How Far Has Pollution Prevention Advanced?

Storylines of Cleaner Production in Durban, South Africa

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Synopsis:

This master's thesis deals with the adoption of cleaner production in the city of Durban, South Africa. eThekwini Municipality, the local authority, has identified cleaner production as a strategy to pursue economic growth and to alleviate the severe industrial pollution that the city experiences particularly in its south basin. The thesis identifies the concept of cleaner production and analyses eThekwini Municipality cleaner production strategy. Furthermore, it analyses the adoption of cleaner production in Durban as part of eThekwini Municipality efforts towards ecological modernisation. In order to fulfil these objectives the thesis examines the cleaner production primary stakeholders in relation to the concept and a centre for cleaner production case study. The thesis concludes that eThekwini Municipality is on the process of institutionalising cleaner production but have not yet identified a core strategy to accomplish the adoption of the concept. It concludes that ecological modernisation is present at an incipient stage in eThekwini municipality and that the case study analysed in the thesis has moved from a centre with 'strong' ecological modernisation to a 'champion' with a 'weak' ecological modernisation.

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Abbreviations

Acronym	Description
BAT	Best Available Technology
CP	Cleaner Production
CSIR	Council for Scientific and Industrial Research
DANCED	Danish Cooperation for Environment and Development
DANIDA	Danish International Development Agency
DEAT	Department of Environmental Affairs and Tourism
KZN	KwaZulu-Natal (South African province)
LCA	Life Cycle Assessment
MPP	South Durban Multi Point Plan
MRA	Merebank Ratepayers Association
NCPC	National Cleaner Production Centre
NEMA	National Environmental Management Act
NGO	Non Governmental Organisation
PRG	Pollution Research Group
R	Rand (currency of the Republic of South Africa)
SCI	Sustainable Cities Initiative
SDB	South Durban Basin
SDCEA	South Durban Community Environmental Alliance
SMME	Small, Medium and Micro Enterprises
the dti	Department of Trade and Industry
UKZN	University of KwaZulu-Natal
UNEP	United Nations Environmental Program
UNIDO	United Nations Industrial Development Organisation
WESSA	Wildlife and Environmental Society of South Africa
WMC	Waste Minimisation Club

Preface

This master's thesis is submitted in fulfilment of the academic requirements for the degree of Masters of Science in Environmental Management in the Department of Development and Planning, Aalborg University. The thesis deals with the adoption of cleaner production in Durban, South Africa.

The story behind this thesis is worth of sharing. As part of the third semester of my 2-year masters' degree I was required to do an internship in a company or organisation in Denmark or elsewhere in the world. Thanks to a professor in my department, Eskild Holm Nielsen, I got to know of an opportunity in Durban, South Africa. Eskild would later become my supervisor. The project was in line with my interests, which are on the social side of environmental management. I travelled originally to South Africa for four months in 2005 with the objective of finding the feasibility of establishing a Green Network, a Danish – born concept that addresses environmental, economic and social aspects of production. A Green Network was proposed as an innovative development that could alleviate some of the issues related to industrial pollution in the city.

After spending some time getting familiar with the complex situation in Durban and talking to the interviewees about the Green Network feasibility I got to know that there were no plans to establish such an approach and that in fact, I should be looking at the plans of setting up a centre for cleaner production. I modified my plans and I began working towards this goal. Part of that effort was my ninth semester report which analysed the stakeholders of the centre and the conditions within the city regarding cleaner production. The report was written with the idea of being complemented by my thesis. I had the opportunity of being back in Durban for a 5-week period in 2006 where I got to know during the final days of my stay that the plans for a centre for cleaner production had been changed to a 'champion' advocating the concept. I had to modify my plans once again. The result of these developments is this thesis which deals with the adoption of cleaner production in Durban, South Africa..

I want to express my most sincere gratitude to my academic supervisor, Eskild Holm Nielsen for all his invaluable help and supervision that made this thesis possible, Chris Buckley for the academic support and hospitality during my stay in Durban and to each of the interviewees for the time and insight provided. Additional thanks go to Martin Lehmann, Søren Jeppesen and the Pollution Research Group at the University of KwaZulu-Natal. And finally, special thanks go to the RUF travel grants and to Aalborg University for the financial support that has made this master's thesis possible.

On a personal level I would like to thank my family; Eduwiges, my mother, Angel, my father and my siblings Claudia and Roberto for all their support and love. I also want to thank all of my friends because they are part of who I am; Marysia, Steve, Jose David, Mario, Cristobal, Julius, Filipe, Elettra, Jeff Arsenych, Davide, Nir, Andrea, Adriana, Mirela, Sven, Jose, Etienne, Stefania, Julio, Melissa, Wan Lin, Lindsay, Aneta, Aldo, Shantall, Anna, Lisa, Eugenio, Gintare, Genevieve, Jason, Yasmin, Xiangyun , Morten, Kristian, Sandy, Karina, Lene, Leticia, Marcela, Pascale, Kerry, Reena and Roberto.

Aalborg University, Denmark, June 16, 2006

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Gerardo Marquez Resendiz

1 Introduction

Once upon a time there was a city called Durban. The city had a problem known as industrial pollution… This thesis titled "How Far Has Pollution Prevention Advanced? Storylines of Cleaner Production in Durban, South Africa" tells the 'story' surrounding the concept of cleaner production in the city of Durban. The thesis focuses on the undergoing efforts to prevent industrial pollution in the city, particularly on the cleaner production efforts. The objective of the thesis is to make an account of the adoption of cleaner production in the city and analyse the strategy for its adoption in Durban.

Durban is a highly industrialised city with a population over three and a half million inhabitants. It is a coastal city located in the province of KwaZulu-Natal, in the south east part of South Africa (see figure 1.1). The city population is integrated by 68 percent black Africans, 20 percent Asian, 9 percent white and 3 percent coloured (eThekwini Municipality, 2004). The city is home to the busiest port in Africa and to a large number of industries. Manufacturing, tourism, finance and transport are its four largest economic sectors (ibid).

Durban faces a number of challenges common to other big cities in South Africa. Among the most pressing are unemployment at around 40 percent and the aids epidemic estimated at 34 percent of infected adult population in the province of KwaZulu-Natal (ASSA Aids, 2000). Lack of housing and basic services, crime and environmental degradation are also major issues in the city. This thesis focuses on the efforts of eThekwini Municipality to prevent industrial pollution through cleaner production.

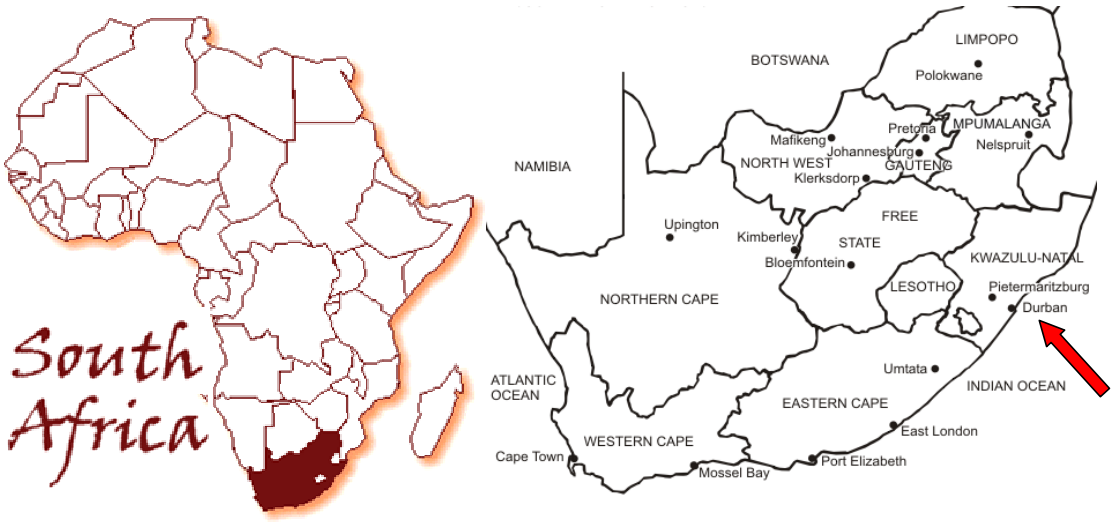

Figure 1.1 Location of Durban

Cleaner production is the continuous application of an integrated preventive environmental strategy to processes, products, and services to increase overall efficiency, and reduce risks to humans and the environment (UNEP, 2001). eThekwini Municipality, the local government authority in charge of the city of Durban, has identified cleaner production as a strategy for economic growth in industry and a possible solution to the serious environmental problems related to industrial pollution in the city.

Industrial activity is the reason behind Durban, in particular its south basin, becoming one of the pollution hotspots of the country. The area presents a unique situation where mainly black[1] communities and industries live and operate in close immediacy. The environmental aspects of pollution are coupled with social aspects. The area is characterised by industries' poor environmental performance and communities plagued by social problems and a history of opposition to industry. The south Durban basin is home to a sharp conflict among communities, industry and government officials.

eThekwini Municipality has been active in its approach towards solving the pollution problems in the basin. The Municipality has been trying innovative approaches in order to achieve pollution prevention and enhance communities' quality of life. They include among others, the integration of cleaner production into the Municipality bylaws, several pollution prevention projects and the launching of a plan to address environmental pollution in the basin. The initiatives undertaken in eThekwini show an undergoing change in the attitude of the involved players in Durban towards environment; an attitude that suggests a path towards ecological modernisation.

1.1 Industrial Activity in Durban

Durban holds a considerable importance in terms of industrial activity. It is considered the second biggest industrial hub of the country with many priority sectors located among its industry. Petrochemicals, motor vehicles and auto components, beverages, paper and paper products and food processing are among the main sectors of activity (JHI, 2003). A significant part of the Durban economy depends on industry making this industrial activity deeply connected to the existence of the city.

The majority of industry in Durban is located in the south part of the city. It is for this reason that this thesis places special emphasis on this geographical region. Industrial activity in south Durban came upon a decision from the former apartheid regime in the late 1930s to develop the south Durban basin into an industrial area (McDonald et al, 2002). The massive industrialisation along with a long industry's history of poor environmental record and the unique topographical and climatological conditions in

[1] Black is used in the thesis to refer to non-white individuals. It refers to black Africans, coloured, Indian and Asian. South Africans still refer to each other in racial terms as one of the legacies of the apartheid.

the basin transformed the south Durban basin into one of the main pollution hotspots in South Africa[2].

A number of additional issues have aggravated the industrial pollution problem in Durban and added another dimension to the problem. Under the apartheid government black communities were forcibly relocated beside industry. This immediacy brought up a number of thorny issues. Industry in the basin was notorious for their record of incidents and poor environmental performance with little regards for the wellbeing of the surrounding communities. Government authorities fuelled the situation with loose environmental regulations and industry protection. As a result the area became home to a sharp conflict among industry, government and civil society.

Social factors such as a high rate of unemployment, general poverty levels, lack of appropriate housing and crime have all worsened the pollution problem adding a social dimension to it. One of the main communities' concern is industry-related health issues. The basin inhabitants hold a poor health record resulting presumably from the high levels of pollution in the region. There is an unusual amount of sicknesses typically related to industrial pollution; asthma, eye and skin irritation, cancer are among the most common (Naidoo, 2005, Seetharam, 2005).

Industry has improved their operations recently but overall it still keeps a poor environmental performance. Every now and then communities are affected by an industry – related activity whether it is bad smells, flaring, spills, leakages, garbage, visual impacts, etc. In a post apartheid society, communities feel that industry has changed little. Industry has not cleaned their operations and continues polluting on them. They still perceive industry as having preferential treatment from government. Communities hold growing levels of frustration related to the government approaches to mitigate these problems. The situation has generated tensions and conflict for many years among civil society, government officials and industry in the area.

eThekwini Municipality is well aware of the situation in the south Durban basin and has been looking at ways to alleviate the issues in the basin. eThekwini Municipality has a good reputation for some of their initiatives and its willingness to try new schemes in order to solve the problems the city faces. In terms of pollution the Municipality together with other actors has supported a number of projects aimed at reducing industrial pollution and mitigate their impacts. Among the most recognised are the former Waste Minimisation Clubs, the Danish initiated Cleaner Production Demonstration Projects and South Durban Basin Multi Point Plan.

[2] See Chapter 3 for a further explanation of the environmental and social challenges in the south Durban basin

eThekwini Municipality is engaged in a number of initiatives that indicate a path towards ecological modernisation. The Municipality is recognised as a leading local authority in South Africa in the quest for a sustainable development. eThekwini is signatory to a number of agreements that aim to improve the livelihood of its citizens such as Local Agenda 21. The Municipality is beginning to take a different tone in its approach to environmental regulation; more cooperative rather than just pure command and control and an emphasis in the principles of pollution prevention pays.

In its search to provide economic growth and improve the quality of life of the city inhabitants eThekwini Municipality has identified cleaner production as one of the tools and strategies to prevent industrial pollution. The adoption of cleaner production has been actively pursued by the related Municipality departments. The process has been hindered by the local institutional set up. eThekwini faces a number of constraints that combined with the conflictive situation in the south Durban basin and the renounce of the involved parties in the pollution problem to actively seek a solution to the problem have made the adoption of cleaner production move slowly.

1.2 Problem Formulation

eThekwini Municipality is not alone in its decision to pursue cleaner production as a pollution prevention strategy. Cleaner production is considered among the most widely used tools to prevent pollution. Cleaner production has been embraced by the environmental authorities of many countries as well as for international organisations. Internationally, United Nations is the main cleaner production advocator. United Nations Industrial Development Organisation (UNIDO) and United Nations Environmental Program (UNEP) joint efforts have seen the creation of the National Cleaner Production Centres (NCPCs) program to extend the application of the cleaner production approach at all decision making levels of industry.

The basic premise of the UNIDO – UNEP National Cleaner Production Centres Program is that cleaner production can only be sustained in a country or region if the capacity to adopt it is in place – this can only come about if the concept is promoted by professionals in the beneficiary country itself and adjusted by them to the local conditions (Luken & Navratil, 2004). The concept of cleaner production acknowledges that in order for it to effectively deliver its promises it must be adapted to the local context. This suggests that each country or even region should take into account its own characteristics and background when planning their cleaner production activities.

Cleaner production possesses a dual dimension; on one hand it is a technical tool designed to solve specific production problems within companies with many of its elements being of a very technical nature. On the other had cleaner production is also about facilitating its adoption and implementation within businesses. It is a strategy that makes use of regulatory, market – based and information – based instruments to achieve widespread application.

The concept of cleaner production was introduced by the first time in South Africa in 1993 by the Department of Environmental Affairs and Tourism in cooperation with the Danish government (Buckley, 2004:1). Since then, cleaner production has gained steady acceptance and has gradually been integrated into South African policy and legislation pieces such as the White Paper on Integrated Pollution and Waste Management or the National Integrated Waste Management Bill. The creation of the National Cleaner Production Centre in 2003 and the release of a National Cleaner Production Strategy draft in 2004 (RSA, 2004) further ratify the idea of South Africa committed to cleaner production.

eThekwini Municipality has been looking at cleaner production as part of their strategy to prevent industrial pollution while at the same time provide a competitive edge to industry. Cleaner production is very relevant to the Durban context. Its goal of pollution prevention offers a potential solution to many of the problems that the basin experiences. Cleaner production does not have all the answers to the complex problems in Durban related to industrial pollution, but its widespread application combined with any other given strategies can bring about environmental and financial gains that benefit industry and civil society alike.

eThekwini Municipality commissioned a study in 2003 to find the feasibility of establishing a cleaner production centre as part its efforts to promote the adoption of cleaner production. The study was followed by a business plan and stakeholders meetings to decide on the right approach to move the project forward. The centre did not come into reality mainly due to the appointed government official being absent of her position and the renounce of civil society and industry to work together. The lack of direction and ownership made the project come to a halt.

Government official gathered recently in order to identify how to move further the adoption of cleaner production in Durban. The plans for a cleaner production centre were ‘resurrected’ during this meeting. Government officials reviewed the existing information and decided that at this stage eThekwini would not pursue a cleaner production centre. The officials decided rather to transform the centre to an independent party with the mission of advocating cleaner production in Durban.

Cleaner production has been present in the plans of eThekwini Municipality for several years, but the form the concept will take is still unknown. This thesis looks at how the concept of cleaner production in Durban can be best adapted into the local conditions of the city. It discusses cleaner production given the local situation in Durban. The thesis main research question is: **how is the concept of cleaner production being adapted into the local context of Durban?**

The local context refers to the industrial pollution and tense situation in Durban described briefly in section 1.2 and further explained in Chapter 3. The local context in Durban provides insight into what kind of approach can be best fitted to pursue a successful strategy to adopt the concept of cleaner production in the city. In order to answer the research question the thesis formulates the following research objectives:

- Identify the concept of cleaner production and analyse eThekwini Municipality cleaner production strategy

- Analyse the adoption of cleaner production in Durban as part of eThekwini Municipality efforts towards ecological modernisation

The thesis sees cleaner production as a strategy that can potentially play an important role in solving the problems the city faces related to industrial pollution. The thesis discusses cleaner production from a general point of view. It then proceeds to analyse the eThekwini Municipality cleaner production strategy with the help of the centre for cleaner production case study. The analysis provides insight into the adoption of cleaner production in the city and identifies the Municipality strategy.

Cleaner production originated from the concept of pollution prevention. Cleaner production aims to convince industry that pollution prevention pays. Past initiatives in the area of waste minimisation and cleaner production demonstration projects have shown industry in Durban the benefits of pollution prevention. While several industries have benefited from these initiatives, the vast majority of the industry in the city is not engaged in this discourse and is unaware of these initiatives or indifferent to them. This situation has been described as clean islands in a sea of dirt (Lehmann, 2004).

eThekwini Municipality has been successful in the past to attract funding from donor countries to introduce the concept of waste minimisation and later on the concept of cleaner production. As a result from these initiatives waste minimisation and cleaner production are known concepts among environmental players in Durban. This does not mean that its application is also widespread. The current challenge that eThekwini faces is how to institutionalise cleaner production. How to move it from being a known concept to some industries to being a widespread strategy among industry and other stakeholders in Durban.

eThekwini Municipality has been under a constant ecological transformation. eThekwini is one of the leading municipalities in South Africa in terms of pollution prevention approaches. The Municipality is receptive to new ideas and innovation. An academic puts it in this way when he speaks of environmental initiatives "*Durban is the best chance you've got*" (Telukdarie, 2005). Ecological modernisation theory is used in this thesis to put into context how much eThekwini has advanced into the modernisation of its environmental institutions. The theory provides an analytical framework to examine the environmental transformation that is taking place in Durban and quantify how much the Municipality has advanced towards ecological modernisation. The theory is used also in order to assess what kind of ecological modernisation has taken place in regards of the centre for cleaner production case study.

1.3 Research Design

The thesis aims to find out how the concept of cleaner production is being adapted to the local context of Durban. Cleaner production has been traditionally a subject dealing mostly with technical solutions to prevent pollution. The literature in the topic is predominantly technical in nature with only a few studies looking at cleaner production from a broader perspective. Industrial pollution is not only a problem of industry and regulators, but a problem of industry, regulators and those communities affected by it. Durban presents a unique apprehensive situation resulting from years of conflict among industry, government and civil society.

There are several studies related to the past initiatives implemented in Durban, the waste minimisation clubs and the cleaner production demonstration projects, but there are still not comprehensive studies that look into the status of cleaner production in Durban and the adoption of the concept considering the local context. These circumstances appeal to an explorative research design. Explorative research is opposed to research where there is already a model developed in earlier studies or a well known situation where it is possible to create hypothesis.

Explorative research takes an initial stand in a field where not much has been researched. It takes a 'let the field speak approach'. Explorative research tries to establish an overview or framework to help future analysis be better defined and researched. This type of method is designed to generate ideas and hypothesis rather than to generate assumptions (SKOPOS, 2006). It usually starts with a preliminary notion of the object of study that improves as the research evolves.

Explorative research is used in a situation of limited knowledge of the subject of study. It helps to acquire a pre-understanding of the area to be investigated (Jeppesen, 2004b). Explorative research provides information on and a description of the context and it gives an insight into the contextualisation of a concept in a particular setting (ibid). Explorative research is therefore used in this thesis in order to gather information on the context of cleaner production in Durban. It helps to reach an understanding of the concept of cleaner production in the unique pollution situation of the city. Explorative research provides insight into how the concept of cleaner production has been adapted into the local circumstances by each of its stakeholders.

A growing amount of literature suggests that we have entered a new era where the environment has gained steady importance. A period of time where there is a paradigm shift towards the solution of environmental problems. This shift has been described as an ecological modernisation. eThekwini Municipality is taking a number of actions in order to solve the environmental issues in the city, such as incorporating cleaner production into its bylaws and initiatives to promote cleaner production among others. The thesis makes use of ecological modernisation theory in order to gain a better understanding of the environmental changes that are taking place in Durban.

Cleaner production, the main topic of study of the thesis, is deeply linked to ecological modernisation. Cleaner production and the theory share several characteristics. Ecological modernisation is based on the belief that economic growth can go hand by hand with environmental protection, cleaner production provides a practical example of pollution prevention pays, that money can be made by protecting the environment. Ecological modernisation provides a framework to analyse the undergoing cleaner production developments in eThekwini from a broader perspective. The theory analyses cleaner production activities and situate them into an overall context that indicates how much the Municipality is advancing towards modernising its approach to the environment.

In addition to ecological modernisation as the main theory, the thesis makes use of systems theory. Systems theory departs from the objective of analysing complex concepts or 'systems' in a simple manner. In this way cleaner production can be seen as a system composed of interconnected elements or subsystems. By analysing a concept in terms of systems and subsystems it is possible to identify new elements to it. The thesis uses the theory in order to identify possible new cleaner production subsystems resulting from the local context in which cleaner production takes place.

The thesis makes use of 'storylines' based on the writings of Hajer (1995) to describe the environmental transformations in the city. It is because of the use of these storylines that the thesis receives its title; "How Far Has Pollution Prevention Advanced. Storylines of Cleaner Production in Durban, South Africa". A storyline brings unity to the different discourses that form part of a problem being analysed. Hajer (1995) claims that the key function of storylines is that they suggest unity in the bewildering variety of separate discursive components. The thesis makes use of 'storylines' in order to give insight into the context of cleaner production in Durban and analyse the strategy being followed for its adoption in the city.

The thesis analyses the environmental transformations that have taken place in Durban based on the writings of Mol (1999). The analysis throws light on how much the city has advanced in terms of modernising its environmental institutions. The case study of the plans of a centre for cleaner production is presented in order to examine the cleaner production strategy being followed by eThekwini. The centre for cleaner production is further analysed under the influence of Christoff (1996) to determine the kind of ecological modernisation that is taking place in the case study.

The plans of a centre for cleaner production case study is selected based on Yin (2003). Yin (2003) argues that a case study is appropriate when we ask the question 'how' and our subject of study deals with a contemporary issue. The subject of study of the thesis fulfils both characteristics, therefore the thesis makes use of the plans for a centre for cleaner production as a case study to provide insight on the adoption of cleaner production in Durban and determine the type of ecological modernisation that the centre is pursuing.

1.3.1 Data Collection and Analysis

The thesis makes use of qualitative methods such as interviews, participant observation, document analysis and one case study, the plans for a centre for cleaner production case study in order to answer the research question.

The data contained in this thesis comes from primary and secondary sources. The thesis takes primary data from interviews with people with relevant knowledge on cleaner production or an aspect related to it. The primary data comes from interviews made mainly in Durban, South Africa in two different periods of time. The first data collection took place between September 2005 to December 2005 and the second from April 2006 to May 2006. The outcome of the first data collection is a report titled *'Approaches to Public – Private Partnerships – A Case Study of a Centre for Cleaner Production in Durban, South Africa'*. The thesis draws information from this report.

The thesis aims to understand the adoption of cleaner production in Durban, therefore it focuses on interviewing people with inner knowledge on the concept rather than making a survey of industry in the area. The people interviewed are representatives of the main stakeholder groups to move forward the concept of cleaner production in Durban, namely industry, civil society and government representatives as well as environmental consultants.

By using an explorative research approach the criteria for the data collection focused on those individuals who could provide insight into cleaner production in Durban or an important aspect related to it, for instance community health issues. During the first data collection 32 interviews with 35 people were made. The second data collection consisted of 10 interviews. Table 1.1 lists the most quoted people along the thesis. Further details are provided in appendix A, which lists the interviewees from the last data collection period and appendix B which lists the interviewees during the first data collection period.

The interviewees were selected in terms of the importance their groups hold to cleaner production. The interviewees were identified taking an explorative approach based on the characteristics described in the paragraph below. Additionally each of the interviewees was asked to name other individuals with relevant knowledge to the objectives of the thesis. This could be described as a snowballing technique.

Name	Position
Bell, Judy	Environmental consultant
Buckley, Chris	Academic, head of the Pollution Research Group at the University of KwaZulu Natal
Chetty, Siva	Former eThekwini Municipality Health Department's Program Manager for the "South Durban Basin Multi-Point Plant" and current deputy head for pollution control support at eThekwini Municipality
Cilliers, Kevin	Project Manager at the National Cleaner Production Centre of South Africa
D'sa, Desmond	Head of the environmental NGO South Durban Community Environmental Alliance
Damon, Ray	Engen Oil Refinery public affairs (relationships) manager
Dold, Di	KwaZulu Natal Wildlife and Environmental Society of South Africa's environmental coordinator and former national coordinator
Fennemore, Chris	Officer at the eThekwini Municipality Water and Sanitation Pollution Control Group
Lakhani, Muna	Head of Zero Waste Institute of South Africa, environmental activist and member of Earth Life Africa
Munn, Alan	Engen Oil Refinery sustainable business manager
Redelinghuys, Sandra	Head of the eThekwini Municipality Water and Sanitation Pollution Control Group
Simon, Michelle	Environmental consultant and ex-anti - apartheid activist

Table 1.1 Most frequently quoted interviewees along the thesis (see appendices A & B for full list)

Representatives from industry were chosen according to any of the three following criteria; company participation in the past waste minimisation or cleaner production activities in Durban, a proactive attitude towards cleaner production or enhanced environmental performance and importance that the company has in terms of levels of perceived pollution produced, size and economic output. Representatives from government were chosen according to the role their departments play in the advancement of cleaner production. Currently there are three government units that are directly involved in cleaner production; eThekwini Health Department, eThekwini Water and Sanitation Department and the eThekwini Environmental Branch.

Civil society representatives were selected from the most representative environmental non – governmental organisations (NGOs) in Durban in terms of advocacy and their fight for a cleaner environment. In addition to these three stakeholders a number of other individuals were interviewed, they were selected in terms of the insight they could provide into cleaner production and its associated subsystems. Among the interviewees are environmental consultants, academics, medical doctors, politicians, and representatives of organisations that had a role to

play in cleaner production such as the National Centre for Cleaner Production and the Durban Chamber of Commerce.

All but three of the interviews were made in person. The interviews were semi-structured made individually in most cases, with only a couple interviews being realised with two representatives from a company / organisation at the same time. All the interviews were tape recorded. A full transcript was made to ensure accuracy and avoid any misunderstanding as some of the comments posed by the respondents can be controversial or in direct contradiction to other interviewed parties. All the interview transcripts can be found in appendix C and D.

A significant number of relevant people from government, civil society, industry and other parties were contacted for interviews during the two data collection periods. Unfortunately not all of those individuals were available at the time or willing to give an interview. A bigger number of people being interviewed would have enhanced the insight into the context and adoption of cleaner production in Durban. The thesis would have definitely benefited from their participation. This limitation however does not invalidate at all any of the conclusions reached in the thesis.

The thesis made use of data triangulation to legitimise and validate its findings. Data triangulation refers to the use of many sources of evidence to verify a fact or statement. The thesis made use of the 42 interviews, documentation analysis and observations of the subject of study in order to provide overlapping support of the same issues (Yin, 2003) or in other words to validate the findings and conclusions of the thesis.

1.4 Structure of the Thesis

The thesis is composed of seven chapters, a bibliography and four appendixes which contain all the interviewees contact details and full transcripts of each of the interviews made mainly in Durban during the two data collection periods.

Chapter one provides a general overview of the thesis. It presents the adoption of cleaner production in Durban as the topic the thesis deals with. The Chapter provides an introduction to the problems the city faces regarding industrial pollution that lead to the thesis main research question and its research objectives. It presents the research design and finishes with the general outline of the thesis.

The second chapter introduces the two theories that provide guidance to this thesis; ecological modernisation and systems theory. Ecological modernisation, the main theory of the thesis is described here. The Chapter gives insight in its origins, core features, main critique and its relation with cleaner production. Ecological modernisation provides an analytical framework to examine the environmental transformations in Durban. Chapter two also provides an overview of systems theory. Systems theory is a complementary theory that is used in the thesis to see cleaner production from an institutional perspective to identify new elements to the concept.

The third chapter describes the environmental situation in Durban related to industrial pollution. This background information is necessary in order to understand the potential that cleaner production has for the city. In particular the Chapter makes an account of the industrial character of the south Durban basin, the environmental problems in the area and its conflictive situation. The Chapter provides also an account of the primary and secondary players of cleaner production in Durban and finishes providing a summary of the developments that have influenced the adoption of cleaner production in Durban.

The fourth chapter introduces the concept of cleaner production. The Chapter begins by giving a brief introduction to pollution prevention, the umbrella concept under which cleaner production was born. It defines the concept of cleaner production and establishes the main practices of the concept. The Chapter goes on to describe the company and strategy related tools that cleaner production uses in order to achieve pollution prevention. The chapter concludes with comments on the ongoing direction of cleaner production.

The fifth Chapter presents the case study of a projected centre for cleaner production in Durban. The centre was planned by eThekwini Municipality in order to promote pollution prevention among industry and ensure economic, environmental and social benefits to the city, particularly its polluted south basin. The Chapter begins by providing information on cleaner production at a national level, its status and constraints. It continues by describing past developments that form the background to the centre plans and concludes describing the stages the centre went through until its current status.

Chapter six presents an analysis of the adoption of cleaner production in Durban. The Chapter introduces the primary stakeholders of cleaner production and provides a background of their relation with the concept. It continues to outline the strategy that eThekwini Municipality is pursuing in its adoption of cleaner production. The Chapter moves on to analyse to what extent eThekwini has embraced ecological modernisation and examines what kind of ecological modernisation has taken place in the centre for cleaner production case study. The Chapter concludes with the analysis of the cleaner production concept in Durban from a systems theory perspective. Finally, Chapter seven provides the conclusions of the thesis regarding the adoption of cleaner production in Durban.

2 Theories – Ecological Modernisation and Systems Theory

Chapter two offers a review of ecological modernisation theory and systems theory. The Chapter begins with a brief introduction to ecological modernisation, which is the main thesis theory. It touches on the origins of the theory and outlines the different stages that the theory has gone through. It then sets to explain what the theory is all about and describes its cores features and provides a critique of the theory. The Chapter explains the relation between ecological modernisation and cleaner production. Cleaner production is one step forward towards environmental transformation in Durban. The Chapter proceeds to establish the relevance of ecological modernisation theory for the thesis. The Chapter then goes on to introduce systems theory as a support theory that will help be used to oversee cleaner production in Durban from an institutional perspective. The Chapter continues by describing some concepts of systems theory and finishes by establishing the relevance of the theory for the thesis.

2.1 Introduction to Ecological Modernisation Theory

For many years after the industrial revolution, businesses have been primarily concerned with increasing production and profit. Little or none attention was given to the natural environment resulting in an increasing number of problems and consequences that have gone from local bad smells and noise for neighbours to regional contamination of water, deforestation, pollution related sicknesses and death to global problems such as acid rain, ozone layer holes and the current threat of global warming.

Initially environmental problems were seen as an inevitable part of production. Pollution resulting from production processes was seen as part of progress. Up until the 1960s the attitude that prevailed was to ignore or hide pollution. As environmental problems appeared solutions to these problems began also to emerge and have been continuously progressing. These solutions focused on mitigating or diluting pollution. As time went by it was realised that although initially good these solutions were just temporary and there was need to look for more permanent answers to the emerging environmental problems.

Remmen (2001) characterises the evolution of the attitude towards environmental problems classifying it from out of sight, out of mind in the 1960s, environmental protection in the 1970s and 1980s, pollution prevention in the 1990's to integrated product policy in the 2000s. Prior to the 1960s, most industries, governments and civil society did not pay much attention to pollution related to industrial production. This attitude changed little by little in industrialised countries lead by a raise of environmental awareness in the 1970s. Environmental issues attracted the attention from the media, NGOs with an environmental agenda appeared and the first government environmental departments were established.

The new environmental structures focused on a 'dilution' approach to pollution. A filter strategy that saw for instance the creation of waste water treatment plants and stack filters to solve the problem. Due to the fact that this strategy focused on remediation rather than prevention it received the name of 'end of pipe solutions'. It was quickly acknowledged that 'dilution is no solution' therefore during the 1980s the focus shifted to pollution prevention via optimisation of industrial processes, implementation of environmental management systems and cleaner production.

The focus is currently adding a new dimension; from cleaner production to cleaner products, moving from pollution prevention to an integrated product policy which foresees the life cycle of a product or a process. In this change of attitude towards the environment or modernisation of environmental paradigms new actors have emerged. The environment is no longer the responsibility of government alone but of industry, environmental NGOs, consumers and other actors as well.

This shift in attitude reflects an evolving discourse to solve perceived environmental problems. This evolution of environmental techniques and solutions to environmental issues is analysed by ecological modernisation theory. Ecological modernisation studies the recent changes in policy and politics. It argues that environmental problems and economic development can go hand by hand resulting in a win – win situation. The theory acknowledges that technology has been the cause of environmental problems and at the same time argues for technology as the solution to the problems originated from its use.

2.2 Ecological Modernisation Theory Origins

Ecological modernisation as an environmental theory is credited on the works of the German social scientist Joseph Huber as well as Martin Janicke. The theory was created as a response to the failure of pollution control policies of the 1960s and 1970s. Ecological modernisation was originated from the desire of policy makers to find a balance between improved environmental practices and economic gains.

The theory developed in the 1980s amid developed countries in Europe with a relatively stable policy style – one that Dryzek (quoted in Carter, 2001:217) describes as featuring strong corporatist traits. Ecological modernisation theory had its origins in Germany, Netherlands and the United Kingdom. As time had gone by, it had extended to other industrialised countries and several studies have been made in transition economies as well.

2.2.1 Ecological Modernisation Theory Evolution

Ecological modernisation theory is a relatively new theory in the environmental scene. Since its beginnings the theory has sparkled debate among the academic community. From these continuous debates the theory has evolved to overcome critics and accommodate the changes in the environmental scene. Mol (1999) identified at least three stages in the development and maturation of the theory.

The first stage of ecological modernisation took place during the early 1980's. It focused primarily on the role of technological innovation as a means of environmental transformation. It took a favourable position towards the role of market actors in environmental reforms and a critical position towards the bureaucratic state and an evolutionary and systems – theoretical perspective with a tendency towards the level of the nation state. During its first stage of development the theory had a very poor focus on the human and social side of the environment.

The second stage took place between the late 1980s to the mid 1990s. This period began shifting away from technological innovation as the primary mover of the theory and paid more attention to the importance of the market as a means of environmental transformation. It further moved towards institutional and cultural aspects of ecological changes. Although the first and second periods took place exclusively in European, developed countries, it can be observed that the theory is beginning to expand to other geographical regions as the second period included comparative studies of industrial production in countries belonging to the organisation for Economic Cooperation and Development.

The third and current period of ecological modernisation theory began in the mid 1990s. It can be characterised by a wider scope in terms of geographical regions as well as areas of study. Ecological modernisation theorists expanded to other European countries such as Denmark or Finland and moved to other areas such as newly industrialising countries, transitional economies in Central and Eastern Europe, United States, Canada as well as less developed countries. Besides its new geographical scope the theory began paying attention to issues such as ecological transformation of consumption and other emerging tendencies.

2.3 Understanding Ecological Modernisation

Society as a whole is currently dealing with its growing environmental problems. Ecological modernisation has gained considerable influence among the approaches to solve these problems. Ecological modernisation is at present the dominant interpretation on how to achieve sustainable development. The theory is opposed to other environmental theories such as deep ecology that emphasises that human interference with the non-human world is excessive and therefore it should be dramatically reduced.

Ecological modernisation importance as a theory comes from its usefulness for societal scientific analysis and policy formulation. In recent years the theory has been divided into 'weak' and 'strong' versions (Christoff, 1996; Mol & Sonnenfeld, 2000:100). Christoff (1996) argues that ecological modernisation has become a fashionable term that could be either used to legitimise the destruction of the environment or to truly achieve a sustainable ecological transformation. Therefore it is necessary to make a distinction between 'weak' and 'strong' versions of the theory (see Chapter six for an analysis of the Durban case study).

The weak version focuses on the redesign of manufacturing systems to limit environmental damage and several authors argue that some countries have made important advancements in these regards (Mol & Sonnenfeld, 2000). The strong version of ecological modernisation calls for a more ambitious approach. An approach that recognises the value of scientific knowledge but at the same time is open to other forms of expertise making it a more equitable and sustainable form of ecological modernisation.

Ecological modernisation authors see continued industrial development as offering the best option for escaping from the ecological crises of the developed world (Fisher & Freudenburg, 2001) arguing that these crises can be solved through further advancement of technology. This is contrary to other theories that tend to see technology and economic growth as enemies of environmental preservation. By advocating to technology ecological modernisation embraces the newest technological developments to clean the environment and analyse them together with policy and societal changes that bring environmental transformation.

2.3.1 Ecological Modernisation Core Features

As a young school of thought ecological modernisation theorists still debate on the extent of the theory and its limits. The features of the theory have changed according to each of its three stages as described in section 2.2.1 and are likely to continue changing as the theory matures. Mol (1999) has identified five characteristic features of ecological modernisation at its current stage.

- Modernisation of politics and policy making; State intervention strategies move away from command and control and begin including market instruments and softer regulation. Environmental regulation makes use of consensual negotiations, partial self-regulation and other instruments such as public – private partnerships to reach environmental goals. This feature emphasises cooperation between industry, scientists and moderate environmental NGOs that are willing to take part in the system (Carter, 2001:213).

- A change in state – market relations; Environmental interests have been somehow institutionalised in market economics; producers, consumers, suppliers, and all related actors are often using economic incentives to reach environmental goals. Costs can be reduced by improving product efficiency and at the same time creating environmental benefits – activities such as waste reduction, rethinking of manufacturing processes, and phasing out of smoke-stack industries become common rule. Green technologies such as pollution abatement equipment, best available technologies (BAT) and green consumerism trends become more and more popular. .

  By establishing that pollution prevention pays, ecological modernisation appeals to business in its own language; profit, making subsequently easier for businesses to adopt the ecological modernisation principles. In this way the theory adds market dynamics and its economic agents (producers, consumers, suppliers, insurance companies, credit institutions, etc.) as carriers of environmental transformation.

- Modifications in the position, role and ideology of social movements; Ecological modernisation argues that ideologies, strategies and positions of environmental NGOs have moved to one to one issue. Major NGOs have gained legitimacy, increased their membership and influence in decision making cycles. They have moved from confrontation and radical views to modernism to coalitions that were not thought possible some years ago. Social movements represented by NGOs are no longer peripheral players or outsiders; they are now part of the game. In this way it is now possible to see an environmental NGO in South Africa collaborating together with two oil refineries in the area in order to make a comparative flaring study to refineries abroad.

- A shift on ideologies in the environmental arena with respect to the role technological innovations can play in environmental reform; this is the main feature of ecological modernisation theory – technology is both, the main cause of environmental pollution and also the solution to the problem. Science and technology are judged by being the originators of environmental problems but at the same time the potential answer to such problems. In this light traditional curative and repair options are replaced by preventive socio-technological approaches that incorporate environmental considerations since the design stage. .

  The theory calls for a more holistic approach to pollution abatement, environmental principles should be applied to the life cycle of products and processes; policy integration, the precautionary principle, the polluters pay principle, integrated pollution control are all part of a call of ecological modernisation to establish the role technology plays in the solution of environmental pollution.

- The nation state is no longer the only level of analysis for understanding environment – informed transformations; there are other players that significantly influence environmental policy. Environmental regulation becomes more decentralised, flexible and consensual giving opportunity to other non – state actors to take part in regulatory, managerial, administrative, corporate and mediating roles that have been traditionally performed by the state. Other international and supranational institutions such as the United Nations or the World Bank for instance have gained major influence in environmental regulation.

2.3.2 Ecological Modernisation Objectives

Several ecological modernisation theorists have works towards making the theory practical rather than just descriptive. The first efforts focused on improvements in environmental performance. Hajer (quoted in Mol & Sonnenfeld, 2000:237) summarises these efforts and proposes three basic concepts on ecological modernisation:

- Making environmental degradation calculable (specially monetarily)
- Environmental protection is a positive sum game; and
- Economic growth and the resolution of ecological problems can, in principle, be reconciled.

Based on these concepts Sonnenfeld (Mol & Sonnenfeld, 2000:237) suggests that ecological modernisation has three immediate and two ultimate technological / material objectives: in the short term, i) waste reduction and elimination, ii) resource recovery and reuse, and iii) dematerialisation. In the long term, i) resource conservation and ii) clean production. These technological / material objectives together with the core features of ecological modernisation provide a framework that enables to analyse to what extent a society has ecologically modernised. These features and objectives are discussed for eThekwini Municipality in Chapter 6.

2.4 Critique of Ecological Modernisation Theory

Ecological modernisation theory acknowledges that technology has been the cause of environmental problems while at the same time argues for technology as the solution to the problems originated from its use. This has been described as an ‘optimistic message’. Ecological modernisation is viewed by its followers as a positive sum game. The perspective has resulted in a divide of ecological modernisation theory supporters and detractors. Among some other criticisms detractors argue that the theory is formulated in countries with a strong environmental law and that is mainly intended for countries in the north with an established environmental legislation.

It is argued as well that the theory takes a technocratic approach that does not give much room to social issues to be considered. Its technological elements such as life cycle assessment ignore issues of equity and social justice. By arguing that pollution prevention pays, it aims to involve government, businesses, consumers, civil society and educational institutions where everyone benefits from the process. It indeed offers a wide range of solutions to prevent pollution. The theory, however fails to prevent that not all the actors can participate since many of their basic needs are not fulfilled (Carter, 2001).

Ecological modernisation describes environmental transformation in the society. But most of this account of environmental transformation refers to what has happened in industrialised countries. In this way a general discourse among supranational organisations such as United Nations and many other international bodies claim that companies can clearly see the benefits of environmentally sound practices. While this is acknowledged and seen as true in all contexts, the countries in which this environmental transformation has been driven are countries with political and economical stability – or countries in the 'north'.

Ecological modernisation claims that environmental improvement can go hand by hand with economic growth which is coupled with increased consumption. Ecological modernists generally understate consumption importance. They believe that by making a product more environmentally friendly it is possible to keep or increase current consumption levels. This is arguable, any possible improvement made by greener products will be offset by the increased consumption tendencies. At most the environmental improvement will be self cancelled by increased product consumption.

2.5 Ecological Modernisation and Cleaner Production

The increased attention to environmental issues in the last decades shows a change of attitudes from government, industry and society to environmental transformation. The last decades have seen a change from companies ignoring the issues, through end of pipe solutions to a search for more permanent solutions. Cleaner production is one of the concepts that have been developed as result of this environmental discourse evolution.

Cleaner production is a preventative approach to environmental management that can be applied to agricultural and industrial processes and services in order to improve production efficiency while saving money and improving environmental performance (UNEP, 2001 quoted on Remmen et al, 2005). Cleaner production is a pollution prevention strategy used by environmental regulators and industry alike. Cleaner production is a regulatory strategy that advocates pollution prevention by establishing what environmental goals are achievable if the tool is applied; tighter pollution permits, effluent discharge tariffs, waste taxes etc. Cleaner production is an environmental strategy for companies in the form of technological tools that improve industry's environmental performance such as waste minimisation and life cycle assessment.

In this light cleaner production is a tool that is consistent with ecological modernisation. Cleaner production similarly to ecological modernisation theory does not deny growth but calls for growth to be ecologically sustainable. Cleaner production appeals for a new mentality on how goods and services are to be produced. In this context waste and emissions have a negative economic value and therefore should be avoided taking into account the present available technology and economic considerations. This results in a 'win - win' strategy that reduces environmental impacts, protects the consumer and worker while at the same time enhances efficiency, profit and competitiveness.

Ecological modernisation acknowledges that technology has caused the current environmental problems and states that technology is also the solution to such problems. Cleaner production departs from this premise and provides paths to pollution prevention through technology. Ecological modernisation seeks to reconcile the environment with businesses. Cleaner production builds these bridges by delivering environmental gains associated to financial savings.

2.6 Relevance of Ecological Modernisation Theory for the Thesis

Ecological modernisation theory helps to analyse the environmental transformation undergoing in any given society. This thesis focuses on the adoption of cleaner production in Durban. It analyses how the concept of cleaner production can be adapted into the local context of the city. Ecological modernisation theory provides support to the thesis by incorporating the cleaner production into the bigger picture of environmental transformation going on in Durban.

At the centre of these transformations there is eThekwini Municipality, the local authority. eThekwini authorities are working hard to address the many challenges that the city faces. The Municipality stands out from the rest of municipalities in South Africa. For instance in 1998 Durban was voted the best managed city in the African continent by the United Nations (eThekwini, 2003). In terms of environment and sustainable development Durban was the first city in South Africa to accept the Local Agenda 21 mandate in 1994 and the Local Action 213 mandate from the World Summit on Sustainable Development in 2002 (eThekwini, 2004). Additionally it has incorporated the 'State of the Environment' reporting as part of its Integrated Development Plan (2003-2007).

eThekwini authorities have embarked in a number of environmental initiatives and projects in the past in order to enhance the natural environment and address environmental issues. Together with eThekwini there are a number of actors that have emerged to support these initiatives[3]. Government, industry, environmental NGOs, community based organisations, academics, environmental consultants and other actors are interacting in order to move forward these initiatives. It is in this context

[3] See Chapter five for more information

that ecological modernisation shows its utility. Cleaner production can be seen as an isolated effort to prevent industrial pollution in Durban or can be seen from an overall perspective as part of a bigger effort to improve the city's natural environment.

Ecological modernisation theory helps to understand cleaner production in Durban as part of a bigger picture. The theory provides an analytical framework to help identify aspects in the context of Durban that otherwise would go unnoticed or would not be seen in relation to cleaner production. These aspects can potentially indicate the path Durban is taking towards environmental transformation.

2.7 Systems Theory

This section describes systems theory and its main concepts. Systems theory is auxiliary to the main theory of the thesis (ecological modernisation). The theory will be used in the thesis in order to analyse cleaner production from a broader perspective. In this way systems theory helps complement ecological modernisation theory. Seeing cleaner production from a wider systems perspective helps to identify new elements to the concept that are important to achieve pollution prevention. The objective of this section is to provide a brief overview of systems thinking.

Systems theory is an interdisciplinary field which studies relationships of systems as a whole. The theory focuses on organisation and interdependence of relationships (Wikipedia, 2006). Systems theory is a complex theory used in many fields of science. It is closely related to cybernetics, catastrophe theory, chaos theory, complex adaptive systems among others. It is based on principles from ontology, philosophy of science, physics, biology and engineering and currently is used in the areas of geography, sociology, political science, organisational theory, management, economics and even psychotherapy among others.

Systems theory was formulated in the 1940's by the biologist Von Bertalanffy as a response to reductionism and as an attempt to revive the unity of science. Systems theory assumes holism; meaning that objects must be studied in 'wholes'. Rather than reducing an entity (e.g. the human body) to the properties of its parts or elements (e.g. organs or cells), systems theory focuses on the arrangement of and relations between the parts which connect them into a whole (Heylighen & Joslyn, 1992).

The objective of systems theory is to devise a universal way to study phenomena that entail complex relationships. Von Bertalanffy (1968) therefore defined it as a "*set of elements standing in interrelationship*". Blanchard and Fabrycky (1990) similarly described systems thinking as an "*assemblage or combination of elements or parts (including methods, procedures of doctrines) which form a complex or unitary whole, such as a transportation systems or system of organisation and management*". Systems theory suggests analysing individually the otherwise complex interrelationships among elements or subsystems in order to grab a clear understanding of the issue analysed.

The main premise in systems theory can be seen graphically in figure 2.1. Systems theory states that in order to understand the greater system or 'whole' we should see it as a composition of three main elements; unity, subsystem and relation. Unity or complexity is what we understand as the whole. It is illustrated by the large oval enclosing the subsystems. A subsystem is a system of its own that belongs to a greater system and that is connected to other subsystems by lines that represent the relationships that exist among the subsystems that integrate the bigger system.

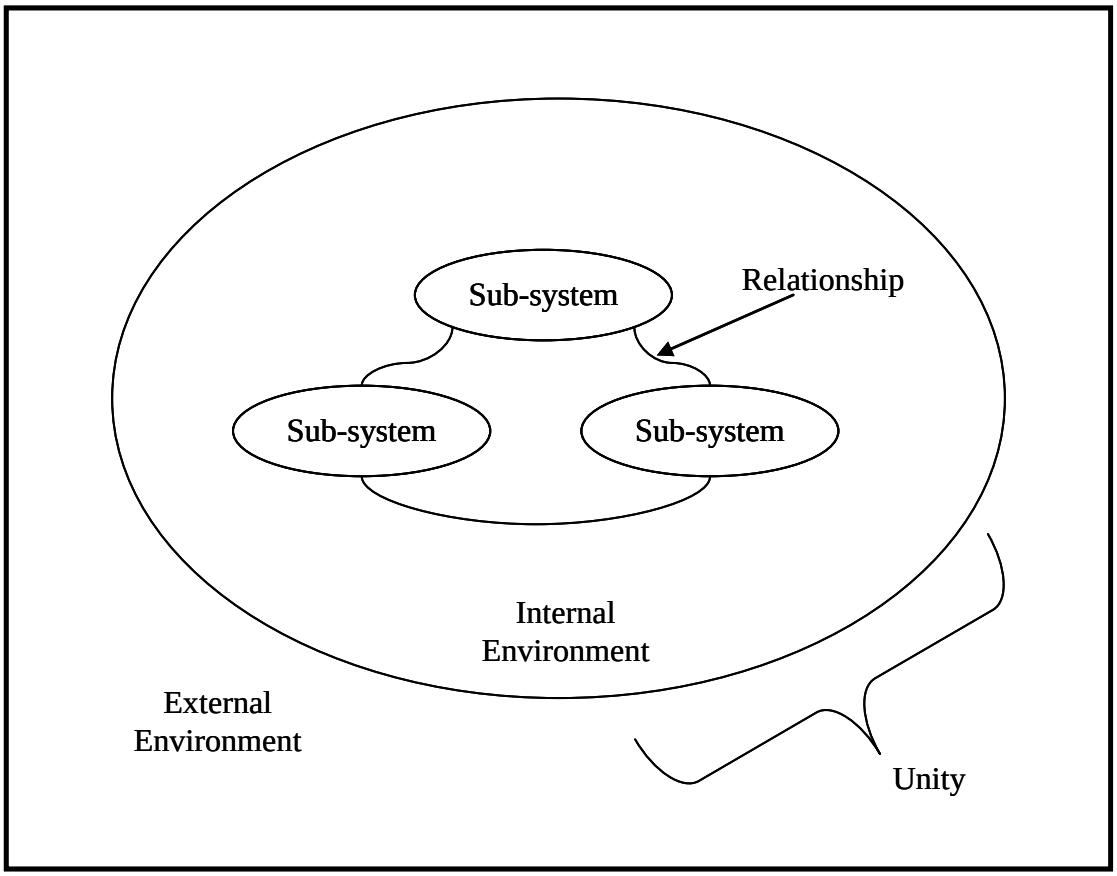

Fig. 2.1 A system unit in systems theory (Dubrovksy, 2004)

Systems can be classified in open or closed depending on their interaction with the environment (Von Bertalanffy, 1968). An open system has interaction with its internal and external environment and a closed system only with its internal environment. Closed systems are usually found in natural science studies while open systems studies are more common into the field of social sciences.

2.7.1 Concepts in Systems Theory

Systems theory makes use of a number of concepts or principles to understand a system. This subsection describes some of the most pertinent to this thesis. They are the concept of subsystem, hierarchy, environment, purpose, input-transformation-output and feedback.

- Subsystems are a set of interrelated systems within the complex structure. They exist within the bigger system and are bonded to each other either directly or indirectly. One of the main tenets in systems theory is that in order to understand a system's behaviour it is necessary to understand first the relationship among its subsystems.
- Hierarchy refers to the rank a subsystem holds as a result of the influence it exercises in the system. In this way we can say that in the pollution prevention system end-of-pipe technologies rank higher than dilution and that cleaner production ranks higher than the former.
- The environment is made up of the different elements within the system and the relations among them. The environment contains elements that affect the systems' conduct. For example the adoption of the concept of cleaner production to a country specific context can affect the way in which the concept is implemented.
- Every system has a purpose for which it exists. For instance cleaner production aims to increase overall efficiency and to reduce risks to humans and the environment.
- A system constantly takes input from the environment, transforms it and then produces an output. Among many existing examples from cleaner production we can take an industry process as the input, transform it with the principles and tools of cleaner production and then have as an output a cleaner, more efficient and environmentally sound process.
- Feedback is an output of the system brought back to it in order to monitor and evaluate the system performance. It allows a system to correct the path when deviating from its purpose.

2.7.2 Relevance of Systems Theory for the Thesis

Systems theory proposes that in order to understand a complex phenomenon it is advisable to treat it as a system composed of subsystems. By breaking the concept of cleaner production into smaller subsystems we would be able to get a better understanding of cleaner production and be able to identify in a simple fashion the otherwise complex elements and relations of cleaner production.

Systems theory is relevant to the thesis for it allows it to look at cleaner production from a perspective that facilitates the integration of elements that otherwise could be difficult to relate to the concept. The concept of subsystems is particularly useful in this regards. As Carnegie et al (2000) point out, it should be remembered that cleaner production should be seen as a system in itself that is at the same time part of a bigger system. In this way cleaner production can be seen as a subsystem of pollution prevention, environmental management, life cycle management, or as a subsystem of ecological modernisation. In the same light cleaner production as a system encompasses many other subsystems such as waste minimisation or life cycle assessment.

By looking at cleaner production from a systems perspective it is possible to integrate elements or subsystems into the concept of cleaner production in a harmonious manner. Systems theory also opens the possibility of identifying new subsystems that were previously not thought to be part of cleaner production. The analytical possibilities of cleaner production viewed from a systems theory perspective will be discussed in Chapter 6.

3 Environmental Challenges in Durban and its Players

Chapter three focuses on the environmental situation in Durban related to industrial pollution. The Chapter describes the industrial activity in the south Durban basin; its importance and the environmental problems industry has created in the area. It provides an understanding of the unique conditions that the basin holds and some of the reasons why conflict is so keen in this region. These conditions motivate the use of a cleaner production approach to alleviate some of the problems in the area related to industrial pollution. The Chapter proceeds to describe the primary and secondary stakeholders of cleaner production and the developments that have influenced the adoption of cleaner production in Durban.

3.1 Industry in Durban

Durban is a complex city that faces several development challenges. The city urban core displays the features of a first world city with housing and access to all services while the periphery of the city containing the major part of the mainly black population shows different levels of poverty. The legacies of the apartheid regime are still felt in the city, especially by the black African population. For example, although considered a relatively prosperous city, the number of people living in townships[4] with very limited access to basic services if any has grown enormously in past few years.

In its quest to address its many development issues eThekwini (2005) has identified the following areas as the major challenges the Municipality is facing: the need for economic growth, provision of basic services to all households, increasing employment and addressing poverty, dealing effectively with crime & grime, addressing HIV / AIDS and other diseases, skills shortage and addressing issues of sustainability.

In terms of environmental issues Durban faces a range of challenges that vary from developing an institutional framework that enables the city to sustainably manage and protect the vast open spaces that provide the city with ecological services, through threats from industrial pollution, to managing an accelerated programme of delivering basic services (energy, water, sanitation, waste management, housing) without overwhelming the natural absorption capacity of the receiving environment (Albertyn et al, 2004).

This thesis focuses on one of the environmental challenges in Durban; industrial pollution. Durban is home to the second biggest industrial concentration in the country. The majority of industry in Durban is located in the south Durban basin thus the study focuses on this area of the city. The south Durban basin is home to two of the four petrochemical refineries in the country, a paper mill, an assembly car factory,

[4] South African term for shanty town originated from the racial division under the former apartheid government

an international airport, several hazardous waste dumps, chemical storage sites, municipal sewage works and is home to as many as 1000 companies (Moodley & Angamuthu 2004:51).

The economic impact of industry in the south Durban basin is noticeable. Companies in the south Durban basin employ 90.000 to 120.000 people – which makes for 10 percent of South Africa's manufacturing jobs (Moodley & Angamuthu 2004:51). In terms of employment and output the most important industry sectors are chemicals, food, metals, paper, textiles and clothing (Morris et al, 2003). The manufacturing sector has been described in strategic government documents as 'the engine of the Durban economy' (Durban Unicity, 2000)

The concentration of industry in the basin has created a myriad of environmental problems. Air pollution, water and ground pollution are some of these problems. Additional to purely environmental problems the closeness of industry to communities and their history of incidents have created a delicate situation. The following sections provide a picture of the area and the conflictive situation in the basin.

3.2 The South Durban Basin

The south Durban basin is a geographical area where industry and communities are located next to each other. Figure 3.1 shows its industrial belts and communities.

The area is located approximately south east of the Durban port, bordered to the east by the Indian Ocean, to the north by the central business district, to the west by the Umlazi Township and to the south by Isipingo. The basin consists of 6 industrial belts; the Valley Industrial Belt which comprise two oil refineries and a paper mill, the Jacobs Industrial Belt, the Navy/Mobeni Industrial Belt, the Island View Industrial Belt, the Prospecton Industrial Belt and the Umbogintwini Industrial Belt (SDCEA, 2004:8).

The south Durban basin is a complex area where mostly non-white communities live in close immediacy to industry. They are an integral part of the basin. Figure 3.1 also shows some of the most important residential areas in the basin; the Bluff, Clairwood, Isipingo, Merebank, Umlazi and Wentworth.

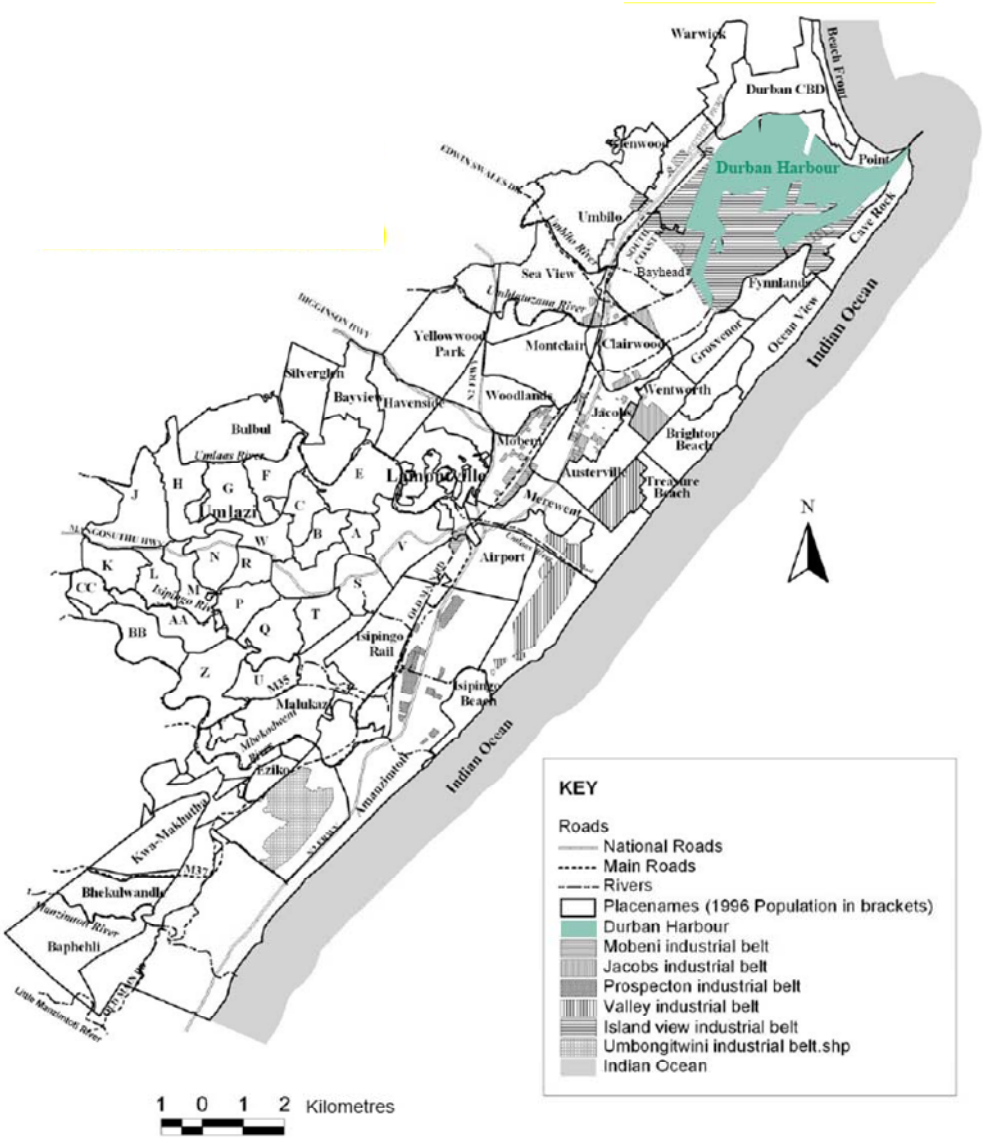

Figure 3.1 The south Durban industrial belts (SDCEA, 2004)

3.3 Background to the Industrial Character of the South Durban Basin

Durban is more dependent on the manufacturing industry than the other major cities in South Africa due to the fact that mining and agriculture are almost absent in the province (Morris et al, 2003). The city developed its industrial nature based on locational advantages and government policy. Durban's natural harbour, abundant manpower and the location of the city being in the middle of a region rich in raw materials and raw resources have all played a decisive role in the industrialisation of the city.

The majority of Durban industry is located in the south Durban basin which used to be a market gardening area until 1938 when the Durban City Council decided that the district would be developed into an industrial estate with black residential areas as a source of cheap labour for the industries (Scott, 2003; Clark, 2004). Additional to this other pieces of legislation such as the Group Areas Act in 1950 and the land expropriation legislation in 1958 accelerated the industrialisation of the area[5] (McDonald et al, 2002:206).

The area became then an industrial focal point for the country as result of this state decision. Additional to fastening industrialisation the Group Areas Act played an important role in shaping the racial composition of the city. Particular to the south Durban basin whites were gradually moved out of the basin and blacks moved in. For instance Indians were moved into Isipingo and Merebank, Coloureds moved into Happy Valley and Wentworth and blacks moved into Umlazi (Nurik & Johnson, 1998:236, 239). At present more than 280.000 people live in the south Durban basin (Clark, 2004).

3.4 The South Durban Basin and Industrial Pollution

Industrial activity in Durban moves a big part of the economy of the city and the KwaZulu Natal Province indeed. The south Durban basin presents a unique situation where the industrialisation of the area is related to some untypical factors when compared elsewhere in the world; the apartheid government decision to develop the area into an industrial state, the mostly forced relocation of communities in the area, the topographical conditions of the basin and a number of social issues such as poverty, unemployment and crime. The mix of all of these factors has resulted in a highly polluted area fuelled by a conflictive situation.

3.4.1 Industrialisation of the South Durban Basin

The concentration of industry in the south Durban basin has been a major factor for it to become one of the pollution hotspots in South Africa. The industrialisation of the area began in 1938 with the decision to transform the area into an industrial region. This factor together with the growing operations in the Durban port gained the area an industrial profile quickly. Cheap land and the availability of cheap labour helped further this industrialisation. The establishment of two oil refineries in 1954 and 1963 attracted a number of related industries to the basin cementing in this way its current industrial character.

[5] See Scott (2003) for a detailed account of the industrialisation of the south Durban basin

The industrialisation of the basin has been characterised by the industries' poor environmental record. Freund (2001) describes the South African government as been generally 'happy' to accommodate the needs of big business acting in ways that were hardly environment friendly. The apartheid authorities were dependent on industry to fund their activities. Loose regulations and preferential treatment are among the characteristics that contributed to their poor performance.

Fig. 3.2 Industrial character of the south Durban basin

The preferential treatment of government towards industry can be exemplified by the Key Point Areas Plan. The plan, formulated by the apartheid government, granted certain industries considered strategic protection and ensured secrecy in their operations. The oil refineries in Durban were among these industries. They had under their disposition the police, the army, operational commands and had access to military intelligence (Bell, 2005). Companies under the Key Point Plan could keep anyone from entering their installations, even local authorities. They could direct their operations in the way they thought it was best without consulting communities surrounding them.

The protection granted by the Key Point Plan to some industries in Durban is among the causes of their poor environmental performance. Additional to the environmental problems caused by these industries they were and are still perceived by some parts of the communities in south Durban as perpetrators of the apartheid. The secrecy in which some industries carried their operations without regards for the communities wellbeing plus their history of denial rank high in the conflictive situation in the south Durban basin.

Industry in the area holds a poor record of operations. The area has been described as a 'pollution nightmare' by more than one. Many industries operating in the area have a long history of pollution, incidents, spillages, and little regard for their workers safety. The oil refineries and the paper mill are notorious for past wrongdoings and denial among civil society and government regulators.

3.4.2 Communities in the South Durban Basin

The industrial pollution problem in south Durban is unique by many aspects. The most remarkable is the proximity of communities and industry. Many residential areas are in the immediacy of highly polluting industry, in many cases just across the street. The proximity of industry and communities is not a fortuitous event. It is the result of the planning decisions of the apartheid government. The 1950 Group Areas Act institutionalised the separation of communities in Durban by race shaping the current racial identity of south Durban.

Fig. 3.3 Immediacy of industry and communities

Freund (2001) argues that these racial separation policies were themselves often well in line with international planning practice, notably in the generation after the second world war, but they had a distinctively South African racial twist which ensured that 'non-white' areas received second-class treatment in almost every way, or worse. The basin racial composition is the result of the Group Areas Act and other developments that took place in the subsequent years. The placement of non-white people beside industry obeyed a racial as well as an economical interest where black people would provide the floor level labour for industry in the area.

The industrial and residential growth in the basin saw the creation of several neighbourhoods such as the 'coloured' neighbourhood of Wentworth, the Indian neighbourhood of Merebank which included a middle class component and the black township of Umlazi. Communities in the basin are plagued of social problems. The legacies of the apartheid are very evident among the inhabitants of the basin. The situation has improved with the change of government but the area is still marginalised. The most pressing problems in the basin are poverty, unemployment, insufficient housing, environmental problems, crime (robbery, murder, rape), HIV/AIDS and health problems caused by industrial pollution among others (Simon, 2003).

3.4.3 Topographical Conditions of the South Durban Basin

The south Durban basin presents topographical and weather conditions that add to the industrial pollution problem in the area. The basin lies between two ridges; the Bluff ridge in the sea direction and the Berea ridge in the inland direction (see figure 3.4). The two ridges and a number of valleys on the Berea ridge side play a significant role in the wind direction, with these valleys serving as air channels into and out of the Durban basin.

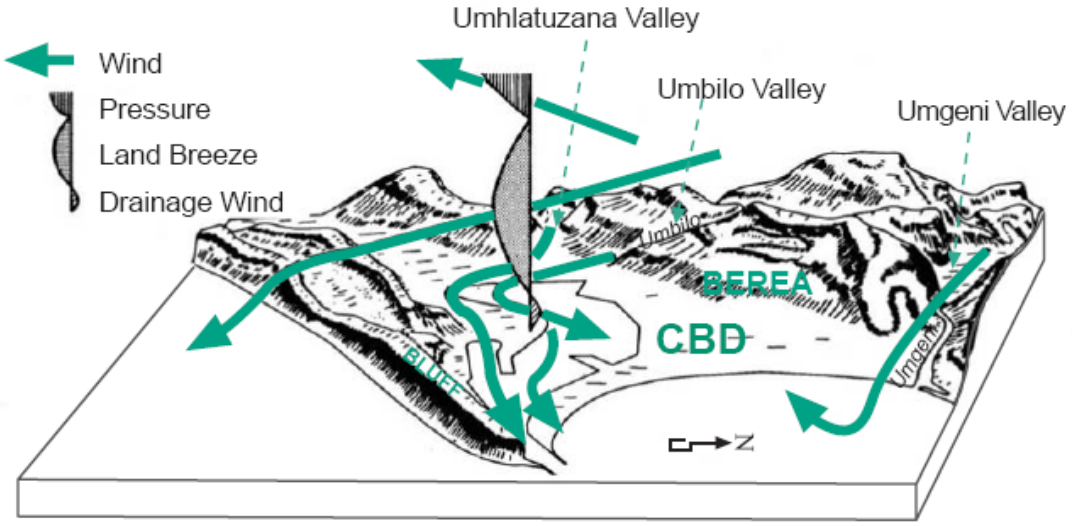

Figure 3.4 South Durban basin topography (SDCEA, 2004)

The prevailing wind conditions affect the basin in the extent in which pollution can be dispersed as well as land and sea breezes. During calm and clear winter nights the ridges cool faster than the valleys developing a high pressure on the ridge tops which results on cool air draining down the valleys in the direction of the basin. This air is blocked by the Bluff ridge resulting in a concentration of air pollution in the basin area (Preston-Whyte, 1968a quoted in SDCEA, 2004). The pollutants would linger in the basin until the effects of winds blowing up from land to sea (land breeze) help disperse them to the Indian Ocean. In the opposite way winds blowing from the sea towards inland direction (sea breeze) bring air pollutants to the basin.

Additionally the basin is prone to temperature inversions; smoke from industries in the area becomes trapped by radiation inversion at night and during the early morning hours, especially during winter. The temperature inversions in the basin affect several residential zones mainly around the Merewent area. The conditions described in this subsection affect the atmospheric stability and reduce the dispersion of odours, toxic concentrations and smoke by wind (SDCEA, 2005:15) worsening the environmental problems in the basin[6].

[6] See 'Applied Meteorology and Climatology in South Durban' (SDCEA, 2004) for a detailed explanation.

3.4.4 South Durban Basin Community Concerns

South Durban is well known nationally and internationally for being one of the most polluted areas in South Africa as well as for evident environmental injustices related to it. Strong claims from civil society assert horror stories related to the situation in the area while industry, on the other side firmly denies these claims. While some of these stories may be urban legends the basin is without any doubt an area with severe issues related to industrial activity.

Communities complain of elevated number of cancer cases, asthma, leukaemia, heart disease, skin disease and asthma. The area holds an abnormal number of diseases that are likely to be suffered with high levels of pollution. It has not been proven yet that these illnesses are directly linked to pollution caused by industry. Making such a claim would require long and costly studies and still the results could be dismissed. What the studies done so far suggest is that there are abnormal levels of sicknesses among the basin inhabitants.

Fig. 3.5 Children leaving school nearby one of the oil refineries

The area has registered numerous health incidents related to industrial activity. There are abundant cases where the health of the communities has been adversely affected; from minor symptoms such as skin and eye irritation through chronic diseases to poisoning and death. The low living standards due to poverty combined with the constant presence of pollutants have influenced the health status of the community. This is of particular concern for vulnerable groups such as HIV / AIDS sick people, elders and children.

One of the recent health studies in the basin concentrated in one of these vulnerable groups; children. During 2001 the Settlers Primary School experienced a number of large scale health problems. There were several episodes where the kids had to be transported to hospital due to respiratory problems. Pressure from the communities to the authorities prompted a medical study of the children of the Settlers Primary School. The study was conducted by the University of KwaZulu-Natal and the university of Michigan. The study concluded that the levels of SO2 in the area were lower that World Health Organisation standards, yet the number of

children with possible or definite asthma was one of the highest in the world according to literature; around 52 percent (Naidoo, 2005; SDCEA,2002).

It is generally agreed that health is a major concern in the area. Most studies show high levels of pollution and portray communities' health as affected by this pollution. Yet there is not a study that definitely links industrial pollution to the illnesses that the inhabitants suffer. For instance a Health risk assessment for sulphur dioxide pollution in South Durban concluded that there is no scientific support for the popularly held belief within the South Durban community that residents have a high risk of developing SO2-related respiratory diseases (Matooane & Diab, 2003).

3.4.5 Conflict in the South Durban Basin

Conflict is an integral part of the history of south Durban. The basin was home to a stronghold of activism during the anti – apartheid struggle. Communities were fighting the government and the industry which was under protection of the apartheid regime. The change of government saw several changes in this struggle yet the element of conflict remains. This subsection describes briefly some of the elements of conflict in the south Durban.

A government official describes the situation in a simple way "*the community does not trust the Municipality, the Municipality does not trust the industry, the community does not trust industry and the industry does not trust the community*" (Fenemmore, 2006). Some of the main reasons of this situation are the poor environmental performance of industry, lack of standards and enforcement and the perception of government not prosecuting industry for their bad performance. The long story of incidents followed by industry's denial is without doubt a key element in this conflict.

The string of incidents has been well documented by the NGOs, newspapers academics and government. For instance, Freund (2001)[7] recounts some of the most publicised incidents related to industrial pollution; a company leaking chlorine gas injuring many people, severe injury to children playing in an abandoned factory site by means of a noxious insecticide, a toxic waste site leakage polluting soil, groundwater and affecting a nearby school, the paper mill blamed by poor and dangerous traffic access and a long history of flaring, spillages, and other incidents caused the by the two oil refineries. Past incidents such as the ones just described come along with new situations such as the recent finding of a German company leaking Chromium 6 in the area (Simon, 2006; D'sa, 2005).

These are some of the incidents that have received the most attention locally, nationally and even internationally. There are plenty of other situations that have taken place in the basin. The everyday life of the basin inhabitants has a lot to do with the pollution in the area. Every other day communities get to know of new spills, bad odours, more people getting sick, clothes left to dry being dirtied by dust or oil in the air etc. The long string of incidents and pollution-related everyday situations

[7] For more information of incidents related to industry see (Freund, 2001), Maguranyanga (2001), SDCEA's & Groundwork's web pages

encountered by the inhabitants provides an idea of what is it to live in the area and why conflict is so acute.

Fig. 3.6 Everyday life in the basin is associated to ind. pollution

The conflict in the south Durban is not likely to be solved in the near future. For instance, an eThekwini Commissioned Strategic Environmental Assessment suggested that the basin will retain its industrial character for the foreseeable future. The study states that the financial and technological resources needed to solve the environmental problems in the basin appeared to be linked to the need to attract new industrial investment in the area. This would result in the loss of residential areas e.g. relocation. A possible further industrialisation in the area is likely only to be encountered with a renewed resistance and tensions from communities in the south Durban basin.

3.4.6 Environmental Improvements in the South Durban Basin

The heavy pollution in the basin has prompted the involved parties to take actions to reduce it. The basin has been the recipient of several developments aimed to decrease and prevent pollution. These interventions coupled with eThekwini regulatory efforts have resulted in a decline of industrial pollution in the basin. Data from the waste minimisation clubs, the cleaner production demonstration projects shows an important reduction of pollutants and financial savings[8]. The Multi Point Plan has resulted for instance in a reduction of sulphur-dioxide in the basin of 45 – 50 percent (Chetty, 2005, Carnie, 2005b). Personnel at the oil refineries state that the refineries have made important reductions in their levels of pollutants (Munn and Damon;2005, Maloa & Mbatha, 2005; Clark, 2004) this is backed by government officials (Chetty,2005; Redelinghuys, 2005).

[8] Among many other reference documents see Hanks & Janisch (2003) and Barclay & Buckley (2002)

While there is no doubt that there have been important reductions in terms of industrial pollution in the basin, pollution continues being a serious concern. Communities have been exposed to pollutants for such a long period that they no longer believe that pollution is going down. Official figures are looked with suspicion. For instance, community leaders have called the results from the Multi Point Plan 'pathetic' and are calling government to prosecute industries (Carnie, 2005b). Environmental activists see industry with an arrogant attitude where little has changed. Pollution has actually decreased but the perception that pollution is on the increase remains.

3.5 Stakeholders of Cleaner Production in Durban

Section 3.5 provides an understanding of the involved sectors or stakeholders of cleaner production in Durban. The section gives an overview of the actors that have a role to play in the adoption of cleaner production in the city. It introduces them and explains their relation to industrial pollution and cleaner production. The section also presents the various developments that have influenced the current development of cleaner production in the city.

Cleaner production has been chosen by the Department of Trade and Industry (the dti) as one of the tools to increase efficiency and gain a competitive advantage. While this holds true for the overall strategy it is also true that cleaner production main objective is preventing pollution. Cleaner production therefore is a tool that can help alleviate some of the problematic conditions in which many communities live in South Africa. Cleaner production in Durban is more an exercise of correcting past wrongs and pollution prevention than that of competitive advantage for industry.

Cleaner production has been traditionally a technical tool created to help prevent pollution. It can be therefore said safely than in most cases the stakeholders of cleaner production are industry itself and the regulators. This of course will have variations according to the local context. Figure 3.7 gives a graphic representation of the situation in Durban.

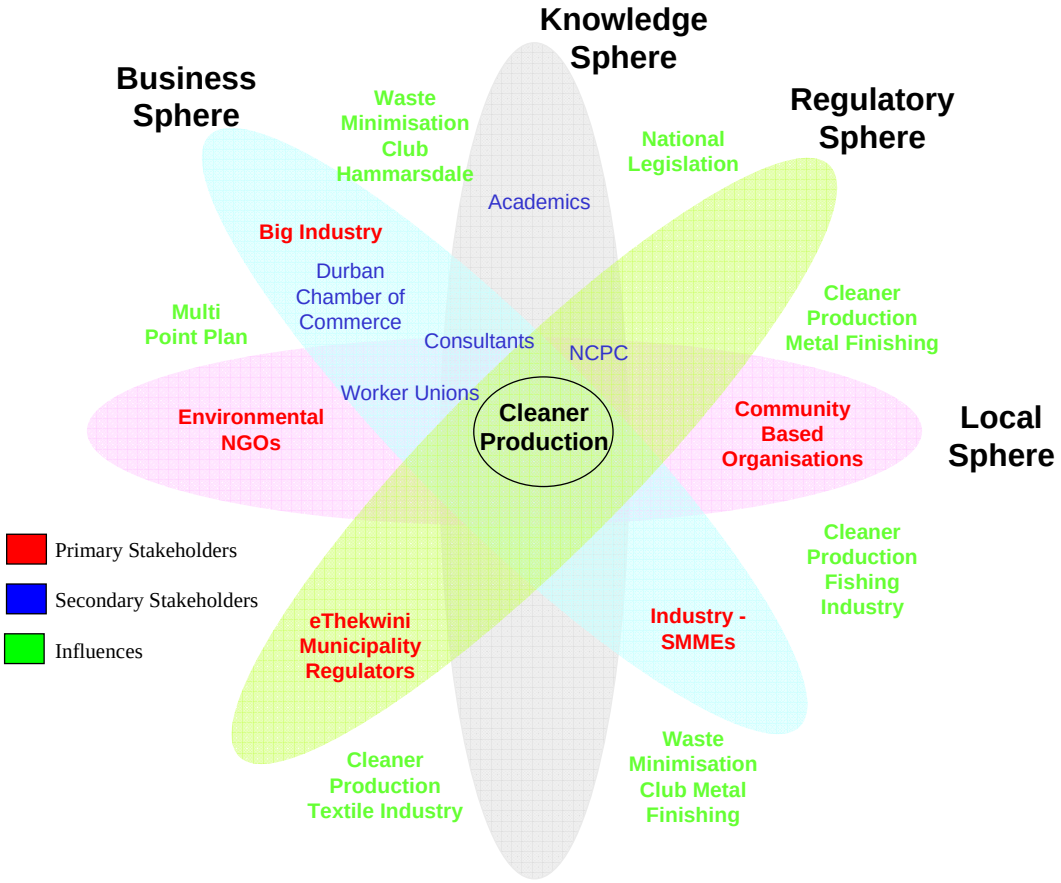

Fig. 3.7 Cleaner production stakeholders and influences in Durban (inspired by Søndergaard et al, 1997 presented at Lehmann, 2004b)

Figure 3.7 organises stakeholders of cleaner production into four spheres; the business, knowledge, regulatory and local sphere. The figure shows the primary and secondary cleaner production stakeholders in Durban according to these dimensions and the influences that have advanced the adoption of cleaner production within eThekwini Municipality according to this. Primary stakeholders to the adoption of cleaner production are the government authorities, civil society and industry. Secondary stakeholders with varying levels of influence include academics, consultants and trade unions. Finally the most important developments influencing cleaner production in Durban are the waste minimisation clubs, cleaner production demonstration projects and the Multi Point Plan. The following subsections describe them.

3.5.1 Regulators

eThekwini Municipality, the regulatory sphere, is actively working to address the environmental issues in the city. In particular to industrial pollution there are three departments within eThekwini that are involved in the implementation of cleaner production, these are the Department of Water and Sanitation, the Health Department and the Environmental Branch.

The Department of Water and Sanitation is one of the most active cleaner production advocates. The Department is currently using a cleaner production strategy to help it decrease pollution from industry, in particular in the area of effluent discharge. The Water and Sanitation Department was the first municipal body in South Africa to introduce cleaner production in the effluent permits. The Health Department is responsible for overseeing health related issues including environmentally related matters. The effects of industrial pollution on the health of the city inhabitants is a major concern for this department. One of the major projects undertaken by the Health Department to address industrial pollution in the basin was the Multi Point Plan. The Environmental Branch main responsibility is to develop and implement an appropriate environmental management system through Durban's Local Agenda 21 Programme.

3.5.2 Civil Society Organisations

South Durban communities' activism has its origins in the anti – apartheid struggle. Communities in south Durban have characterised for their strong opposition to industry and their practices. Through this history of resistance many organisations and individuals have brought attention to the problems in the basin. This thesis describes the current most visible and influential civil society organisations; South Durban Community Environmental Alliance (SDCEA), Groundwork, Merebank Ratepayers Association, Wildlife and Environment Society of South Africa (WESSA) and Earthlife Africa.

The South Durban Community Environmental Alliance is without a doubt the most vocal NGO in Durban. SDCEA is an umbrella organisation that represents community based organisations and individuals with the common agenda to improve their natural environment. Groundwork is an NGO that works on environmental justice and developmental organisation issues. SDCEA and Groundwork publish periodically research reports and participate actively educating communities in environmental related topics.

The Merebank Ratepayers Association (MRA) is a mostly Indian property owners organisation that has an outstanding tradition of activism (Freund, 2001). The MRA numerous activities related to the improvement of their livelihood has granted them recognition as one leading civic organisation in the environmental justice struggle. WESSA is the oldest environmental NGO in South Africa. It is mostly related to conservation but it takes an active look on brown issues in Durban. Earthlife Africa is historically best know for highlighting environmental injustice but also works promoting ecologically sound alternatives and participating in government policy development processes.

Civil society organisations are focused on fighting the environmental injustices the region has endured for many years. They fulfil an important role and thanks to the attention brought by them the basin has been the recipient of many projects to improve its natural environment. Cleaner production is a strategy that is not

mentioned per se by civil society. Civil society is more familiar with other terms such as clean technologies, best practice and best available technology.

3.5.3 Industry

Industry in the basin has a conflicting identity. One on side it is the economic engine of the region and crucial to an area with high rates of unemployment. Many industries in the basin such as the oil refineries are considered of strategic importance to the growth of the country. Its importance to the growth of the region and of the country is evident. On the other side, industries' bad environmental performance has converted the basin into a pollution hotspot. Its general practices of polluting on poor people, doing things on the cheap denying all its errors have granted them a bad reputation nationally and internationally.

Industry in the basin is composed of small companies with a few employees such as electroplaters, middle industries with less than 50 employees such as chemical related industries and large industry usually with more than 100 employees and large operational budgets. Although it is considered that middle and especially small companies are quite polluting the attention is usually concentrated in the big industrial players. The two oil refineries and the paper mill are the most well known industries in the basin. Together with other big industrial players they account for a large percentage of the pollution produced in the basin.

The concept of cleaner production is familiar to some industries in the basin. Thanks to past pollution prevention projects and a gradual improvement in the environmental regulatory framework and its enforcement some industries had changed their practices to more environmentally friendly operations. Still, the area has a long way to go and the concept of cleaner production can play a vital role in helping industry clean their operations.

3.5.4 Secondary players

The adoption of cleaner production in any society is to become successful if a number of actors embrace the concept. In the Durban context the main stakeholders have been described in the subsections above. In addition to them there are other players that have varying levels of influence, among them there is the National Cleaner Production Centre (NCPC), academic institutions, worker unions, media and others. This subsection describes them briefly.

National Cleaner Production Centre

The National Cleaner Production Centre is a collaborative venture between the United Nations Development Organisation (UNIDO), Switzerland, Austria, the Department of Trade and Industry of the Republic of South Africa (the dti) and the Council for Scientific and Industrial Research (CSIR). The NCPC main objective is to create awareness in cleaner production and to encourage enterprises to adopt cleaner production into its processes and products, stimulating the adoption of energy-and resource-saving technologies. Cleaner production is seen by the dti as a strategy that will enhance the competitiveness and productive capacity of national

industries, primarily small, medium and micro enterprises. An additional benefit of the NCPC approach is an improved dialogue between industry and government regulators.

NCPC current strategy focuses on the clothing, textile and chemical sectors, the food sector with initial focus on the agro-processing sector and the automotive sector. These sectors have been chosen by the impact they have in the South African economy in terms of employment and income generation. More key sectors will be integrated into the NCPC strategy as time goes by (Cilliers, 2006). The last goal of the organisation is to create cleaner production programs for all the industrial sectors in South Africa.

As the national authority in cleaner production, the National Cleaner Production Centre has a clear role to play in the adoption of cleaner production in Durban. Cooperation between this institution and eThekwini Municipality is important to the progress of cleaner production in the city.

Academic Institutions
Cleaner production in South Africa has been promoted by foreign donors, government and academics. Cleaner production in South Africa has some of its best advocates in the academia. Durban is one of its strongest examples. For instance the Durban Institute of Technology hosts a Centre for Cleaner Production that has been working successfully with many industries among them the metal finishing sector.

Vital to the adoption of the concept in Durban is the University of KwaZulu-Natal Pollution Research Group (PRG). The Group has been involved in the creation of the first waste minimisation clubs in the country and the cleaner production demonstration projects. The PRG has trained a large number of people on cleaner production many of whom have become cleaner production consultants. The Group continues working on the advancement of cleaner production by recently signing agreements with eThekwini Municipality to cooperate together for the advancement of the environmental agenda of the city.

Environmental Consultants
South Africa in general is still lacking capacity in terms of cleaner production. Environmental consultants play an important role in helping promote the adoption of cleaner production within industry. A consultant is probably the first link many companies, particularly small and medium companies, have with cleaner production. Consultants are very important because they spread the message among industry and facilitate the implementation of cleaner production.

Other Secondary Players
The most relevant players in the adoption of cleaner production have been described in the sections above. Besides them there are other players that have roles not strongly associated with cleaner production but can nevertheless contribute to its advancement. Some of them include worker unions in the Durban region, the Durban Chamber of Commerce and the media.

3.6 Influences in the Adoption of Cleaner Production in Durban

eThekwini Municipality is one of the frontrunner municipalities of South Africa in terms of cleaner production. This is thanks to the several pollution prevention developments that had taken place in Durban. Some of them are the Waste Minimisation Clubs and the Danish initiated Cleaner Production Demonstration projects. Additionally the South Durban Multi Point Plan (MPP) has been influential to improve the environmental conditions in the basin and the advancement of cleaner production. National legislation and several government documents such as the National Cleaner Production Strategy have added their part too. The list of influences in this section is not exhaustive. There are more initiatives that have had varying levels of influence in the adoption of cleaner production in Durban.

3.6.1 Waste Minimisation Clubs

The concept of waste minimisation clubs was developed in the Netherlands in the early 1990s to encourage industries to reduce pollution. It involves a small number of companies, generally within the same geographical area, working together to exchange ideas and information on minimising waste and encouraging each other to improve process efficiency, save money and reduce their environmental impact (Buckley & Barclay, 2002).

Waste minimisation was one of the first pollution prevention initiatives that took place in South Africa. The KwaZulu Natal province was home to the first two waste minimisation clubs in the country. The aim of these two pilot clubs was to determine the feasibility of the concept in South Africa to promote sustainable business and environment; and to establish the necessary criteria to replicate these clubs in other regions of the country (ibid). The clubs were established in 1998 in the metal finishing sector in the Durban Metropolitan Area, and the second, in November 1998 in the Hammarsdale region.

Both clubs were considered successful. Club members reported significant savings in water, chemicals, energy and effluent that meant noteworthy financial savings leading to environmental benefits. Their implementation provided several lessons that were used to replicate the clubs in the rest of the country; barriers, drivers, suggested structure and size as well as interaction lessons among club members and with government authorities. As part of the effect of this initiative waste minimisation clubs were implemented in other areas of South Africa. Many of these clubs continue to run today, most of them located in the Western Cape (BECO, 2001).

The role of eThekwini Municipality was instrumental for the clubs to achieve its objectives. For instance in the case of the metal finishing sector eThekwini used a combined regulatory approach that tightened existing environmental regulations and compliance levels (the stick) with a fresh proposal to try out the new concept of waste minimisation clubs (the carrot). The University of KwaZulu-Natal Pollution Research Group was in charge of setting up of the club and funding was made

available by the Water Research Commission. The combination of a harder regulation that threaten the metal finishing industry with an alternative that would decrease waste, provide financial gains and help companies comply with regulation was a successful approach.[9]

3.6.2 Cleaner Production Demonstration Projects

The first specifically labelled cleaner production projects were implemented by the South African government and donor agencies. The Department of Trade and Industry, the Department of Environmental Affairs and Tourism together with the Danish Cooperation for Environment and Development (DANCED), and since 2002, the Danish International Development Assistance (DANIDA) formulated in 1999 a series of cleaner production demonstration projects (Buckley, 2004). The projects were aimed to promote cleaner production in three problematic sectors; fishing, the textile and cotton growing and the metal finishing sectors.

The Cleaner Textile Production Project was a three-year project involving a life cycle approach to textiles. It included the cotton growing sector and the manufacturing sector. The project began in September 2000 and ended in June 2003. It focused on the entire textile pipeline but concentrated mainly on cotton growing and textile manufacturing - the two areas where most environmental impacts occur. Additional to technical activities it also included activities such as awareness raising, project publicity campaign, identification of environmental issues and training for auditors.

The project benefited more than 36 textile companies and 18 other industry related organisations. After the end of the project it was agreed that further activity was needed to ensure the continuation of cleaner production in the industry. Thus the Clothing and Textile Environmental Linkage Centre was born in 2003 with funding from the Department of Trade and Industry and DANIDA. The centre has made significant progress in increasing awareness on environmental issues within the textile pipeline. The centre was incorporated within the National Centre for Cleaner Production as of January 2006. This is a strategic move from the Department of Trade and Industry to increase competitiveness and productivity in the South African textile industry through building up national capacity in cleaner production (NCPC, 2005).

The cleaner production in the metal finishing sector was initiated in June 2000 and ran until December 2003. Metal finishers were supported in the form of audits, feasibility studies and demonstration projects. The project also trained factory staff in environmental awareness through the use of street theatre and the development of courses. The project was supported by the Water Research Commission and the Department of Water Affairs and Forestry. It took place in 3 provinces (KwaZulu Natal, Gauteng and the Western Cape). The project reduced considerably the waste and environmental impacts of this sector, considered one of the most troublesome industrial activities. Similarly to the textile case, as a result from this project it was

[9] See for further info on waste minimisation clubs in South Africa see Reiner (2002), Barclay & Buckley (2002)

decided to create an organisation to continue the cleaner production work; the South African Metal Finishing Association (Dupreez, 2005). Currently, the Association is working in a project aimed to improve the occupational health and safety of the metal finishing sector.

The Cleaner Production in the South African Fishing Industry project was implemented by the Danish Technological Institute in partnership with the Fishing Industry Research Institute at the CSIR. The project began in 2000 when the fishing industry was in survival mode with environmental considerations very low on the priority list. The project was based on conditional licenses issued by the Department of Water Affairs with gradual adoption of cleaner production as a condition (DEAT, 2004). Companies participating have achieved good results. For instance, canneries recorded freshwater savings of 75 percent and seawater savings of 80 percent , white-fish factories recorded savings of 33 percent in freshwater and 60 percent in seawater (Standford, 2004)[10].

3.6.3 South Durban Basin Multi Point Plan

The Multi Point Plan established in 2000 is an initiative aimed to establish a management system to improve air quality in the South Durban Basin. The plan has two dimensions: a technical and an institutional dimension. The technical aspect is concerned with quantifying the impact on the environment of the waste emission from the industries in the area. The institutional dimension covers aspects such as establishing the policy framework covering laws, regulations, by-laws, permits and organisational development to control industrial pollution both in the basin and across the country (Robinson, 2004).

The plan consists of a series of actions; i) A health risk assessment, ii) an epidemiological study, iii) phasing out of dirty fuels, iv) establishing an Air Quality Management System, v) controlling chemical and fugitive emissions, vi) strengthening the inspectorate, vii) developing a local legal framework, viii) reviewing of standards for priority pollutants and ix) reviewing standards for vehicle emissions (eThekwini Municipality, 2005b).

The health studies aims to establish the current health status of the local community and the relationship between industrial and vehicular pollution and deterioration in the quality of life in the south Durban basin. The epidemiological study looks at the population and what health issues it has in relation to air pollution. The health study looks at emissions and what impact they have on health. The full results of the studies are to be released later this year.

[10] See Hanks & Janisch (2003) for detailed information of the cleaner production demonstration projects

The development of the Air Quality Management System is intended to show the link between emissions and ambient (surrounding air) concentrations. The major element of the plan is the air quality monitoring network, established in 2003. The network consists of twelve air monitoring stations, three of which are background stations, and six meteorological stations (eThekwini, 2004b). The stations are situated in strategic locations around Durban and surrounding areas. The multi-point plan plans to use the data gathered from the stations to lobby industries to phase out the use of harmful fuels, develop a national strategy to control vehicle fuel emissions and set national air quality standards.

The Multi Point Plan has pioneered a partnership among community, industry and the three spheres of government. The plan has demonstrated that given the appropriate platform civil society, government and industry can come to the table and engage in a fruitful process. The plan has contributed to improve the basin environment and to advance cleaner production. The project manager puts it in this words "*our current regulatory philosophy is for industries to move beyond compliance by introducing best technology practices and engaging in cleaner production processes*" (Chetty quoted by Robinson, 2004).

3.6.4 National Legislation

There are a number of pieces of legislation and government drafts among other documentation that have influenced the development of cleaner production in Durban with the National Environmental Management Act being at the head of all of these documents. One of the most relevant is the draft of the National Cleaner Production Strategy. The document highlights the constraints that are deterring cleaner production in South Africa and lays out the strategy to overcome them. The National Cleaner Production Strategy is described in section 5.1.2 and discussed in Chapter 6.

DEAT (2004) identifies other relevant pieces of legislation that are related to cleaner production. These include the White Paper on Integrated Pollution and Waste Management of 2000, the Environment Conservation Act 73 of 1989, the National Integrated Waste Management Bill, Draft 9, November 2002, the National Water Act o f 1998, the Occupational Health and Safety Act 181 of 1993, the Regulations for Hazardous Chemical Substances (in terms of Occupational Health and Safety Act 181 of 1993, the White Paper on the Energy Policy of the Republic of South Africa of 1998, the Mineral and Petroleum Resources Development Act no 28 of 2002 and the Air Quality Bill of 2003.

4 Cleaner Production Concept

The objective of Chapter four is to provide an understanding of cleaner production taking as the main point of departure the views of the United Nations Environmental Programme (UNEP). United Nations is presumably the main promoter of cleaner production in the international scene. Chapter four introduces the overall concept of pollution prevention which encompasses cleaner production. It defines the term according to UNEP and describes the various elements that are part of a cleaner production approach. The Chapter then touches on the tools and instruments that help cleaner production move forward. The Chapter finishes with a view of the future direction of cleaner production.

4.1 Pollution Prevention

The 1987 Bruntland Report and the 1992 World Summit in Rio de Janeiro put in the spotlight the necessity for pollution prevention and development of environmentally sound technologies. These concepts have steadily gained recognition and support. For instance, more than 178 governments signed agreements in Rio de Janeiro to save the environment from harmful substances and since 1990 United Nations Environment Programme – Industry and Environment office have promoted successfully the concepts of pollution prevention and cleaner production (Retta, 1999).

Pollution prevention can be seen as the umbrella concept that leads all the modern approaches to environmental transformation. The main characteristic of pollution prevention is the idea of reducing the environmental impacts of industry at its source. UNEP (2001b) defines pollution prevention as a strategy of continuously reducing pollution and environmental impact through source reduction, that is, eliminating waste within the process rather than at the end-of-pipe.

Pollution prevention encompasses a wide arrange of solutions to avoid environmental problems. During the 1960s the mentality towards environmental issues was that of ‘out of sight, out of mind’. The term environment did not have any relation with industry and dilution was the common practice to solve any issue related to industrial pollution. Dilution is a non – preventive strategy that tries to dissolve the pollutant into the air, water or land. Dilution is a cheap strategy that works well only in a robust receiving system. As pollution increased and several receiving systems could no longer cope with the pollutants remediation appeared.

Remediation or ‘end-of-pipe solutions’ emerged as a response to the increasing pollution problems and the recognition that dilution was no longer a sound strategy. End-of-pipe solutions is a non – preventive strategy that seeks to remediate, diminish or disappear the effects of pollutants (Remmen et al, 2005). Typical examples of end-of-pipe technologies are filters and waste incineration. Initially very popular as they allowed industry to continue their operations as usual, end-of-pipe solutions do not

solve the problem of industrial pollution but merely transform it or transfer it to other recipient. In this way solid waste that is incinerated becomes now air pollution or wastewater treatment leads to accumulation of toxic-and-difficult-to-deal-with substances on the sludge.

It was realised during the 1980s that shifting pollution from one medium to another did not tackle the environmental problems. It was an expensive and complicated way of dealing with pollution. Gradually it was acknowledged that the only way to effectively stop pollution was to prevent it from its source. Pollution prevention had been born. Pollution prevention represented a paradigm change in the environmental scene. The adoption of pollution prevention has seen the birth of a new wave of environmental concepts and tools to improve the environment. Remmen (2001) illustrates some of these developments, from cleaner production processes over environmental management to cleaner products and beyond.

An outstanding element of the pollution prevention approach is cleaner production. Cleaner production is one of the existing developments that aim to prevent pollution from its source. Other approaches to pollution prevention include environmental management systems, eco-design, eco-efficiency, life-cycle thinking etc. The adoption of cleaner production in Durban is the main subject of study of this thesis. The following sections of the Chapter deal with the concept of cleaner production and its associated elements.

4.1.1 Cleaner Production and Ecological Modernisation

Cleaner production is a strategy to achieve pollution prevention and achieve ecological modernisation. As discussed in section 2.5 cleaner production is aligned with ecological modernisation theory. Cleaner production objective is to restructure industry in an economically profitable manner and at the same time improve industry's environmental performance. In other words, to advance industrial environmental transformation. Cleaner production appeals to regulators and policy makers alike because it links industrial efficiency with environmental and human health benefits. This combination results in a number of gains such as improved competitiveness, improved image and financial benefits.

Cleaner production offers two dimensions, a technical dimension that encompasses industry specific pollution prevention solutions and a policy dimension that oversees its adoption and wider integration with the environment. Ecological modernisation theory encompasses the two dimensions of cleaner production. Ecological modernisation makes use of technology as the basis of environmental transformation and at a policy level uses cleaner production and other among other strategies and tools to promote environmental transformation in any given society.

Cleaner production offers a strategy and a tool for companies to improve their environmental performance. In this way companies begin a journey towards environmental transformation, hence ecological modernisation. One of the main tenets of the theory is its position regarding technology as creator and solver of environmental problems. Cleaner production reinforces this belief by using technology amid other tools to make industry cleaner.

4.2 Cleaner Production Definition

Cleaner production was born from the environmental transformation that had taken place in the last decades. The first practices related to cleaner production had their roots in diverse developments such as the company 3M Pollution Prevention Pays program as early as 1975, the United States Environmental Protection Agency with its Waste Minimisation Opportunity Assessment Manual in 1988 and the Dutch project PRISMA that helped introduce the concept to the European continent (Remmen et al, 2005).

It was the United Nations who coined the term cleaner production. Since then the concept has been defined in different ways but all of them consistent with the goal of pollution prevention. It can be stated safely that the main promoter of cleaner production at an international level is the United Nations through its Environmental Program (UNEP) and its Industrial Development Organisation (UNIDO). The United Nations definition is the most widely accepted designation of cleaner production and taken as the point of departure of most literature related to the topic. This thesis therefore uses the cleaner production definition of the United Nations.

United Nations Environmental Program (UNEP, 2001) defines cleaner production as the continuous application of an integrated preventive environmental strategy to processes, products, and services to increase overall efficiency, and reduce risks to humans and the environment. Cleaner Production can be applied to the processes used in any industry, to products themselves and to various services provided in society.

For production processes, Cleaner Production results from one or a combination of conserving raw materials, water and energy; eliminating toxic and dangerous raw materials; and reducing the quantity and toxicity of all emissions and wastes at source during the production process.

For products, Cleaner Production aims to reduce the environmental, health and safety impacts of products over their entire life cycles, from raw materials extraction, through manufacturing and use, to the 'ultimate' disposal of the product.

For services, Cleaner Production implies incorporating environmental concerns into designing and delivering services.

Cleaner production is defined as a strategy meaning that it goes beyond merely technical fixes to pollution. It does not isolate and concentrate on only single aspects of the problem. It aims to be holistic and includes production processes, products and services. It points out that pollution prevention is a continuous rather than a static objective. Besides its production character it makes emphasis on the necessity of protecting both the human well being and the natural environment.

Cleaner production is closely linked to and enhanced by the concepts of eco-efficiency, pollution prevention, waste minimisation, green productivity and industrial ecology / industrial metabolism. According to UNEP (2001b) cleaner production and eco-efficiency are almost synonymous where the only difference among them is that cleaner production starts from the basis that environmental efficiency has economic gains and eco-efficiency departs from the basis that economic efficiency results in environmental gains. Similarly pollution prevention and cleaner production are used interchangeably where the difference between them comes mostly from geographical regions; cleaner production is used worldwide while pollution prevention is used in Canada and the United States.

Waste minimisation refers to a preventive approach to reduce waste through changes of input raw materials, technology, product and improved operating practices. It is currently used as a synonym of pollution prevention. Green productivity on its side is an Asian concept that aims for the same goals of cleaner production, that is, improved productivity and environmental performance. The concepts of industrial ecology / industrial metabolism are complimentary to cleaner production. They aim to imitate natural recycling systems (UNEP, 2001b); their objective is to create industrial systems that resemble natural ecosystems where environmental impacts are reduced or nullified.

4.3 Cleaner Production Practices

Cleaner production is based on the principles of pollution prevention, that is; i) reduction of resource consumption per unit of product – less raw materials, water, energy and chemicals, ii) elimination of toxic substances, energy intensive and hazardous materials, iii) reduction of emissions, noise and waste to air, soil and water at the source and, iv) reuse of water, separation of waste, etc. Based on these principles of pollution prevention and inspired by UNEP Remmen et al (2005) identify five different types of cleaner production solutions; good house keeping practice, reuse and recycling, substitution of hazardous materials and chemicals, process optimisation and technology changes and innovations.

Cleaner production easiest and simplest solution is good house keeping practices. The term is also known as good management practices or the low hanging fruit. It implies procedural, administrative, or institutional measures that a company can use to minimise waste and emissions (UNEP, 2001). Good house keeping practices are usually simple to implement and require little money. Reuse refers to the use of a product many times without altering its physical form e.g. bottles and some other

forms of packaging. Recycling implies to use 'waste' as a material input to produce a new product e.g. recover food materials from a process and convert it into pet food. It is important to point out that cleaner production emphasises in on site reuse and recycling.

Substitution aims to change hazardous materials and chemicals to more environmentally friendly, safer and better materials. Substitution implies changes in raw materials, chemicals as well as energy sources which in turn create more efficient, safer and environmentally sound product, processes and services. Process optimisation deals with improvements of the existing manufacturing equipment – this can be from small changes and investments to larger sums of money to improve a process. Technology changes and innovations are major changes in the existing machinery or entirely replacing them for more efficient and environmentally sound technologies. They are the most demanding cleaner production solution as they require significant amounts of money to be spent.

Cleaner production makes use of a number of strategies in order to achieve its objectives. These strategies can be divided in two groups: tools and policy instruments. Waste minimisation and environmental life cycle assessments are some of the technological tools among others. The environmental policy instruments include regulatory instruments such as negotiated agreements and reporting requirements, market-based instruments such as taxes and subsidies and finally information – based instruments.

4.3.1 Cleaner Production Tools

Cleaner production makes use of a number of tools to achieve pollution prevention. Among them there is environmental audits, green chemistry, dematerialisation and process integration which makes use of techniques such as thermal and water pinch. Describing these tools is not the objective of this thesis. This subsection describes only two of the fundamental tools of cleaner production; waste minimisation and life cycle assessment.

Waste minimisation

Waste minimisation is a systematic approach to reducing waste at its source. Waste minimisation aims to reduce or eliminate pollution at its source rather than treat it after it has been generated. Waste minimisation applies to all emissions to air, land and water and to materials used directly or indirectly in products, services and operations.

Cleaner production encompasses waste minimisation. Both cleaner production and waste minimisation have many similarities. That is one of the main reasons many people use the terms cleaner production and waste minimisation indistinctively. Waste minimisation makes use of five main techniques to reduce or eliminate pollution at its source; improved housekeeping, raw material changes, product changes, technological changes and on-site recycling.

Life Cycle Assessment

Life cycle assessment (LCA) is a tool used to asses the environmental impacts of a product or a service over the entire its entire life cycle, that is from raw material extraction to final disposal (Remmen et al, 2005:209). Originally conceived for industry purposes LCA is commonly used for technical assessments. Recently it has gained popularity at a societal level where it is used to help design and adjust environmental policies and regulations.

Known also as life cycle inventory, cradle to grave analysis, eco-balancing and material flow analysis LCA was originated from studies in the 1960s and 1970s to determine the environmental burden of for instance beverage containers as well as global modelling studies and energy audits. LCA gained momentum in the 1980s but it was not until 1993 that the first LCA guidelines were created. LCA is currently one of the most widely used tools to calculate the environmental impacts of products and services.

A life cycle assessment breaks the environmental impacts of a product or service through its several phases; extraction of raw material, manufacturing, use and disposal. The tool categorises and calculates the environmental impacts into three categories global like global warming and ozone depletion, regional like acidification and nutrient enrichment and into local like waste and toxicity. In this way one can find out stage in the life cycle of our product or service is the most environmentally harmful and action can be taken to correct it.

Life cycle assessment is a very popular tool that is being widely used worldwide to improve efficiency and reduce waste. It is widely regarded as a powerful tool to identify problem areas in complex systems. Although a very useful tool LCA is not exempt of criticism. LCA's main deficiency is failing to address socio – economic aspects. In effect, by not addressing issues other than technical ones the life cycle analysis can be incomplete or miss important pieces to provide better decision making information.

4.3.2 Cleaner Production Policy Instruments

Cleaner production makes use of policy instruments which are usually classified in three categories; regulatory instruments, market – based instruments and information – based instruments. Most countries in the world contain different mixes of these three types of instruments.

Regulatory instruments order a specific behaviour. They are also known as command and control instruments. They try to impose constraints in society in order to remove undesired effects (Smink, 2005). Market – based instruments usually act as incentives for certain activities. They try to influence the price tag that goes along with the environmental measure. They shape the behaviour through price signals rather than explicit instructions on pollution control levels and methods (Hockenstein quoted by Smink, 2005). And finally, information – based instruments try to influence the behaviour of consumers and producers via information and education.

UNEP (2001c) adds that it is possible to further categorise these policy instruments according to the nature of the interaction between government and industry, and the level of obligation of the policy instrument. In this way there can be specified compliance where the government imposes obligatory standards on the regulated party, negotiated compliance where the regulators and the regulated interact in setting the obligatory standards, co-regulation where there is a high level of interaction between the parties, but the agreed standards are not mandatory and self-regulation where industry acts unilaterally in setting standards that are not legally enforceable.

Regulatory instruments

UNEP (2001c) identifies the following as mixed co-regulatory, self-regulatory instruments that fall into the overall category of regulatory instruments.

i) Negotiated agreements between regulators and private sector enterprises or sectoral organisations.
ii) Reporting requirements such as the Green Account in Denmark or the Pollution Release and Transfer Registers in United States, Canada, Australia and the United Kingdom.
iii) Auditable environmental management systems such as ISO 14001 or the European EMAS where regulators have a potential role in promoting cleaner production through an increased emphasis on cleaner production and enhanced environmental performance.
iv) Public voluntary programmes that are aimed to provide participating companies improved public recognition, access to governmental technical assistance, cost savings and environmental gains.
v) Industry codes of practice such as the chemical industry's Responsible Care initiative and the International Chamber of Commerce's Business Charter for Sustainable Development.
vi) Not mentioned by UNEP but also equally important are the Integrated Pollution and Control Policy, Best Available Technology and enforcement and dialogue.

Market – based instruments

Market – based instruments aim to provide rewards and incentives for environmental improvements and economic burdens to environmentally unfriendly players. Market – based instruments do not prescribe solutions but rather leave that option to the target groups to decide on the best available option. UNEP (2001c) distinguish three main economic instruments:

i) Taxes, charges and fees. This type of instruments generates revenue, sometimes in substantial amounts which can be used to further promote cleaner production. By using incentives to reward good conduct and by raising the costs of undesired outputs taxes, charges and fees are an effective way of forcing industry to move to cleaner production.

ii) Liability rules. By making firms accountable for all the environmental damage they cause even though they have complied to all existing regulation liability rules drive companies to enhance their environmental performance.
iii) Subsidies. Subsidies can be an effective way to stimulate technological development and environmental transformation. By providing low-interest loans, direct grants, or preferential tax treatment among others government can foster encourage cleaner production.

Information – based instruments
Information based instruments can be unilateral communicative steering where for instance government tries to convince another actor that government's choice for certain environmental behaviour is preferred or multilateral communicative steering where a process of consultation to discuss the possible options from all involved players take place. UNEP (2001c) gives some examples of information based instruments:

i) Promotion of highly visible demonstration projects to promote the technical tools and economic saving opportunities associated with cleaner production.
ii) Encouraging educational institutions to incorporate preventative environmental management within their curricula, particularly within engineering and business courses.
iii) Requiring industry to publicly disclose information on their environmental performance, for example, establishing a pollutant release and transfer register or by stimulating greater voluntary corporate reporting.
iv) Initiate and maintain initiatives that deal with sustainable consumption such as eco-labelling schemes and environmental product declarations.
v) Promotion of effective cleaner production training initiatives.
vi) Recognition to industry that have effectively implemented cleaner production by for example high profile awards.

UNEP (2001c) argues that since the creation of environmental policy command and control has been the main form of regulation. Command and control typically involves setting a standard then inspect, monitor and enforce compliance to this standard. Command and control regulatory instruments form the backbone of most environmental regulation in the world. UNEP proposes three different kinds of mixed instruments to achieve cleaner production; co-regulatory and self-regulatory instruments, market – based instruments and information – based instruments.

These three types of instruments are based on a more cooperative approach between regulators and regulated. Their final objective of pollution prevention is the same but they make use of different means to achieve it.[11] The pure command and control instruments prescribe a desired attitude among the regulated and impose constraints to

[11] Information of the instruments based on Smink (2005)

achieve it. This type of instrument is reliable, easy to articulate, trigger innovation and is an effective way of cleaning up environmental pollution. Regulatory instruments require a precondition of proper monitoring and enforcement. They also have disadvantages due to its narrow approach. They can become costly and inefficient, static, focus on end-of-pipe technology and fail if there is lack if capacity for enforcement. The co-regulatory and self-regulatory instruments proposed by UNEP take a more flexible approach that combined with command and control can achieve good results.

Market based instruments take a different strategy, rather than being prescriptive they create incentives or disincentives for certain activities by economic means. Since most companies in the world exist for profit this type of instrument is an effective way to prevent pollution. Their advantages include a free choice for industry to achieve pollution prevention, triggering of innovation, incentives for constant pollution reduction and revenue generation. On the other hand they require sophisticated institutions to implement and enforce them and can fail if the instruments are not set at the appropriate level.

Information instruments try to achieve pollution prevention through a change in the behaviour of producers and consumers. Information based instruments have the advantage of a wide exposure that can result in changes from the regulated and the creation of awareness and pressure for polluters to change. From an enforcement perspective they have limited influence on pollution prevention. They are the weakest among the three instruments due to its non-forced, voluntary nature.

4.4 Cleaner Production Evolution and the Way Forward

The concept of cleaner production was launched in 1989 by United Nations Environmental Program. It is now one of the leading approaches to pollution prevention. Cleaner production has gone a long way; from being a concept only known to a few to currently being a mainstream tool used worldwide. Its popularity is due to its promise of efficiency resulting in economic, environmental and human heath benefits and the fact that the launching of the concept coincided with a paradigm shift in pollution management from end-of-pipe treatment to pollution prevention (A El-Kholy, 2002)

Cleaner production has evolved through time to address the ongoing demands and issues resulting from industrial activity as well as evolving environmental knowledge. From a technical perspective cleaner production main current change is moving from focusing on the supply side only to incorporate the demand side or in other words consumption (UNEP, 2002). Cleaner production – oriented academics and researchers are beginning to focus on the social aspects of consumption patterns, one of the less explored areas of cleaner production.

It is important to emphasize that cleaner production does not hold all the answers to solve environmental problems. Cleaner production is just one of many existing strategies in the path towards environmental improvements. Cleaner production is not a magic tool that will solve all pollution resulting from production activities. This distinction is important to situate cleaner production in the right place towards a sustainable development.

The concept of cleaner production as defined by UNEP is wide in scope but it does not go further than the company fences. Cleaner production is mostly a technical concept that does not address other issues related to production. In this aspect cleaner production receives the same critique as ecological modernisation – a technocratic approach (Mol, 1999). Cleaner production is a strategy that has kept its technical nature through the years. As time has gone by however, cleaner production is beginning to widen its sphere of influence and include elements outside the industrial dimension.

Cleaner production is beginning to be integrated gradually into the wider sphere of environmental transformation. Take for instance the organisational dimension; awareness and technical knowledge are not enough if the company lay out does not facilitate the communication of the cleaner production message, or the community aspect of cleaner production that is discussed in this thesis. The number of academics beginning to pay attention to related aspects of cleaner production is increasing. These changes will influence the direction that cleaner production will take in the coming years.

5 Cleaner Production in Durban – Case Study

Cleaner production is a broad concept that can take place in different ways depending on its actors and the local circumstances where it is being pursued. In a complex city as Durban a number of players have been involved in the adoption of the concept. Through their involvement several cleaner production initiatives have taken place. Chapter five focuses on the cleaner production developments lead by eThekwini Municipality. It takes the case study of a proposed centre for cleaner production in the city. The evolution of the centre for cleaner production plans and its latest developments are described. The case study is analysed in Chapter 6 to discuss the strategy that eThekwini is following towards incorporating cleaner production.

Chapter five begins by providing an overall picture of cleaner production in South Africa. It briefly describes its gradual adoption in the country, the constraints that cleaner production faces and the proposed solutions to overcome them. The Chapter then moves from the national scene to the Durban context where it describes past projects that had influenced the adoption of cleaner production in the city. One of the results from these influences is a plan to establish a centre for cleaner production in Durban. The Chapter provides the history of this initiative describing its actors, their roles and the several stages that the project went through. Chapter five finishes giving an account of the project current direction.

5.1 Cleaner Production in South Africa

Cleaner production was introduced in South Africa as part of a government strategy to create growth in the country. The South African government sees cleaner production as a tool that will help companies achieve energy and resource efficiency with the additional benefit of environmental gains. In this way cleaner production will help companies increase their productivity and competitiveness. In its report titled "Assessment of the Status Quo of Cleaner Production in South Africa" the Department of Environmental Affairs and Tourism (DEAT, 2004) acknowledges that whilst there are no legislative instruments to directly enforce Cleaner Production at present, there are a number of policy initiatives in which this approach is proposed and which are likely to be incorporated into legislation in the near future. Cleaner production has indeed gone great lengths since its introduction to the country.

The concept of cleaner production was introduced by the first time in South Africa in 1993 by the Department of Environmental Affairs and Tourism in cooperation with the Danish government (Buckley, 2004:1). Since then cleaner production has been gradually institutionalised. Cleaner production is an integral part of the National Waste Management Strategy, the new Water Act and the Water Services Act have also embraced the principles of cleaner production. The Department of Environmental

Affairs and Tourism (DEAT) has drafted recently the National Strategy for Cleaner Production and the Department of Trade and Industry (the dti) has established the National Cleaner Production Centre within the Council for Scientific and Industrial Research.

Cleaner production is fully aligned with the government objectives of economic development and environmental sustainability and has been embraced by the relevant government departments. The main promoter of cleaner production in the country is the Department of Trade and Industry followed closely by the DEAT. The Department of Water Affairs and Forestry has also an important involvement in the advocacy and implementation of cleaner production in South Africa. Furthermore, cleaner production is aligned with the strategies of the Department of Mineral and Energy Affairs to promote "Energy Efficiency in the Industrial Sector, with the Advanced Manufacturing Technology Strategy and with the National Integrated Manufacturing Strategy.

In addition to these departments there are other government bodies which have the potential of playing an important role towards the adoption of cleaner production. For instance the National Treasury is planning to develop cleaner production policy instruments, the South African Revenue Service has potential to promote cleaner production through environmental levies and the Department of Labour can potentially integrate cleaner production in the activities of the Sector Education and Training Authorities. The provincial and local government levels through numerous activities are also contributing to the advancement of cleaner production in South Africa.

Cleaner production is being pursued in South Africa by many sectors; government, industry bodies, academics, research organisations, and donor agencies. Many initiatives and events have taken place in order to adopt the concept. Among some of the most important are Southern African Regional Conference on Cleaner Production in 1996, the Danish Cooperation for Environment and Development demonstration projects in the fisheries, metal finishing, and textiles sectors, the establishment of waste minimisation clubs in the Durban and Cape Town region, the publication of a waste minimisation guide for the textiles industry and the creation of dedicated cleaner production unit in the Department of Environmental Affairs and Tourism (Hanks, 2002).

Cleaner production activities in South Africa have not necessarily been coordinated. The private sector is more focussed on the practical industry based implementation of cleaner production projects whereas, the public sector has been actively involved in an array of activities including research, policy formulation, project financing and implementation. Local academic, research institutions and privately owned consulting firms are also actively conducting cleaner production related research, creating awareness and documentation of local and international best practices regarding cleaner production (RSA, 2004).

5.1.1 Assessment of Cleaner Production in the Country

Unlike the European Union and the United States there have been few detailed assessments of the implementation of cleaner production in South Africa. In 1993 a status report by an environmental NGO (EMG, 1993) highlighted that the use of cleaner production technologies was limited and that the environmental legislation and regulation needed to be re-oriented to place greater specific emphasis on cleaner production practices and improved compliance. The Council for Scientific and Industrial Research conducted a small study between 1998 – to 1999 to examine companies motivation behind the adoption of clean technologies finding out that the most important factors were obtaining a competitive edge, cost reduction, operations expansion, new market opportunities, complying with environmental regulation and meeting the needs of export markets (Hanks, 2002).

Jeppesen (1999) conducted a survey of the status of environmental management in small, medium and micro enterprises in South Africa in 1999. The findings show that the use of cleaner production techniques is limited due to insufficient regulatory and market incentives. Most enterprises have low awareness of environmental costs and relevant environmental legislation coupled with a low level of legal enforcement – public pressure has no impact on the performance of these companies whatsoever. Companies use old technology, are under severe economic pressure, are cost and production focused and have low level of interaction between the individual enterprises. Environmental performance is generally a low priority. Additionally, the study found that there is a strong correlation between the size of a company and the use of cleaner production technologies; medium sized and big companies are more likely to use cleaner production techniques and environmental management systems due to market demands. This finding is consistent with other studies.

A more recent investigation into the state of cleaner production in South Africa was undertaken in 2003 for the Danish International Development Agency (DANIDA) (Hanks & Janisch, 2003). The focus of the report was on the DANIDA cleaner production demonstration projects but also included an overview of other cleaner production projects in South Africa. The report assessed the impact of the various cleaner production interventions, and identifies the key lessons learnt from these projects, using this as a basis for providing some general observations and recommendations regarding future cleaner production support in South Africa (ibid).

5.1.2 Constraints to and Strategic Goals Towards Cleaner Production in South Africa

The numerous projects related to pollution prevention and the various actors pushing for its adoption have given cleaner production a good level of acceptance. Yet, acceptance does not mean that cleaner production will be incorporated into South African legislation and embraced by industry magically. Cleaner production has been shown to be a good tool yet it has not been well implemented nationally neither among government nor industry and related organisations (RSA, 2004).

In November, 2004 the government of the Republic of South Africa issued a National Cleaner Production Strategy (RSA, 2004) in order to address the challenges for sustainable production and consumption in the country. The strategy is being lead by the Department of Environmental Affairs and Tourism with key emphasis on the cleaner production aspect. The strategy identified a number of constraints deterring the implementation of cleaner production in the country. Based on these constraints the document suggests four strategic goals to overcome these obstacles.

The National Cleaner Production Strategy outlines four overall constraints to achieve widespread application of cleaner production.[12]

i) Inconsistent enforcement of regulations to protect the environment. There is a lack of coordination among government bodies to integrate pollution control and pollution prevention. Some government bodies use environmental enforcement as means of revenue rather than focusing on pollution prevention. This results in companies being confused in terms of standards and enforcement.
ii) A fragmented approach in Government departments to the triple bottom line for sustainable development. There is a lack of an overall vision allows to improve productivity, improve resource efficiency, improve access to basic needs, and quality and competitiveness of technologies used in the South African industries.
iii) Lack of incentive programmes to assist industry and government services to adopt international practices and develop appropriate local solutions to local problems. This is caused by several factors such as lack of cleaner production incentives among government and financial institutions and a lack of enforcement of cleaner production regulations.
iv) Lack of information, knowledge and awareness in the South African government, industry, and consumers on the costs and benefits of implementing cleaner production.

In order to overcome these obstacles the National Cleaner Production Strategy formulates four goals. The goals are to be measurable, attainable in a mid-term and supported by a series of actions that move them closer to be achieved.

i) Enforcement of appropriate regulatory standards. The goal can be achieved by setting appropriate standards for release of waste to the environment, and enforcement of regulations for measuring acceptable environmental quality and for protection of the environment.

[12] For a detailed description of the constraints and goals see (RSA, 2004).

ii) Harmonisation of Government policies and strategies. This is to be achieved by coordination of policy and regulation development of the different relevant sectors, incorporating the UNEP recommended policy principles to evaluate policies for waste management and by using a national technical institution such as the NCPC to coordinate studies that provide technical information for adequate policy decision taking.

iii) Development of incentive and support schemes. Establishing sector improvement programs with incentives for adoption of cleaner production, eco-efficiency, etc. development of guidelines to calculate environmental costs and economic instruments and balancing incentives and subsidy/levies for environmentally friendly energy alternatives.

iv) Availability of information. Create a network of cleaner production and sustainable production information centres at national, industry, and regional level, with focus on the needs of consumers, government / municipalities, SME's, NGO's, schools, and industry sectors. A programme focussed on cleaner production and sustainable consumption to build capacity at schools, tertiary institutions, industry research bodies, etc.

Cleaner production is a well known concept among relevant government departments in South Africa. The concept is also known in varying levels to industry, industrial associations, academia and civil society. Yet, in order to be institutionalised in government, industry and civil society there is still a long way to go. The elimination of the described obstacles to cleaner production adoption and the achievement of the National Cleaner Production Strategy goals by the national government will be a decisive factor to the future of cleaner production in South Africa.

5.2 Cleaner Production Background in Durban

The gradual adoption of cleaner production in South Africa can be exemplified in the city of Durban. eThekwini Municipality, the authority in charge of the city can be described as one step ahead than the rest of the Municipalities in the country when it comes to pollution prevention. It is within the Municipality that many of the projects that have influenced the adoption of cleaner production have taken place. eThekwini government officials have been successful to attract projects to the city.

One of the earliest developments regarding a pollution prevention approach in Durban was the establishment of the waste minimisation clubs in the province of KwaZulu-Natal. This waste minimisation clubs concept is essentially drawn from the clubs set in the United Kingdom. The concept of the waste minimisation clubs was established in the Netherlands in 1989 through the PRISMA project followed by the United Kingdom. The Waste Minimisation Club concept was "devised to promote the exchange of waste minimisation experiences among geographically close manufacturers." In Durban and the whole of South Africa as well as the rest of the continent, waste minimisation is a key concept driving cleaner production and cleaner production related programmes and initiatives (UNEP, 2002b:49).

The first waste minimisation club in the province was set up in June 1998 for the metal finishing sector, traditionally a big contributor to pollution. The majority of metal finishing companies have less than 50 employees and are situated in the Durban and Pinetown region. The second club was established in the Hammarsdale region in November 1998. This club was made up of textile companies, a chemical manufacturer and a chicken abattoir (Barclay et al, 2002).

The two waste minimisation clubs focused on financial savings rather than environmental gains. This approach was successful as companies are worried about the bottom line and have little or no regard for environmental issues. Additional to the financial incentive, the waste minimisation club for the metal finishing was established at the same time eThekwini issued new bylaws targeting effluent discharges with high concentrations of heavy metals. Under these new bylaws companies could apply for a relaxation limit provided that they had a waste minimisation programme. The combination of the carrot (bylaw) and the stick (the waste minimisation club) provided good results.

The creation of the clubs was closely monitored by academics mainly from the Pollution Research Group. A number of studies and reports were produced. The studies provided an insight on the main barriers and drivers for the implementation of the clubs. This information proved to be of great utility to spread the concept of the clubs to other provinces of South Africa. It also provided eThekwini an early and strong indication that pollution prevention is a strategy that could help it achieve growth in the city, one of its main challenges while saving the environment.

The waste minimisation clubs set the precedent of cleaner production in Durban. Regulators and academics began looking at other pollution prevention options that could help in the sustainability strategy of the city. The concept of cleaner production was known in South Africa by the time. It was preceded by a good reputation. Cleaner production was a wider strategy than waste minimisation which had already delivered good results. The efforts of regulators and academics began to be focused on this direction.

The joint project between the South African and Danish government in cleaner production brought more definition into the path that eThekwini would take towards the adoption of the concept. The project was aimed to show industry that cleaner production was a feasible option to achieve a win-win situation, reducing waste, increasing efficiency and obtaining environmental gains in the process. The Cleaner Production Demonstration Project was promoted under the banner that “cleaner production makes good business sense”.

The Danish initiated Cleaner Production Demonstration Project began officially in 1999 although a number of events regarding the project focus sectors had already taken place well before that. The project was a joint initiative from the Department of Trade and Industry, the Department of Environmental Affairs and Tourism and the Danish Cooperation for Environment and Development (DANCED), and since 2002,

the Danish International Development Assistance (DANIDA). The Demonstration Project focused on the fishing, the textile & cotton growing and the metal finishing sectors.

The demonstration projects underlying approach was to support the identified industrial sectors through cleaner production capacity building, practical demonstration and dissemination of information. The projects were generally considered successful and brought a number of financial and environmental benefits to the industries that participated on them. The projects helped to further disseminate the concept of cleaner production and helped create much needed local cleaner production capacity.

The impact of the Waste Minimisation Clubs and the Cleaner Production Demonstration Projects to advance cleaner production in eThekwini was manifest. Cleaner production had gained good reputation as a strategy capable of delivering good results. The goal of enhancing Durban's industry competitiveness and efficiency together with the increased pressure from communities in the south Durban basin to improve industry environmental performance encouraged the search for institutional solutions to the problems originated from industrial activity.

Based on its previous successful experiences with pollution prevention approach through waste minimisation and cleaner production demonstration projects eThekwini Municipality identified a centre for cleaner production as the natural next step to promote environmental best practice, industrial efficiency and international competitiveness. eThekwini saw the cleaner production centre as a strategic movement to advance their sustainability agenda through a strategy that was capable of meeting the challenges faced by the Municipality related to industry competitiveness and industrial pollution.

5.3 Background to the Cleaner Production Centre

The plans for a centre for cleaner production were originally an initiative of the Economic Planning Department of eThekwini Municipality and later coordinated by the Environmental Branch. The plans were developed in January 2003 in conjunction with a Canadian government initiative; the Sustainable Cities Initiative (SCI). eThekwini Municipality submitted a proposal for funds from the European Union to go ahead with the creation of a cleaner production centre for Durban. The SCI and Capacity Building Leadership & Action, a local initiative by the Canadian International Development Agency saw the centre as a possibility for eThekwini to partner with Canadian expertise. These three parties commissioned a study in order to identify the feasibility of such a centre.

In 2003 a consultant was appointed to carry out the study. The scope of the study included an initial research to obtain information on how similar initiatives were established and are managed internationally, an assessment of cleaner production local initiatives and interviews with stakeholders and potential users of the centre.

Group meetings and interviews among stakeholders and users took place between August 2003 and February 2004. These activities focused on the target audience, services the proposed centre should offer to all stakeholders and users, funding of the centre, funding, location and staffing.

The study saw a total of 41 people interviewed either personally or telephonically. Among people interviewed are representatives from local, provincial and national government, community organisations, service providers, industry, labour unions, NGO's and other interested parties. As result from the interviews a list of discussion points were prepared and two group meetings took place; one among potential centre users and the other among the centre stakeholders. These group meetings highlighted the unusual conditions of the planned centre where the discussions clearly included the centre stakeholders rather than just the intended centre users.

5.4 Towards a Centre for Cleaner Production; the Centre Feasibility Study and Business Plan

The results[13] of the centre for cleaner production feasibility study were presented in February 2004. There was agreement between stakeholders and users alike for the need of a centre of this type in Durban. It was noted that emphasis should be put on the south Durban basin at first but it should not be limited to this area. The centre should focus on key topics to be identified by, the Multi Point Plan representatives and civil society representatives.

Industry was defined as the main target audience, with special emphasis on small, medium and micro enterprises as well as government departments. Other audiences to be included are educational institutions, community groups and NGOs. The centre was defined to be both a physical location as well as an internet website. Several places were suggested for the physical location but no decisions were taken. Different names were suggested for the centre, but as well as with the location of the centre this was to be decided in the business plan.

The study identified a number of cleaner production services and activities to be offered at the centre. These activities were classified in six categories namely information for industry, government and civil society, advice, quick scan and more in-depth audits, networking consulting and others. The plan also identified what activities should be free and what activities should be charged for as well as agreeing in the importance of raising cleaner production education and awareness among civil society.

Cleaner production information was highlighted as a primary service of the centre. The primary target receiver of information is industry, but information should also be available for government regulators and all interested sectors of civil society. Some of the identified information services include; cleaner production literature,

[13] Information of this section from Barclay (2004).

implementation guides, case studies, fact sheets, posters and pamphlets, a regular newsletter, a centre's web page, a database of information on cleaner production and waste reduction, etc. Special attention was given to the creation of a waste exchange database similar to an internet based exchange service developed by the City of Cape Town.

As part of the identified need for information the study found that the centre should be a link to the information rather than attempting to do everything by itself. The study defined the centre as an advice and networking centre. Some of the advice activities comprise a telephone technical hot-line, a list of environmental service providers, list of suppliers, interpretation of the legislation / regulations, application processes for environmental impact assessments, co-ordination and broker funding for projects, follow-up on advice given and advisory services for companies contemplating clean technology investments, including investments under the Clean Development Mechanism from the Kyoto Protocol.

The study found that networking was a critical function for the centre. Additional to networking through information and advice the centre could facilitate and coordinate cleaner production related activities such as breakfast seminars, workshops, conferences, waste minimisation clubs and other dissemination activities. The centre could as well act as a clearing house for investors seeking opportunities to purchase carbon credits through the Clean Development Mechanism, provide marketing support for local clean technology suppliers and link to other related initiatives locally and nationally.

Research investigations are among the main consulting services identified mostly by industrial input. Examples of possible research are solutions that are not cost-effective for one company to implement on its own but that can be implemented by the centre. Preparation of cleaner production guides and training were also services that could be offered at the centre. All of these services could potentially become income generating and help the centre to self sustain in the future. A last activity suggested for the centre is to begin reward/recognition programmes for local industries introducing clean technologies.

In regards to the organisational aspects of the centre the feasibility study pointed out a number of issues that could be decisive for the success or failure of the proposed centre for cleaner production. Emphasis was given to the importance of a multi-stakeholder approach, keeping access open to any interested organisation or sector and interacting closely with similar projects in the area. The centre was to take care of not to overlap with the functions of the National Cleaner Production Centre or undermine the work of local NGOs and community based organisations. A key organisational aspect raised by all stakeholders was the necessity of being impartial given the delicate situation among the centre primary stakeholders.

The centre for cleaner production feasibility study was an important step forward to institutionalise the adoption of cleaner production within eThekwini. The study took a multi-stakeholder approach influenced by the approach taken by the South Durban

Basin Multi Point Plan and the conflictive situation in the basin. The study saw the renounce of industry and civil society to work together and acknowledged trust building as one of the fundamental factors necessary to continue the process.

5.4.1 One Step Further – the Centre Business Plan

The feasibility study gave a considerable momentum to cleaner production in Durban. Many actors participated in this process; eThekwini Municipality, Sustainable Cities Initiative, Capacity Building Leadership & Action, the Pollution Research Group, environmental consultants and individuals from industry and civil society organisations. The next step in towards the creation of the centre was the development of a business plan for the centre.

The creation of the business plan had the precedent of a workshop where stakeholders would be able to express their opinions in regards to the centre. The workshop took place in April, 2004. It was well attended by civil society and government authorities but poorly attended by industry. The workshop highlighted the tensions among these three sectors. It made evident the historical lack of trust atmosphere in the basin. The business plan, based on the feasibility study, a concept document and the workshop among key stakeholders, was ready in August, 2004.

The plan provided a more detailed overview of the functions of the centre. It motivated the establishment of the centre, described the functions and operations of the centre providing an indication of the start up costs. The business plan refined the services already described in section 5.4 adding a more detailed overview of such services. Workshops for example will focus on cleaner production techniques and approaches, as well as with working groups to explore and develop symbiotic relationships.

The plan discusses economic aspects of the centre, its starting up operating costs, and planned ways in which the centre is expected to become self-funded. In terms of governance it is intended that the centre functions as a non – profit organisation with a board of directors to provide strategic direction. The board will be made up with key stakeholder representatives; three industry representatives for large, medium and small companies, three government representatives for national, provincial and municipal spheres, three labour representatives and three civil society representatives. The centre would initially be driven by eThekwini Municipality but it was expected that the wider stakeholder base drive it in the future. The centre is to be initially driven by eThekwini Municipality but it was expected that the wider stakeholder base drive it in the future.

5.5 Clouds in the Sky – The Centre Loses Momentum

After the commissioning of the feasibility study and the creation of a business plan the creation of the centre for cleaner production seemed eminent. Its main advocate, eThekwini Municipality had all the reasons to bring the project to completion; increase industry's competitiveness and efficiency and obtaining financial savings both for industry and for the Municipality in terms of monitoring. Additionally the environmental benefits of cleaner production would help improve the natural environment in the polluted south Durban region.

eThekwini Municipality, Sustainable Cities Initiative and Capacity Building Leadership & Action were the initial players that pushed for the creation of the centre. In addition to them the Pollution Research Group and the consultants responsible for the feasibility study and business plan had an important role to play. Other stakeholders such as industry, community representatives, trade unions, the NCPC and other levels of government had a lower level of involvement in the planning of the centre.

After the initial stages in the planning of the centre eThekwini Municipality appointed a government official from the Environmental Branch as the 'champion' to finalise the establishment of the centre. The champion would act as a link to all stakeholders and would provide direction towards the centre creation. The designated 'champion' from eThekwini fell sick and stayed away from her position for several months. During this period of time no government official was appointed as the new responsible to lead the project, nor much activity from any of the involved parties in regards to the centre took place.

Industry representatives that participated in the centre meetings had a cautious approach. Industry was not willing to disclose any detail of its operations in order to obtain assistance. Equally important industry did not feel very comfortable with civil society on the table. The main issue industry was concerned about was a possible leak of information to other stakeholders such as possible competitors as well as NGOs that could use this information against them. With the sudden lack of direction industry representatives lost interest and continued their activities as normal. The lack of clear leadership for the centre was detrimental to the participation from industry.

On its side, civil society had similar concerns. They favoured the creation of a centre but were worried about the centre being an excuse for industry's non compliance to environmental regulations. The character of the centre as a voluntary initiative was not supported by civil society representatives who did not see the centre as having the necessary means to force industry improve their environmental performance. The absence of a project responsible made the centre lose the credibility it had earned among civil society. A similar situation took place among the rest of the stakeholders. As time went by all the participants in the plans for the creation of the centre labelled the initiative as yet one more proposal that did not get off the ground.

As the absence of the project responsible continued the involved parties in the planning of the centre lost interest. Key people among the main organisations and institutions supporting the centre changed functions or left their jobs. Some of these organisations had internal problems of their own or were going through a restructuring phase. As a result, their interest in pushing forward the centre decreased gradually. The centre lost the momentum it had gained. An important detrimental factor was the inability of the three key stakeholders industry, civil society and government to work together to keep the project going. Due to the lack of direction and the lack of capacity of the stakeholders to work together the project came to a halt.

5.6 A New Direction for the Adoption of Cleaner Production

The plans for a cleaner production centre came to a halt. During most of 2005 no visible activity related to the centre took place. The plans for the centre gathered dust waiting to be reactivated by the appropriate interested party or be finally dismissed. During this period of inactivity the interest for the centre remained among a few the stakeholders, the Pollution Research Group was one of the few stakeholders who continued work towards the creation of the centre.

eThekwini officials had some conversations regarding the status of the centre during the last months of 2005. Through these discussions a government official from the eThekwini Health Department and former manager for the Multi Point Plan was informally appointed as the new ‘champion’ of the centre. The designated official held meetings in early December with the Pollution Research Group. The Group agreed to be part of the work to bring the centre to completion. Among some other topics eThekwini Municipality and the Pollution Research Group discussed the possibility of having a member of the Group working on a PhD thesis to support the cleaner production centre.

The first months of 2006 did not see much activity related to the centre. The plans for the centre were once again gathering dust. In the first days of May, 2006 officials from eThekwini Water Services, eThekwini Environmental Branch and the area based manager of the south Durban basin held a meeting in order to review the existing documentation regarding the centre for cleaner production. The purpose of the meeting was to ‘resurrect’ the plans for the centre and review how to move cleaner production given the current conditions of the involved actors and the newest developments regarding cleaner production in the city.

During this meeting it was agreed that cleaner production will be actively pursued by eThekwini. It was also agreed that at this stage eThekwini would not work towards a cleaner production centre (Fennemore, 2006). It was decided rather to appoint an independent party to advocate cleaner production in Durban. The meeting was a first after a long period of time but the feeling was that at this point in time an individual funded by eThekwini for some time to promote cleaner production would be a better option than the centre. The parties who took part in the meeting agreed that eThekwini

would take the path of a neutral party to show impartiality. Their views were that an individual promoting cleaner production impartially in Durban would facilitate the job of eThekwini as enforcers of environmental regulation.

The participants in the meeting are also in the process of developing environmental indicators for the south Durban region in order to create a platform to approach politicians and gain access to resources to promote pollution prevention through improved regulation. Moreover the indicators are expected to gain political support to push for stronger regulation. In this way eThekwini would be the stick pushing industries to improve their performance while the appointed individual would be the carrot helping companies improve their performance through cleaner production activities.

At the same time the eThekwini Health Department reached the same conclusion; not to pursue a centre for cleaner production (Chetty, 2006). The Health Department informally appointed 'champion' for the centre sees the centre as something that will happen organically. This development means in no way that cleaner production is out of their plans. The Department is working in implementing a cleaner production demonstration project for industries in the south basin Jacobs area. The Health Department is also looking at the possibility of appointing a cleaner production officer to further advance the concept in the city.

The emphasis put in the advancement of cleaner production in Durban by all government officials is a clear indication that the concept is very much alive and with further possibilities of spreading. The path that cleaner production was taking had changed considerably with the decision of not establishing a centre. The officials from eThekwini Water and Sanitation, the Environmental Branch and the south Durban area based manager agreed to convene in early June, 2006. Their objective is to continue working towards advancing the adoption of cleaner production in Durban. The plans for the independent cleaner production advocator is the main point on the agenda. It is expected that this meeting is attended by more interested parties such as the Health Department. The results from this meeting and future decisions taken by these players will have an important influence on the adoption of cleaner production in Durban.

6 Analysis

Chapter six analyses the adoption of cleaner production into the local context of Durban. The Chapter makes use of the theories presented in Chapter two; ecological modernisation and systems theory. Ecological modernisation provides an analytical framework to examine the environmental transformation in the city. Systems theory helps to see cleaner production from an overall institutional perspective and identify other elements to the concept. The Chapter draws on the information provided by the cleaner production in Durban case study in order to analyse the adoption of cleaner production in the city.

The Chapter is organised in three themes. The first theme discusses the relation of eThekwini Municipality, industry and civil society with cleaner production and analyses the cleaner production strategy in Durban. The second theme analyses the adoption of cleaner production in the city within the framework of ecological modernisation. The theme also evaluates the centre for cleaner production case study to determine what kind of ecological modernisation is taking place in the plans for the centre. The third theme discusses cleaner production in Durban from a systems theory.

6.1 South African Cleaner Production Strategy

Cleaner production in South Africa has gained steady acceptance and has been implemented gradually into several pieces of legislation. The South African government through the lead of the Department of Trade and Industry has identified cleaner production as one of the strategies to promote competitiveness and efficiency among industry has decided to set a plan to move forward the adoption of cleaner production in the country. Two key documents to achieve this goal are the Assessment of the Status Quo of Cleaner Production in South Africa (DEAT, 2004) and the National Cleaner Production Strategy Draft (RSA, 2004).

The Assessment is divided in three sections where it reviews, analyses and documents the status quo of cleaner production in South Africa, reviews international best practice and identify gaps in the current South African cleaner production policy, strategy and practices and provides a framework for the future development of cleaner production policy, strategy and action plans in the country (DEAT, 2004). The National Strategy describes the benefits of cleaner production, the constraints to its adoption in South Africa and outlines the strategy to follow in order to achieve the adoption of cleaner production in the country (RSA, 2004).

The National Cleaner Production Strategy (RSA, 2004) establishes four major goals composed of objectives and supported by complementary actions in order to overcome the constraints that cleaner production faces in the country. The goals and its associated elements should fulfil a number of conditions such as being measurable,

adjusted to future scenarios and should be essential to enable the adoption of cleaner production. Of particular importance is the purpose of the South African government to attain these goals in the mid-term, three to five years.

The Strategy aims to achieve enforcement of national regulations and standards for water, air quality, soil and sand and mining. Mandatory reporting for waste inventories, creation of regulation and guidelines for extended product responsibility. Coordination of policy and regulation among the themes of natural resource usage, waste management systems, economic and industrial development policies, social development policies, consumption, production and infrastructure development. Incorporation of the UNEP waste management policy principles, use of a national technical institution to coordinate studies for policy decision making, establishment of sector improvement programs, development of guidelines for the calculation of environmental costs, incentives to renewable energy, and finally the creation of a network of cleaner production and sustainable consumption at a national level and a science and technical program focused on cleaner production and sustainable consumption (RSA, 2004).

South Africa does not have currently enough capacity to achieve such a large task. The government at all its levels presents several constraints that may prevent it from achieving these goals. Government bodies present shortage of human resources with many government bodies seriously understaffed (Hanks, 2002). There is also a lack of capacity and training among official to perform their job properly (Chetty, 2006; Buckley, 2005; Bell, 2005). Financial constraints are present in all government levels and industrial sectors with the focus not being on environment but on service delivery (Buckley, 2005). The achievement of all the goals and its objectives requires an amount of capability not present currently. In a nutshell, there is not enough institutional capacity to reach the goals of the Strategy.

The Strategy shows a deep understanding of the problems South Africa faces in terms of cleaner production but also related to the achievement and enforcement of its regulation. On the other hand South Africa does not have the institutional capacity at the moment to reach these goals in a longer term, even less in such a limited amount of time. The National Strategy for Cleaner Production remains an important government policy document that shows the overall direction the country is intending to take regarding cleaner production and pollution prevention. It succeeds in presenting the problems the country faces to its adoption and a strategy to overcome them. The document however presents an ambitious approach that requires an amount of financial and human resources, coordination and networking that are not present at this time among the involved players. The strategy is not realistically achievable and has the risk of ending up as just a ‘nice to have’ policy.

6.2 The Adoption of Cleaner Production in Durban

At a National Level eThekwini Municipality is acknowledged as one of the leading Municipalities in the country in terms of applying pollution prevention approaches. eThekwini Municipality has identified cleaner production as one of the strategies to follow in order to fulfil its objectives of economic growth and sustainability. The concept has been gradually gaining acceptance in relevant circles. This section analyses the adoption of cleaner production within eThekwini Municipality.

The section is structured in the following way; it introduces cleaner production in relation to the major stakeholders, eThekwini Municipality, industry and civil society in order to set the context in which cleaner production is taking place in the city. It then goes on to the centre for cleaner production case study and analyses it in order to provide an understanding of the adoption of the concept in the city. The section concludes with an analysis of the cleaner production strategy of eThekwini Municipality.

6.2.1 Cleaner Production and eThekwini Municipality

eThekwini is one of the municipalities in South Africa with most successes in pollution prevention. At a national level the Municipality is recognised as a frontrunner and their approaches to pollution prevention are considered worthy of imitation (Hanks & Janisch, 2003). eThekwini is definitely ahead but it still has a long way to go before the widespread adoption of concepts such as cleaner production is achieved. An eThekwini government official states that "*Durban is more aware than most cities, but it is still probably 25 percent of the road in getting cleaner production awareness*" (Fennemore, 2006).

The adoption of cleaner production in Durban has been affected by the local conditions in the city and the developments at a national level. There are a number of factors that have influenced the adoption of cleaner production in the city. The lack of institutional capacity to enforce regulation, punitive enforcement of the law, lack of coordination between government departments are some of them. The influence of past pollution prevention projects, national legislation and the National Cleaner Production Centre complete the list of the most visible.

Literature and practically all the interviewees suggest that environmental regulation is poorly enforced in Durban as well as the rest of the country (Hanks, 2002; Albertyn & Watkins, 2002, Lakhani & Black, 2005; D'sa, 2005, Simon, 2005; Cilliers, 2006). D'sa (2005) expresses it in this way "*we don't have strong laws here, we don't have enforcement in this country*". eThekwini Municipality experiences an inconsistent enforcement of regulations to protect the environment. This is the result of economic constraints, lack of defined standards and a lack of qualified and committed inspectors within the Municipality. Dold (2005) states "*South Africa has fantastic laws, but there is no compliance and no enforcement*"

Compared to other municipalities that are in a human capacity crisis (Hanks, 2002) eThekwini is better resourced. Yet there is a lack of human capacity within eThekwini Municipality. Additional to the capacity there is a lack of training. "*Officials are still locked into old ways of thinking, old paradigms*" (Chetty, 2006). Redelinghuys (2005) claims that "*eThekwini has enough staff to do the bulk amount of job, where maybe some of the smallest things get neglected and maybe some of the staff is a little bit overworked*". eThekwini seems to be coping while looking at alternatives to solve this problem. One of them is training their officials in cleaner production with the help of for instance environmental consultants and the Pollution Research Group.

One of the major deterrents towards an effective enforcement in Durban is the lack of punitive fines and sanctions for environmental transgressions. Companies seem to be able to get away with minimum or no punishment for environmental violations (Dold, 2005; Simon, 2005; Prinsloo, 2005; Lakhani & Black, 2005). The current fines are risible. The mechanisms that enforce laws are not meeting their objective. These fines are not determined by the Municipality itself but rather by the Chief Magistrate of Durban. The magistrate favours to take industry into court if they are making serious environmental crimes. *"The problem with that is that our cases never seem to be a priority in courts, and it is years we haven't got any"* (Redelinghuys, 2005).

Courts are inefficient mechanisms to enforce environmental regulation. A typical fine is around R 1000 and takes a long time to settle. A government official states that "*probably it takes three quarters of a million Rand to find someone for 1000 Rand which is really not worthwhile*" (Fennemore, 2006). This lack of punitive enforcement comes along with a social implication. The current fines are described by civil society as "*ridiculous, tea money and laughable*" (Lakhani & Black, 2005; Simon, 2005; Prinsloo, 2005). Civil society sees the fines as a continuation of the apartheid mentality where industry, particularly big industry was able to get away with practically anything. Civil society also perceives the fines as being racially and economically biased to favour big industry (D'sa, 2005; Carnie, 2005).

Big industry in the region holds a considerable influence that does nothing but stir up the conflict. D'sa (2005) argues about differences in the treatment of environmental offenders *"government only goes after poor black companies – for instance they went after a furniture company; a guy who is dumping some hundreds litters of diesel, but the guy who is dumping millions of litters of diesel – nothing!"*. Carnie (2005) supports this by noting that *"this boat had a diesel spill and they were fined R 10 000, but it contrasted badly because the previous week Engen had spilled diesel and they were fined something like R 5 000, so there was a discrepancy, it was supposedly because the boat spilled it in th*e harbour and Engen did it in a canal…I don't know… ". Chetty (2006) confirms this influence by stating "*we cannot prosecute someone, politically it does not go well*".

eThekwini has a fragmented approach in their adoption of cleaner production. Senior officials of the three main departments responsible for their advancement have a good understanding of cleaner production but have little communication among them (Chetty, 2006; Fennemore, 2006; Anderson, 2005). The result is an inconsistent

approach to cleaner production which is similar to the situation in the rest of the country. The Department of Health, the Department of Water and Sanitation and the Environmental Branch are working in their own strategies towards cleaner production but do not have appropriate communication channels to ensure the work towards an overall cleaner production strategy.

Government officials hold informal talks related to the concept but there has not been a formal meeting to move the process ahead. The efforts in regards of cleaner production have been sporadic and fragmented. Prior to the meeting that took place in order to resuscitate the plans for the centre of cleaner production an official from the Water and Sanitation Department acknowledges that "*communication among the three main departments was almost non-existent*" (Fennemore, 2006). This is recognised by the other departments. Chetty (2006) states that so far "*our cleaner production efforts have been independent but as the concept evolves there will be need for harmonisation*". Anderson (2005) ratifies this fact stating "*none of the environmental departments talk to each other…they are fragmented*"

Contributing to the lack of enforcement is the issue of standards. At the moment there are no proper standards in place for industry to comply with. There is no clear regulation at a ground level (Lakhani & Black, 2005, Simon, 2005; Bell, 2005; Buckley, 2005). Industry does not know what the standards are because there are no defined standards to compare to – *"many people are trying to comply, but they don't know to what standard they should comply"* (Hurt, 2005). Government officials and academics state that the big majority of industry complies or is in the process of complying to environmental regulation (Redelinghuys, 2005; Chetty, 2005; Buckley, 2005). This reveals another aspect of enforcement and standards "*a question of how high and appropriate they are*" (Buckley, 2005).

eThekwini as the rest of the municipalities in South Africa is influenced by the national legislation. The democratic government received a weak and fragmented environmental regulatory system (Hallowes, 2002; Hanks, 2002). The environmental regulation is currently being updated and revised; the head of the environmental legislation is the National Environmental Management Act. The Act together with other documents such as the National Cleaner Production Strategy and other pieces of legislation described in subsection 3.6.4 are also part of the influences in Durban towards cleaner production. As the national authority in cleaner production the National Cleaner Production Centre (NCPC) has also an important role to play in the adoption of cleaner production within eThekwini. So far the NCPC has had very little influence in the cleaner production developments in eThekwini. Since its creation in 2003 the NCPC has experienced a number of changes and restructuring that have prevented it from being more active in their interaction with eThekwini Municipality.

The National Cleaner Production Centre has an interesting relation with the cleaner production-related actors in Durban. This situation could be described as "*good, yet highly ineffective*" (Fennemore, 2006). The NCPC started operations about 2002 (Cilliers, 2006) and officially began its operations in 2003. The centre has focused on cleaner production at a policy and strategy level. Since their beginning the NCPC has

gone through several changes and restructuring. Cleaner production related actors in Durban have been aware of the NCPC since its beginning. Their perception is that they are disorganised and have done nothing to help move cleaner production in Durban. The secretary of the Metal Finishing Association describes it in this way "*they've been going on for ages and still haven't done anything*" (Dupreez, 2005). Bell (2006) describes the NCPC in these terms "*They have no energy. They are a barrier; they have no enthusiasm, or motivation. They draw salaries every month and don't show anything*".

A former NCPC coordinator for the KwaZulu-Natal Province recalls of an uneasy situation going on between eThekwini Municipality and the NCPC and states that the NCPC constant changes have put them "*a little bit in the limbo*" (Anderson, 2005). Consultants and academics claim that eThekwini has not benefited from their relation with the NCPC (Bell, 2005; Anderson, 2005, Buckley 2006). eThekwini government officials consider their relation with the NCPC good but "*neither effective nor efficient*" (Fennemore, 2006). The general feeling in the city is that at the moment the NCPC is more of an obstacle to the advancement of cleaner production in Durban than a driver to it.

The NCPC has experienced internal restructuring and strategy changes. These changes have limited so far their capacity to spread cleaner production. Nevertheless they have worked in several cleaner production initiatives in Durban; training and assessments in Hammarsdale as well as activities in the textile industry (Cilliers, 2006; Fourie, 2005). The manager of an oil related industry in south Durban speaks of "*an extremely successful cleaner production initiative that saves our company over R 1.8 million annually*" (de Souza, 2005).

The centre has consolidated recently and has begun to come to steam. The NCPC project manager states that "*the centre is small at the moment but there are many plans to grow its capacity and spread the message*" (Cilliers, 2006). Kothuis (2006) enforces this by adding that "*the NCPC is setting up different programs, building infrastructure, appointing people and finding sources of funding. Industry will notice a lot more the National Cleaner Production Centre in the upcoming 12 months*".

The environment in which cleaner production moves in eThekwini is complex. Cleaner production faces several situations which are hindering its advancement. The lack of enforcement in eThekwini coupled with a lack of human resources and financial limitations its major institutional reasons. Additional to them there are other factors such as the political and social dimensions in which cleaner production moves in Durban and the NCPC which so far has been a barrier for cleaner production but can become a driver to it.

6.2.2 Industry in Durban and Cleaner Production

Up to date there is not a comprehensive study that portrays the status of cleaner production in Durban. Several documents provide insight to what extent cleaner production has been adopted within industry in Durban. Most of these documents are project specific and related to its outcomes. The current information on cleaner production in Durban together with the information from the interviewees suggest that; industry in Durban has a better cleaner production understanding than in other municipalities in South Africa yet, the adoption of cleaner production within Durban's industry has been modest.

Industry is concentrated in the south Durban basin. Industry in the area can be classified taking into account different criteria such as by sector of activity, by economic input, etc. An easy way to classify industry in Durban taking into account the local context is between small, medium and micro enterprises (SMMEs) which account for the majority of industry in the basin and big industries which are a minority in terms of numbers but their contribution to the economy, to industrial pollution and their political influence is noticeable.

The relation industry – environment in Durban is related to money. Industry in the city is concerned only about one thing. This varies from an oil refinery sustainability manager expressing "*you want to throw a fair chunk of money to the environment but you still want to satisfy the shareholders, it is all about balance*" (Munn & Damon, 2005) through an environmental consultant talking about the metal finishing industry in relation to its waste minimisation club "*it was not because they wanted to make things better environmentally, no way! Unless it is going to save you money and it is easy to implement companies don't care*" (Bell, 2006) to an environmental activist referring to big industry "*they operate here with dirty technology because they make more money, instead of directing the profit margins to cleaner technology, they can pollute on people, externalise those costs and make more money*" (Simon, 2005).

Industry in Durban has varying environmental awareness levels that rank from low to the most majority through medium to a few companies and high to selected industries. Hanks (2002) argues that in general most small, medium and micro enterprises have very low awareness of environmental costs, and moderate to low awareness of relevant environmental legislation. Most SMMEs are on the perception that pollution prevention affects their bottom line rather than enhance it (Bell, 2005, Cilliers, 2006). The problem of human capacity is also a serious constraint to adopt cleaner production in SMMEs. Most SMMEs have just enough personnel to do the job with no environmental officer or personnel with environmental knowledge (Buckley, 2005). The reintegration of South Africa into the global economy has put additional pressure on SMMEs. Already constrained sectors such as the textile face further pressure from abroad (Fourie, 2005). Lehmann (2004) claims that this situation does not necessarily encourage environmental improvements.

SMMEs are the main target of cleaner production initiatives from both eThekwini Municipality and donor agencies. The Municipality cleaner production-oriented activities and regulation, together with the waste minimisation clubs and the cleaner production demonstration projects from donors have been the major causes of cleaner production awareness among SMMEs. The specific sectors involved in the projects have a higher awareness of cleaner production than the rest of industry in Durban (Chetty, 2006), yet these sectors have not embraced the concept totally. Empirical evidence suggests that after eThekwini stopped applying pressure on these sectors many of these industries went back to their past practices. Redelinghuys (2005) exemplifies it in the metal finishing industry "*when we started to walk away from the cleaner production project from Denmark and began putting our efforts elsewhere their metal levels started to climb up again*".

In comparison to SMMEs big industry is better resourced and staffed. Big industries in Durban are transnational corporations with multi million Rand budgets. Given the size of their operations, their levels of emitted pollutants and their economic impact in the municipality big industry has been one of the focuses of attention of regulators in Durban. As a result big industries have improved their operations in the last years as driven by pressure from government regulators, their headquarters and community organisations (Chetty, 2005; Redelinghuys, 2005; Bell, 2005, Naylor, 2005, Lakhani & Black, 2005).

Big industries in south Durban are responsible for the majority of industrial pollution in the region. Through the years the three main polluters, the two oil refineries and the paper mill have increasingly paid attention to their environmental performance. This has resulted in a noticeable reduction of pollutants such as sulphur dioxide. Big industries are still far from claiming to have environmentally sound operations[14], a fact acknowledged by the industries themselves which recognise that there is still room for improvement (Munn & Damon, 2005, Maloa & Mbatha, 2005; Mondi, 2005). Big companies continue to have a poor environmental performance where incidents, spills, exceedances in their permitted pollution levels are frequent and continue affecting communities and fuelling the conflict in the region (Chetty, 2005; D'sa, 2005; Carnie, 2005; Simon, 2005).

Big industry in Durban has more access to human and financial resources than SMMEs. It is common practice that industries in the area have environmental personnel and some sort of environmental commitment. eThekwini interacts with big industry in base of the permitting systems, some of the most important coming from the Water and Sanitation Department and the Health Department. These permits incorporate cleaner production among some other pollution prevention concepts (Chetty, 2006; Redelinghuys, 2005). In addition eThekwini has engaged with big industries recently through the Multi Point Plan.

[14] By the nature of their operations it can be argued that for instance the oil refineries would never be

Big industry has a mixed record related to the environment. On the one side big industry is improving its operations, keeps a good relation with eThekwini regulators and is engaging with civil society through a number of forums to improve their performance. On the other hand they still have poor environmental records, deny their wrongdoings and have an arrogant attitude. In terms of other cleaner production activities big industry claims to have problems that are so technically complex that the help that eThekwini or the concept of cleaner production can provide is almost none (Munn & Damon, 2005, Maloa & Mbatha, 2005; Naylor, 2005). Munn & Damon (2005) state "*no cleaner production centre is going to tell me how to solve my problems on sulphur for example. I am going to go to the sulphur expert in Texas or wherever it is I am going to bring him across and fix it. The multinationals companies don't actually need a local resource centre*." Naylor (2005) adds "*it would not make sense to us go to a cleaner production Durban centre to solve specific problems because we have at our disposal the experience of Europe and the other producers, which are further down in terms of cleaner production…as a big company we have the resources at our disposal to solve the problem, I cannot see that it would be utilised by a company such as Mondi to a great extent*"

Cleaner production offers a number of economic, financial and environmental benefits to companies in south Durban. So far the majority of industry in Durban has not taken advantage of these opportunities. There are not studies that indicate the advancement of cleaner production within industry in Durban, empirical evidence suggests however that most industry remains indifferent or ignorant of the opportunities that cleaner production offers.

6.2.3 Cleaner Production and Civil Society

Pressure from cleaner production to industry and government has been a major driver of environmental transformation in the area. Civil society in Durban has been instrumental in bringing attention to the industrial pollution in the basin (Simon, 2005; Lakhani & Black, 2005). Communities in the south Durban basin have a long history of activism and their efforts have resulted in many concrete actions to improve the natural environment in the region, such as the Multi Point Plan. It is undeniable that communities are a major driver towards pollution prevention in the area. "*Without NGO's nothing would have happened*" (Lakhani & Black, 2005).

Civil society in Durban does not speak of cleaner production per se. The term is familiar to the main civil society representatives in the city, yet they speak of concepts such as cleaner technologies, best available technology and clean production as opposed to cleaner production (Lakhani, 2006; Read, 2006). Civil society mirrors the situation in eThekwini Municipality in terms of cleaner production capacity. There are only a few individuals that can claim to have an understanding of cleaner production and just a handful with cleaner production technical knowledge (Lakhani, 2006; Buckley, 2006; Simon, 2006; Read, 2006; Kothuis, 2006).

The lack of cleaner production understanding and capacity among civil society does not write it off from the undergoing cleaner production strategy in Durban. Civil society representatives bring many other things to the table other than just pure technical knowledge. Simon (2006) states that civil society makes the process equitable. Civil society brings to the table the true impacts of industry and provides alternatives; "*why do you need incineration when you can use auto-claving*". Lakhani (2006) argues in the same line stating that civil society comes across sustainable alternatives much more than people in industry. He argues that civil society brings to the table out of the box solutions, innovative thinking, their knowledge networks and helps keep the process honest.

Civil society does not have a direct relation with cleaner production. This is due to the current technical nature of cleaner production. Civil society has been related to the concept as advocators of pollution prevention and environmental improvement. At present civil society participation in the adoption of cleaner production is limited. "*The easy answer is that civil society participation is very important… realistically I don't see civil society participating in cleaner production. It will be an industry – government exercise for the foreseeable future*" (Kothuis, 2006). Industry and regulators in Durban prefer not to have civil society on the cleaner production debate while at the same time they also acknowledge that it has a role to play for its adoption. It is necessary therefore to open the right platforms for civil society to participate and add the value that they bring with their inclusion.

6.2.4 The Centre for Cleaner Production Case Study and its Future Direction

This subsection deals with the case study of a planned centre for cleaner production. The centre plan was part of eThekwini Municipality efforts to advance cleaner production in Durban. Its plans emerged gradually based on the objective of making industry more competitive and efficient and the industrial pollution problems in the basin. The plans involved a number of government officials, consultants, industry representatives, worker union representatives, academics and civil society representatives. It was one the first efforts in Durban that involved a significant number of several sector representatives towards pollution prevention.[15]

The plans for the centre made evident that cleaner production was an important part of eThekwini sustainability strategy, that cleaner production was becoming institutionalised in Durban and that given the conflictive situation in Durban there was need to have a multi-stakeholder arrangement which clearly included civil society representatives in the process. The plans also made evident the existing tensions between industry and civil society and the reluctance of both parties to work together. Finally, trust was recognised as the major elements missing among industry, government and communities to move the centre forward (Vengedasamy, 2004).

[15] History of the centre plans based on Barclay (2004)

The centre objective was to promote the adoption of cleaner production practices to the benefit of the social, economic and natural environment of the area. In order to achieve its objectives the centre would make use of only one of the regulatory instruments identified by UNEP (2001c) to promote cleaner production; the public voluntary programme. The centre was planned to be established as a public – private partnership between industry and regulators as well as other stakeholders. The centre aimed to provide industries improved public recognition, access to technical knowledge, technical assistance that would result in cost savings, efficiency and environmental gains; in a nutshell to promote the pollution prevention pays concept.

The plans for the centre did not make use of any market based instruments such as taxes, charges, fees or incentives. The plans focused solely on the information – based instruments; promotion of the concept through case studies and audits, cleaner production information aimed at industry, regulators and civil society, advice, networking, audits, training initiatives and recognition of industries effectively implementing cleaner production through reward and recognition programmes.

The centre gained a considerable momentum and his creation seemed evident. The plans began to slow down. The absence of the 'project champion' was a major factor hindering the process. The renounce of industry and society to engage on the project ensured that there was no pressure coming from these stakeholders to keep the project alive. The long history of distrust that has characterised the basin prevented them from engaging in a fruitful dialogue. The project lost momentum little by little until it was archived waiting for better times to come.

The resurrection of the centre plans recently by the Department of Water and Sanitation, the Environmental Branch and the south Durban basin area-based manager indicate the importance that cleaner production holds for the city. eThekwini Municipality is looking into spreading cleaner production in one way or another. The discussion of these officials was not in order to resurrect the centre per se, but rather about how to move cleaner production in Durban forward. In this way they decided that rather than creating a centre it was better to have an individual advocating for cleaner production; an independent party rather than an institution to promote the concept - effectively cancelling for now the centre for cleaner production.

The plans for the creation of a cleaner production centre have transformed into an independent party advocating cleaner production. eThekwini sees this independent party as an expert with a very wide network, without political agendas, totally impartial. The party would promote cleaner production advocacy, write a few articles in the newspapers, have a few seminars, attend some conferences, do and publish case studies, start waste minimisation clubs and act as a networking agent to promote cleaner production – "*a person with a laptop, a cell phone, a car and a broadband connection that could be anywhere*" (Fennemore, 2006).

The independent party goal is the same as the planned centre for cleaner production; promote the concept, with the difference that this party does not have a clear mandate that incorporates the triple bottom line; economic, social and environmental aspects.

The independent party does not have any element of regulatory and market – based instruments. His / her functions relate solely to the promotion of cleaner production. Activity that falls completely under the information – based instruments sphere; provide cleaner production information, networking and give visibility to the concept among mainly industry in the south Durban basin. It can be argued that the centre has moved from activities to promote cleaner production to talks to encourage industry into cleaner production.

The case study of the centre for cleaner production that becomes an independent party to promote the concept points out a number of observations that provide useful insight into the adoption of cleaner production in Durban. Both developments, the planned centre for cleaner production and the independent party send the signal that eThekwini is looking into cleaner production as part of their strategy to achieve sustainable development. They suggest that eThekwini continues with demonstration and information as an overall non-declared strategy regarding the adoption of the concept in Durban. The developments suggest that eThekwini is adopting production and point out towards different levels in this adoption of cleaner production.

A centre for cleaner production sends a stronger signal of the adoption of cleaner production than an individual advocating the concept. A centre shows a more solid indication to the actors involved in environmental transformation than the independent party. An institution rather than a person makes it easier for industry, communities, unions, consultants and stakeholders in general to see a formal approach to pollution prevention. In the same way, donors would be inclined to sign cooperation and funding agreements with an institution rather than an individual.

The centre would pursue the achievement of cleaner production within industry more formally than an individual. The institutionalisation or formality that a centre would bring is at the same time something that eThekwini wanted to avoid. eThekwini officials have emphasised on the neutrality and independence of this party because they do not like the idea of enforcement. "*Officials did not like the idea of having a centre or even an 'official' because it shows enforcement*" (Fennemore, 2006). This can be seen as a contradictory sign. eThekwini sees itself as the regulators and this party advocating cleaner production completely separated from them. eThekwini wants to establish clearly that enforcement comes from the Municipality and that although the party would be paid by the Municipality he / she should be seen as a neutral player.

A centre for cleaner production has more visibility than an independent individual advocating cleaner production. The centre was intended to be a public – private partnership to promote cleaner production in the city. The centre was planned to have a physical location and probably an internet location as well. The current plans of eThekwini see the independent party as being capable of being anywhere. "*A party with enough mobility that may not even require to have an office*" (Fennemore, 2006). This could potentially lead to a decreased visibility of the efforts to promote cleaner production.

The preference of an independent party over a centre for cleaner production can lead to a potential loss of innovation and networking. As a public – private partnership designed to run as a non – profit organisation the centre would have a board of directors composed by industry, regulators, civil society and unions. A diverse board such as this has a great networking potential alone. Additionally, the centre was planned to serve as a networking space for different sectors to interact and share experiences related to pollution prevention. An independent party with good networking abilities would be able to network people, but not at the same extent that the centre could potentially do. This can be explained with the example that this individual would need to first meet actor A and then actor B before he could make a connection between them.

The lack of an adequate platform for networking can result in a loss of innovation. The combined effort of regulators, civil society, industry, academics, consultants and other actors can result in innovative approaches and ideas to advance cleaner production. The centre could act as a space where any of the players bring their ideas towards pollution prevention, share experiences or propose innovative projects. The interest of civil society to improve their living conditions together with an industrial representative looking to improve its relations with communities could result in potential innovative projects. The centre could as well function as a platform where historical enemies can engage in a neutral manner. Many of the interviewees indicated that the centre could potentially serve to defuse tension (Naidoo, 2005; Dold, 2005 Bell, 2005) "*this centre could address (conflict) issues and get stakeholders together, explain impacts and then move the process forward, so you have a centre that defuses tension*" (Naidoo, 2005).

The change in plans has effectively written civil society off. A typical centre for cleaner production would be an exercise between regulators and industry. The local conditions in Durban have forced this arrangement to be different – the centre had in principle taken a big step by including civil society and labour unions representatives in their board of directors. The change in plans means effectively that there will be little or none civil society intervention. An independent party would be mostly industry oriented excluding civil society from cleaner production. Marquez (2006) argues that the participation of civil society in cleaner production is already limited and opposed by industry and regulators. The change in plans further undermines this participation.

The absence of the centre 'champion' was the determining factor for the project to come to a halt. eThekwini failed to name another government official and eventually the project collapsed. This indicated an issue of sustainability that needs to be looked at. The absence of a person should not stop a project such as the proposed centre. The project coming to a halt due to lack of direction resulted in a waste of financial resources and efforts from all the participants. This experience should serve as a valuable lesson to eThekwini to reconsider their future approaches to project management.

The meeting where the new direction of the centre was decided has been just the first step. Government officials will meet again early July, 2006 to continue these efforts. The plans are still in their initial stage and many things can still happen. The process is slow and it will take time to access the funding required to move the project forward. Given the bureaucratic procedures the earliest time that for instance the independent party could theoretically begin working is early 2008 (Fennemore, 2006). At the moment the plan is to have this cleaner production 'champion' but the plans are still on initial stages and can be easily modified or cancelled.

6.2.5 eThekwini Approaches Towards a Cleaner Production Strategy

There are many factors that are hindering the advancement of cleaner production within eThekwini. The Municipality is looking at ways in which it can deal with these challenges. Innovation is key in order to find creative solutions and eThekwini has some of the most perceptive officials in South Africa. Some of the approaches the Municipality and its perceived overall cleaner production strategy are discussed in this subsection.

The constraints in human and financial resources that eThekwini experiences have lead it to look for a different regulatory approach in order to help enforce legislation. Sandra Redelinghuys (2005), head of eThekwini Water and Sanitation Pollution Control Group puts it this way *"we used to have a lot of command and control. That is certainly changing, we are now looking at innovative ways, cleaner production, win – win situations"*. eThekwini Municipality was the first municipality in South Africa to incorporate cleaner production into its bylaws. The Water and Sanitation Department pioneered the approach by incorporating clauses in their effluent permits, the basis of their regulation, that specifically call industries to apply a cleaner production in their processes.

Water and Sanitation issued a new five-year permitting system "*which involves concessions in trade effluent fees to make it more viable for companies to install cleaner technology and best available technology*" (Fennemore, 2006). The permit requires companies to create a plan for the implementation of best practice within their type of industry. The permit must be availed by a cleaner production expert. Industries are required to set targets and in return they are given a concession which saves them a considerable amount of money. The permitting system has been successful resulting in considerable financial savings for the companies while achieving the Municipality objective of pollution prevention. Fennemore (2006) and Cilliers (2006) quantify these savings in the order of thousands of Rand a month. "*Some of those guys can save up to fifty percent of the existing effluent charges they are paying, that is a big incentive. In some of the companies that can be up to 40, 50 thousand Rand a month*" (Cilliers, 2006).

Redelinghuys (2005) states that eThekwini Municipality is now looking at what they call "hybrid pollution control techniques" a mix of command and control and voluntary measures. "*eThekwini is trying very hard to find win – win situations; cleaner production, best available technology (BAT), setting standards,*

communicating the bigger picture as opposed to just putting a limit that you have to comply with" (ibid). The basis of this approach is their permitting system but it also involves other measures such as industry education via management level and participation in forums as well as inspectorate training and networking.

The eThekwini Health Department states that "*we are making sure that cleaner production is being written into business plans, licenses and permits*" (Chetty, 2006). The Health Department regards the adoption of cleaner production as "*a process that will set up organically*" (ibid). The Department is beginning an information – based instrument project where they have selected a company to apply cleaner production. The Department has chosen an industry of the notorious polluted Jacobs area. The idea is to demonstrate industry that cleaner production delivers financial and environmental benefits. The project has the goals of promoting cleaner production among industry through a successful case study in the area and to help the Department develop more comprehensive permits with the knowledge gained from the company assessment. "*Our idea is to integrate all the principles of cleaner production into our permits*" (Chetty, 2006).

In a situation of economic constraints and lack of human capacity eThekwini has made use of ingenious ways to achieve the implementation of their environmental regulations. One example of this is what the Municipality officials call the non-regulatory inspections or 'non-reg' inspections, a solution sought after the inadequacy of the courts in the city. If a company doesn't comply it is given a certain amount of time after which the Municipality inspectors come back. The company is charged for the inspector time, gasoline, the phone calls etc. If the company keeps on doing this for some time the amounts comes to thousands of Rand. "*It is not a fine, just charges for our services, but it is a driver*" (Fennemore, 2006).

At a national level the country is undergoing a national process that focuses on cleaner production. eThekwini is bringing this process to incorporate cleaner production into its Integrated Development Plan (Chetty, 2006). The Integrated Development Plan (IDP) is a strategy required for each municipality in South Africa to map its future over the short, medium and long term. The IDP provides an overall framework for development. It aims to co-ordinate the work of local and other spheres of government in a coherent plan to improve the quality of life for all the people living in an area (ETU, 2003). The incorporation of cleaner production into eThekwini's IDP plan is a strong indication of the adoption of cleaner production within the Municipality.

One of the major success stories of eThekwini is related to the metal finishing sector and the waste minimisation clubs. The approach taken by the Municipality was to tighten regulation as the stick, coupled with the opportunity of reducing waste through a waste minimisation club, thus complying with the regulation (Bell, 2005, Buckley, 2005). This carrot and stick approach was very successful with the metal finishing sector. It reduced pollution and improved the relations between eThekwini and the sector (Barclay & Buckley, 2002). The Municipality has not officially launched other similar initiative but the lesson remains there. Fennemore (2006) sees a situation

where eThekwini is the stick and an independent party advocating the concept is as the carrot.

An important component of in the adoption of cleaner production is Durban has been the external help the Municipality has received. eThekwini is the local level of government that has the best relations with foreign governments and donor agencies in the country. The Municipality has been successful to attract funds and expertise in several areas. In terms of cleaner production eThekwini has forged strong relations with Austrian, Canadian, Norwegian and Danish governments to assist industry access to cleaner production technologies and spread the adoption of the concept (DEAT, 2004:9).

The basis of eThekwini Municipality environmental regulation is command and control. The Municipality uses this policy instrument in order to reduce or remove the undesired industrial behaviour in the city. The basis of eThekwini Municipality is their permitting system that applies to distinct areas such as effluent levels and air pollution. Command and control requires adequate monitoring and enforcement and requires the regulators to have a comprehensive understanding of the functions of the regulated. Unfortunately, the Municipality faces many constraints which prevent it to perform proper monitoring and enforcement.

The Health Department is currently in the process of applying the concept of cleaner production in a company in the Jacobs industrial belt. Their objective is to reduce the company's environmental impacts, improve its efficiency and obtain financial gains. Once it has obtained a 'success story' the Health Department will publicise it with the aim of spreading the message and hopefully convince industry in the area of the benefits of cleaner production; a purely information – based approach. The Department wants to use this information to co-opt other actors into joining forces to move cleaner production forward, actors such as the Durban Chamber of Commerce or local politicians.

The Health Department is also hoping to use this and other future cases in order to understand the operations of the companies in the area, grasp an understanding of their processes and the pollution prevention possibilities that cleaner production can rip and make use of this information to develop new an appropriate permitting systems. This approach indicates a new element of command and control coupled with the information – based instrument. The Health Department sees cleaner production as one of the main drives that will help it achieve the enforcement of their regulation. A Health Department official states "*at the moment there is no one focused on cleaner production in eThekwini and I can only advocate for cleaner production in one industry at the moment given our resources*" (Chetty, 2006). He states that this approach is better than the national approach "*you cannot have a highly structured approach*" (ibid).

The constraints that eThekwini faces have prompted the Municipality to look for other ways in which they can achieve the enforcement of their environmental regulation. Pollution prevention is one of those strategies. The concept was introduced to the

Municipality several years ago. One of the early pollution prevention milestones was the creation of the waste minimisation clubs and later the cleaner production demonstration projects. The adoption of cleaner production at a national level and the experience of these initiatives among other developments discussed in this thesis have led eThekwini to actively seek the adoption of cleaner production.

The initiatives, developments and legislation that have influenced the adoption of cleaner production in Durban have not come in an ordered fashion. They have come from different players at different periods of time and influenced different people in different departments and institutions. The initiatives that have taken place in eThekwini fall in the category of information – based instruments. The idea of the waste minimisation clubs and the cleaner production demonstration projects is to spread the message that pollution prevention pays through success stories and learning by doing

The cleaner production strategy in Durban has had minimum elements of public (regulatory) policy and market – based instruments and has focused by large on information – based instruments. The centre for cleaner production is a good example of this approach, the centre was intended to spread the message that cleaner production results in improved efficiency and competitiveness hence in financial benefits; promoting the adoption of cleaner production among industry through success stories, demonstrating that pollution prevention pays. The decision of transforming the centre into an independent party that has the sole purpose of advocating cleaner production further consolidates the choice for information – based instruments

The changes in the centre for cleaner production indicate a change in the concept and the strategy; from a centre to a champion and from activities and information to purely information. The concept of a centre for cleaner production brings along a deeper institutionalisation of cleaner production. As it has been discussed a centre is a visible platform where stakeholders can engage and network. It brings about the possibility for networking and innovation, and in the Durban case with the inclusion of civil society it brings also a social element that is in line with the context in the city. It brings a multi-stakeholder approach that if managed properly can result in innovative solutions to the benefit of the area.

The concept of a champion on the other hand brings a lower level of institutionalisation of cleaner production. It removes the platform where stakeholders can meet with the consequences of a potential loss of innovation and decreased networking. The champion concept also takes away the social equity element that civil society brings with its inclusion. The strategy continues without major changes; based on information instruments. The difference is the capability of each of the concepts to disseminate the information. Due to a higher level of institutionalisation a centre would be more effective transmitting the information than a ‘champion’ going from ‘door to door’ providing information.

Both approaches are based on information which is in line with all former cleaner production initiatives that have taken place in Durban. Due to its nature, information – based instruments could be described as the weakest instrument compared to regulatory instruments and market –based instruments. Information – based instruments are a limited tool that should be used in conjunction with other instruments. Its non-obligatory character makes it difficult to force the adoption of the concept of cleaner production.

The cleaner production initiatives that have taken place in eThekwini Municipality fall in the category of information – based instruments. Its objective is to promote and advocate the principle that pollution prevention pays. The result from this approach in Durban has been a bigger general awareness of the concept of pollution prevention / cleaner production and a number of industries actively involved in the process. The initiatives have fulfilled their own objectives but the overall results are modest compared to what could be achieved with a mix of instruments particularly market – based instruments.

The champion would promote the concept further, but lacks the necessary means to make a big impact. eThekwini Municipality expects the champion to have a major impact in the pollution reduction. Fennemore (2006) expresses "*I would like to see a 40 percent reduction in emissions and utility usage. One person is just purely the network, he would act as liaison*" He further adds that "*financially we cannot get two people, so one person should be enough, see the example of Bas Kothuis, he is a biologist, he is not even a chemical engineer or anything, he is doing wonders in Cape Town*". The expectation of a major change through a cleaner production champion is unrealistic; as it has been discussed a champion is in fact a less effective advocator than a centre to promote cleaner production, particularly with the choice of instrument. One person advocating the adoption of cleaner production through information – based instruments will not be enough to bring about major environmental transformation in Durban.

The cleaner production constraints such as the lack of institutional capacity, lack of enforcement and fragmentation of the government departments in eThekwini does not allow to speak of a unified cleaner production strategy followed by the Municipality. eThekwini continues tightening their regulation and standards, incorporating cleaner production on them while having external parties (a centre, a 'champion') advocating cleaner production as an option to industry to achieve the enforcement of the regulation. So far this non-conscious strategy followed by eThekwini has resulted in an increased awareness of the concept in the city and a number of proactive players and industries adopting cleaner production. Compared to the rest of the municipalities eThekwini is doing a good job, but in absolute numbers the results are still modest.

The initiatives that have taken place in eThekwini have been based on information instruments. There are only a few co-regulatory instruments in place in the city and no economic instruments to promote cleaner production. The centre for cleaner production case study points out the preference of eThekwini for information – based instruments. The strategy has increased awareness but it has not been enough to adopt

cleaner production practices in Durban. Further interventions on this line point to a similar direction. The strategy has not been unified; it is the initiative of some Departments within the Municipality. There is not an overall defined eThekwini Municipality cleaner production strategy.

6.2.6 The Adoption of Cleaner Production in Durban - Summary

At a national level the Department of Environmental Affairs and Tourism (DEAT, 2004) summarises the adoption of cleaner production stating that whilst there are no legislative instruments to directly enforce cleaner production at present, there are a number of policy initiatives in which this approach is proposed and which are likely to be incorporated into legislation in the near future. The message that DEAT wants to communicate is that the South African government is on its way towards fully institutionalising cleaner production. At a local level, eThekwini Municipality is among the frontrunners in this process.

Chetty (2006) states that "*eThekwini problems related to industrial pollution are so complex that sometimes government officials don't know where to start*". eThekwini Municipality faces a difficult situation regarding environmental regulation. Government officials are taking the challenge and making the best out of it. Cleaner production is one of the strategies the Municipality has chosen to help it solve some of its issues. Figure 6.1 shows the major cleaner production – specific initiatives in Durban.

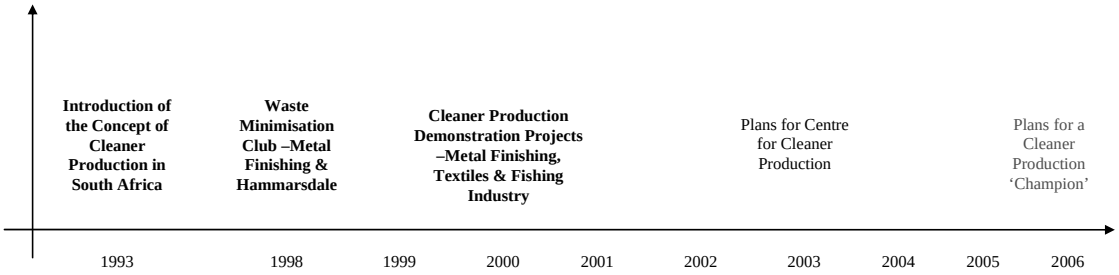

Figure 6.1 Time line of cleaner production – specific initiatives in Durban

The official introduction in 1993 of cleaner production by the Department of Environmental Affairs and Tourism in cooperation with the Danish government (Buckley, 2004:1) marks the beginning of the race towards pollution prevention in Durban. Since then the waste minimisation clubs and the cleaner production demonstration projects for the metal finishing, textile and fishing industry have been the major cleaner production – specific activities that have taken place in the city.

Cleaner production initiatives in Durban have been moved by donors in conjunction with government bodies. They have not been coordinated and although all of them pursue the same final objective of pollution prevention they did not form part of any overall strategy to adopt cleaner production. The lack of institutional capacity, inappropriate enforcement and a lack of coordination among eThekwini Municipality related departments have resulted in a fragmented approach towards

cleaner production. eThekwini Water and Sanitation, the Health Department and the Environmental Branch are aiming towards the adoption of the concept through individual, isolated efforts.

The initiatives in Durban had privileged information – based instruments where few regulatory instruments have been included and none market –based instruments. The plans in 2003 for a centre for cleaner production created to move further the adoption of cleaner production in the area continues the choice of information –based instruments. The centre concept was changed to the 'champion' concept. The change from a centre to a 'champion' continues moving cleaner production forward, but in a debilitated approach.

eThekwini is on the road towards the adoption of cleaner production within the Municipality. The several developments described suggest this direction. A certain level of cleaner production institutionalisation is taking place. However, the cleaner production initiatives that have taken place in the city are not part of a coordinated effort. The adoption of cleaner production has been fragmented and project based rather than government driven. The efforts have been sporadic and many industrial sectors are still ignorant of the benefits of cleaner production. The Municipality departments continue working in a fragmented strategy that favours demonstration / information – based instruments. Overall, there is no core cleaner production eThekwini Municipality strategy.

6.3 eThekwini Municipality and Ecological Modernisation

Sonnenfeld (Mol & Sonnenfeld, 2000:236) describes ecological modernisation as an industrial restructuring with a green twist. Ecological modernisation is based on their acknowledgement of technology as the main reason of the ecological crisis we are facing and the belief that technology holds also the solution to the crisis. Ecological modernisation is the guiding theory of this thesis. It provides a framework that is used in this section to analyse to what extent eThekwini Municipality has advanced towards ecological modernisation.

The section analyses to what extent the core features of the theory are embedded in eThekwini Municipality. It discusses briefly if eThekwini is aligned with the technological / material objectives of ecological modernisation and finishes presenting an analysis of the centre for cleaner production case study in order to find out what kind of ecological modernisation is taking place in regards to the centre plans.

6.3.1 Ecological Modernisation in Durban

Ecological modernisation is not a fully consolidated body of knowledge therefore its approach would vary depending on the author. However there are some definite features that are widely accepted as basic elements of the theory. This section draws on the core features of ecological modernisation and its objectives to analyse the ecological modernisation of eThekwini Municipality. Mol (1999)

identifies five core features of the current stage of ecological modernisation; a modernisation of politics and policy making, a change in state – market relations, modifications in the position, role and ideology of social movements, a shift on ideologies in the environmental arena with respect to the role technological innovations can play in environmental reform and finally, the nation state no longer being the only level of analysis for understanding environment – informed transformations. These features are discussed below in regards of the Municipality.

- Modernisation of politics and policy making; ecological modernisation introduces a new approach of government towards environmental regulation. An approach where regulators move from the command and control and integrate other policy instruments to ensure achievement of their objectives. The basic foundation of eThekwini Municipality environmental regulation is command and control. Their regulatory system inherited from the former apartheid government is still weak and fragmentary. The creation of relevant national pieces of legislation such as the National Environmental Management Act has established the right foundation to address these constraints. But it will take some time before policy could be translated into ground, local measures.

  The present eThekwini enforcement mechanisms are constrained by lack of institutional capacity and appropriate standards among others. eThekwini is looking into other forms of regulation in order to address these constraints. The Municipality still does not have much hands on experience on new approaches but is willing to give them a try (Redelinghuys, 2005). Currently there are only a few market instruments that encourage environmental improvement. The situation in Durban mirrors that of the rest of the country. At a national level the government has issued recently a discussion paper (South African National Treasure, 2006) that recognises that the current market-based instruments are few, inadequate and there is need for a deep restructuring of this type of instruments. . .

  eThekwini is moving into mixed types of regulation where it is trying out innovative schemes, yet this approach is limited. The main reason being is that industry in Durban is not mature enough to move to partial self-regulation or loose public – private partnerships or other schemes (Chetty, 2005; D'sa, 2005, Buckley, 2005). The innovation of politics and policy making is incipient in eThekwini. The history of distrust and conflict in the region has prevented industry, government and environmental NGOs to establish proper cooperation between them. Regulators have at times good cooperation with industry but this varies depending on the specific context. .

  There are some small indications that show that the current picture is slowly changing. The relations between eThekwini and some industries improved after the waste minimisation clubs and cleaner production demonstration projects (Buckley, 2002; Buckley, 2005). The South Durban Multi Point Plan was the first major project that brought industry, communities, regulators, academics and other actors to the table with the purpose of improving the

conditions in the basin. The project multi-stakeholder approach was regarded by all the participants as the correct strategy to face the challenges in the city.

- A change in state – market relations; ecological modernisation argues that environment can go hand by hand with economic development. Environmental interests are being gradually institutionalised in market economics. Producers, consumers, suppliers, and all related actors often use economic incentives to reach environmental goals. Ecological modernisation theory establishes that money can be made by protecting the environment. The Municipality is trying to communicate this to industry but so far the advance is modest. Cleaner production is one of the city's main strategies to spread the message that pollution prevention pays. This message is not getting across market actors. The majority of industry in Durban remains currently resistant or ignorant to the opportunities that pollution prevention approaches can generate. .

  This picture is slowly changing with interventions such as the waste minimisation clubs, cleaner production demonstration projects and pressure from customers particularly from abroad. There is a growing influence of environmental management systems such as ISO 14001. More and more industries are becoming aware of the benefits that a sound environmental protection can bring to them, yet in Durban the opportunities are still unexplored. eThekwini Municipality has gone great extents to facilitate the achievement of their regulations and encourage growth but "*companies are still not taking the bait*" (Fennemore, 2006). .

  The adoption of activities such as waste reduction and rethinking of manufacturing processes is beginning to increase, the call for cleaner technologies and best available technologies, particularly from civil society is on the rise as well but have not been met yet by industry. The possibility of phasing out smoke-stack industry in the city is distant. Regarding other actors, currently there are no financial institutions or banks in Durban active on the financing of pollution prevention credits or supporting pollution prevention activities. At the moment there are no innovation and research and development programs looking into pollution prevention in the city other than isolated initiatives. The bulk of the population of Durban has a low environmental awareness thus there is little pressure coming from the consumer side (Bell, 2005; Buckley, 2005, Munn & Damon, 2005; Dold, 2005). Green consumerism is practiced by just a small, more affluent portion of the Durban population; "*the general population is not going to choose a green product or move to a green product if there is a higher price on it*" (Buckley, 2005)

- Modifications in the position, role and ideology of social movements; the theory argues that ideologies, strategies and positions of environmental NGOs have moved to one to one issues; from confrontation to cooperation. Most environmental issues come from the south Durban basin. It is there where this tenet can be tested. The conflictive situation in the basin points out a very

small change in the relations of communities with government and particularly industry. NGOs in Durban have a strong legitimacy and presence in the city. Their efforts have attracted attention to the problems in the basin. Civil society organisations are an important component of the environmental transformations that have taken place in Durban. .

The conflict in the basin particularly between industry and communities has prevented cooperation among stakeholders to find solutions to their problems. Historically industry in the basin ignored and excluded civil society from their decisions (Bell, 2005, Dold, 2005, Scott, 2003). Government, particularly the apartheid government also contributed to this segregation. The change of governments has seen a dramatic change in the way these two stakeholders are engaging with civil society. Government has become a more democratic institution and industry has been forced to change. Yet, communities still perceive a biased attitude from government towards industry and regard the latter as having changed little and continue polluting on them without any regard for their well being (D'sa, 2005; Simon, 2005; Lakhani & Black, 2005).

On the community side D'sa (2005) states "*They are killing us like hell… I call them murderers; their hands are dripping with blood*". Witt (2005) takes a more moderate approach when he states "*it is complicated to get a monolithical statement that civil society hates industry it really does not get us anywhere, I would say civil society is very sceptical of industry, civil society is very cautious of interventions from industry, civil society is reluctant to take industry very well, but at the same time I think there is an acknowledgement that there should be engagement*". On the industry side Munn (2005) argues "*I don't think that there is actually such a problem, I think there are some community groups which for their own agendas causes more trouble to industry as they can, and NGOs have the right to do that, I respect that right, ok. I just think they are not doing it in the interest of the community*."

The current situation is conflictive but is gradually signalling towards a different path. Community organisations are beginning to move to one to one issue. Groundwork declares that "*it disagrees with industry sometimes and other times it works together with them depending on the issue raised*" (Peek, 2005). Timberwatch declares that "*sometimes we work well with industry and some other times we can't* (Witt, 2005). Civil society is very sceptical of industry but there is a growing recognition from civil society, particularly from moderate NGOs that there is need to engage if the situation in the basin is to be improved (Dold, 2005; Lakhani, 2006, Bell, 2005, Witt, 2005).

- A shift on ideologies in the environmental arena with respect to the role technological innovations can play in environmental reform; the principal core feature of ecological modernisation is that technology is both, the main cause of environmental pollution and also the solution to the problem. Technology plays an important role in the solution of environmental pollution in Durban. The government regulators are pushing in this direction with special emphasis

on pollution prevention. The undergoing efforts in eThekwini are part of a strategy to remediate the existing environmental problems and prevent future ones. At this stage eThekwini is integrating environmental considerations in the form of technological tools into their bylaws (Chetty, 2005; Fennemore, 2006; Redelinghuys, 2005). The most visible indication is the integration of cleaner production into their permitting system. Cleaner production, polluters pay, life cycle assessment, waste minimisation are being incorporated into the Municipality bylaws. The process is taking long due to the many constraints that the Municipality faces but there is a clear will to move into this direction.

- The nation state is no longer the only level of analysis for understanding environment – informed transformations; in Durban, civil society and industry have a visible influence in the environmental transformation of the city. Civil society has been a decisive factor to push for an improved natural environment, while the influence of industry has played also a major role in the way in which environment – related decisions are taken. Academics and environmental consultants also hold some influence on how eThekwini goes about towards the environment. Supranational institutions such as the United Nations and donors particularly have a strong influence in the Municipality.

  The influence from these various actors is visible but has not yet resulted in decentralised, consensual styles of governance. These non – state actors have not assumed any traditional administrative, regulatory or managerial role belonging to the Municipality. Certain forums where industry engages with civil society are fulfilling the purpose of driving improvement. The centre for cleaner production could have been theoretically one of them. Still, the forums do not take over the role of the regulators. Therefore although other actors have gained influence in the environmental decision making the Municipality continues their dominant role.

A growing amount of literature suggests that we have entered a new era where the environment has gained steady importance. A period of time where there is a paradigm shift towards the solution of environmental problems. This shift has been described as an ecological modernisation. This subsection has examined to what extent the core features of this change are present in Durban. The analysis reveals that all the core elements of ecological modernisation are present in an incipient stage in eThekwini Municipality. Overall the Municipality is striving towards an ecological modernisation but it is still at the early phases of this environmental transformation.

6.3.2 Ecological Modernisation Objectives

Sonnenfeld (Mol & Sonnenfeld, 2000:237) suggests that ecological modernisation has three immediate and two ultimate technological / material objectives; in the short term, i) waste reduction and elimination, ii) resource recovery and reuse, and iii) dematerialisation. In the long term, i) resource conservation and ii) clean production. It is too early too assess the extent in which these ecological modernisation objectives have been adapted in eThekwini Municipality. The city is in its early stages of

ecological transformation. The rising institutionalisation of cleaner production in the city and the evidence from past initiatives suggest that waste reduction and elimination and resource recovery and reuse are the two objectives that are being pursued within industry in Durban so far. The advance has been modest but it is on the increase. On the other hand, dematerialisation, resource conservation and clean production are still distant in the future of the city.

The gradual adoption of pollution prevention mainly through cleaner production in Durban has seen an increase of environmental awareness in industry. This awareness has not reached all the industries but there is an overall understanding that there is need to reduce and eliminate waste as well as reuse and recycle resources. Cleaner production is an important tool in order to move it forward. Waste reduction and elimination and resource recovery and reuse are being pursued through eThekwini regulations and information – based projects. The current focus on the Municipality is on service delivery rather than further environmental issues (Buckley, 2005). Dematerialisation, resource conservation and clean production are concepts that are not well known, not even among some environmental consultants and academics (Buckley, 2006). At the moment there are no strategies or players pushing for these developments to take place. Industry in Durban is busy beginning to clean their operations and jumping into the cleaner production wagon. It will take a long time before there is the maturity among industry and regulators to achieve these objectives.

6.3.3 The Centre for Cleaner Production Case Study - Strong or Weak Ecological Modernisation

The plans for the creation of a centre for cleaner production indicate a step forward in the process of eThekwini Municipality towards ecological modernisation. The centre would act as a facilitator of environmental improvement in the region by communicating that pollution prevention pays, that money can be made by saving the environment while at the same time protecting the environment and improving the relations of industry with civil society.

It has been argued that ecological modernisation is the dominant theory in the environmental scene currently and that when seen through its lenses a number of countries including South Africa are moving towards ecological modernisation. eThekwini Municipality is on the track of ecological modernisation. Section 6.3.1 analysed the core features of ecological modernisation in the Durban context. The section suggests that there is an incipient ecological modernisation within eThekwini Municipality. Taking this assumption as a point of departure it is now important to assess what kind of ecological modernisation is taking place in Durban.

This subsection analyses the plans for a centre for cleaner production and its current development from an ecological modernisation theory perspective based on Christoff (1996). The subsection discusses the relevant features proposed by Christoff in relation to the centre alone, these features are economistic/ecological and Technocratic – Neo corporatist - Closed / Deliberative - Democratic – Open. The

objective of the analysis is to determine what kind of ecological modernisation is taking place in the case of the centre for cleaner production in Durban.

In his analysis of ecological modernisation theory Christoff (1996) argues that it is necessary to clarify the concept. Christoff claims that different authors provide different meanings to the theory resulting in a danger that the term may serve to legitimise the continuing instrumental domination and destruction of the environment. Through his analysis he concludes that ecological modernisation can be divided in two; strong and weak. For Christoff a weak ecological modernisation is almost a false modernisation that leads to environmental destruction while the strong ecological modernisation promotes enduring ecologically sustainable transformations and outcomes across a range of issues and institutions.

Christoff (1996) identifies several elements in his distinction of these two types of ecological modernisation;

Weak Ecological Modernisation	Strong Ecological Modernisation
Economistic	Ecological
Technological (Narrow)	Institutional / Systemic (broad)
Instrumental	Communicative
Technocratic / Neo-corporatist / Closed	Deliberative / Democratic / Open
National	International
Unitary (Hegemonic)	Diversifying

Table 6.1 Types of ecological modernisation (Christoff, 1996)

Christoff's analysis of ecological modernisation is made from an overall perspective where he aims to identify the normative dimensions of the environmental discourses that are shaping the way in which we interact with the environment. In this way his interpretation of ecological modernisation as weak or strong is based in the general perception of the environment. This perception is relevant when used in policy or macro-level analysis. The centre for cleaner production in Durban case study on the other hand is a specific case where many of the traits identified by Christoff such as national / international are not relevant. This raises the question on how much Christoff's division of ecological modernisation can be applied to case studies and other specific analysis. For this reason the discussion focuses only on those characteristics that are relevant to establish what kind of ecological modernisation is being pursued at the centre for cleaner production.

The plans of a centre for cleaner production were formulated by eThekwini Municipality in conjunction with other actors to promote cleaner production in Durban as part of eThekwini's economic and sustainability strategies. Its main objective was to promote co-operation and collaboration between industry and other

stakeholders in the area with the ultimate aim of adopting cleaner production practices to the benefit of the social, economic and natural environment of the area (Common Ground, 2004). This approach shows cleaner production as part of a strategy that is incorporating the triple bottom line of sustainability; people, planet and profit.

Christoff (1996) argues that in a weak ecological modernisation the environment is reduced to a series of concerns about resource inputs, waste and pollutant emissions where cultural needs and non-anthropocentric values are marginalised and excluded as they cannot be reduced to monetary terms. The centre for cleaner production shows a different scenario. One of the major drivers for its planned creation was to improve the living conditions of the inhabitants of the area through improved industry performance. The centre had explicit objectives that include a triple bottom line approach answering to the environmental justice concerns that linger in the region.

The complex situation in the basin where industry and communities are situated next to each other was a major influence for the centre plans to take a wider approach. The centre in effect was not purely planned to improve industry's efficiency. This approach differs substantially from the common cleaner production centre approach which is based solely on industry. The focus of the centre was industry but it also included social and environmental concerns. Its objective was to show industry that pollution prevention pays, that money can be made while at the same time achieving environmental and social gains.

The decision of having an independent party rather than a centre may affect this objective. The party is to promote cleaner production among industry and create general awareness of the concept. While the main objective, cleaner production remains, the triple bottom line may be reduced to focus only on economic goals for industry such as efficiency, competitiveness and financial gains. There is no doubt that improved industry operations would impact also on the other two, but the emphasis would no longer be related to the three factors.

The adoption and implementation of cleaner production is mostly a technocratic process where decisions are taken solely on the basis of technical information. Cleaner production is up to date a technical tool rather than a strategy for pollution prevention. Literature about the topic and its implementation keeps mostly technical focusing on solutions with only a very few studies done encompassing cleaner production to other elements such as employment, communities or an overall strategy for a sustainable development.

In this light, the establishment of a centre for cleaner production is an exercise that is traditionally set among the regulators and industry mainly with a few other secondary actors such as consultants or academics providing input. The plans for the centre in Durban took a different path. The plans were created by eThekwini in conjunction with a mission from a Canadian project, the Sustainable Cities Initiative. These players commissioned a feasibility study of the centre. The study was done by a consultant in order to asses the need for the centre, its feasibility, grasp an understanding of the functions, its structure and ways of moving forward the proposal.

The consultant interviewed a total of 41 people (Barclay, 2004) which included government officials from the three spheres of government, industry representatives, labour unions, consultants, academics, business associations and environmental NGOs. Additional to individual interviews the plans for the centre saw several open meetings for stakeholders to share their points of view. The centre presents an unusual case for cleaner production – a multi-stakeholder, democratic approach. The inclusion of civil society reflects a direction that is in line with the objective of the centre to promote the concept to the benefit of the social, economic and natural environment of the area.

South Durban has a rich tradition of activism that emerged from the communities' anti-apartheid struggle. This activism has been one of the basis for the centre to be created, therefore the plans included civil society although other players, particularly industry were not comfortable with their participation. The inclusion of civil society added legitimacy to the plan, without them the plan would lose credibility and legitimacy. The exclusion of civil society would ultimately lead to the collapse of the centre (Dold, 2005; Bell, 2005; Simon, 2005). The centre plans provided an open forum where stakeholders could provide their input and express their concern in a democratic way. Christoff (1996) argues that a strong ecological modernisation is reflected in processes that are communicative, deliberative, open and democratic. The process that was followed to create the centre plans met these characteristics, pointing towards a strong ecological modernisation.

The change in plans has cancelled the participation of civil society in its quest for ecological transformation in Durban. There is no longer a platform where civil society can engage in a democratic process with industry and government to protect their interests. The independent party advocating cleaner production main activities will be cleaner production information and promotion of the concept among industry. It is likely that there will be limited interaction with civil society. This approach would save a lot of friction to industry and regulators who were always reluctant to have civil society on the table but were forced to by the local conditions in Durban.

This subsection has discussed the centre for cleaner production case study from an ecological modernisation perspective based on Christoff (1996). Christoff argues that there are two types of ecological modernisation being pursued nowadays, strong and weak. The plans for a centre for cleaner production seemed to be pointing towards a strong ecological modernisation. This trend was still nevertheless not totally directed towards 'strong' ecological modernisation. The institutional set up deteriorated this trend; the centre emphasis being placed on economic benefits and the reluctance of the involved actors to work together.

The change of a centre to a champion has altered this trend. The centre has transformed into a pure exercise of information and dissemination of the concept, an approach focused now on industry altogether. The focus is now on financial gains through improved performance and no longer on the triple bottom line. The champion approach has as well cancelled the active participation of civil society. The result is of

this decision is a weaker version of ecological modernisation. One that focuses on information – based instruments to convince industry that pollution prevention pays and has excluded civil society, a key element in Durban, from the quest for ecological modernisation.

6.3.4 An Overall View of the Players in Durban

The thesis has provided an analysis of the cleaner production actors and their efforts towards a cleaner production strategy in the context of the conflictive situation in Durban. The efforts and the strategy followed form a part of an ecological modernisation in the city. Ecological modernisation is used is this thesis in order to understand cleaner production as part of the environmental transformations going on in Durban. Jamison (2005) argues that the current ecological transformation or modernisation in society can be analysed by the discourses, institutions and types of practice among the three main players of this transformation. Table 6.2 shows the actors and their practices in Durban.

	Regulators	**Industry**	**Civil Society**
Discursive	Sustainable Development	Pollution Prevention	Environmental Justice
Institutional	Responsive Regulation	Environmental Management Systems	Public Participation
Practice	Cleaner Production	Cleaner Production	Pressure Industry / Government

Table 6.2 Ecological modernisation in Durban, inspired by Jamison (2005)

The discursive level is the way in which the actors word the environment. In Durban, regulators, industry and civil society have different views towards the environment. At a discursive level, the Municipality talks of sustainable development where it aims to integrate social, economic and environmental actions in a unified discourse. Industrial players are not interested in the wider sustainability discourses and speak rather of pollution prevention as a goal in terms of environment. Civil society speaks of environmental justice, which encompasses social and environmental issues, as a means to correct all the wrongdoings from industry and government and restore the natural environment.

At an institutional level the Municipality speaks of a responsive regulation that makes use of hybrid pollution control techniques, centres for cleaner production or ‘champions’ to move forward the environmental agenda. Industry aims towards

establishing environmental management systems that help them move towards continuous environmental improvements. Civil society makes use of public participation in order to present their views on the environment.

Finally at a practical, floor level, both, regulators and industry in Durban are making use of cleaner production as a means of achieving their environmental visions. Regulators see cleaner production from a wider perspective resulting in economic, social and environmental benefits while industry is focused on financial gains. Civil society makes use of public pressure to industry and regulators in order to force environmental transformation in the city.

6.3.5 Critique of Ecological Modernisation Theory in Durban

The thesis made use of ecological modernisation theory in order to analyse the environmental transformation that the city is experiencing. The theory has been useful to identify the elements of this modernisation and put them together in an overall framework that analyses environmental transformation in Durban. The theory however fails to address social issues in an appropriate manner. Durban is home to an acute conflict among industry, government and civil society. Social and political elements are an integral part of the environmental agenda in the city.

Ecological modernisation provides an analytical framework to analyse the transformations that Durban has experienced in terms of the environment. The thesis analysed to what extent the core features of ecological modernisation are present in Durban and the type of ecological modernisation pursued in the centre for cleaner production case study. The theory fails to incorporate social and political elements in its analysis. Conflict is not a part of the theory. The social and political conditions in Durban have been a major drive towards environmental transformation in the city, yet these conditions are not clearly reflected in the analysis.

The thesis has benefited of using ecological modernisation as the guiding theory. Ecological modernisation has helped identify cleaner production as part of an overall trend in eThekwini to modernise its approach to the environment and has provided a framework to oversee the advancement of the environmental agenda in the city. The theory does not manage to incorporate social issues properly hence it excludes a significant part of the environmental discourse in Durban. It is therefore necessary to complement it with other theories that look into these aspects to get the right picture of environmental transformation in Durban.

6.4 Cleaner Production from a Systems Theory Perspective

This section makes use of systems theory in order to analyse cleaner production from a systems perspective. It argues that by taking a systems approach it is possible to see cleaner production from an overall institutional perspective and identify emerging elements (subsystems) to the concept. The thesis has discussed the importance of civil society in cleaner production in Durban and its current limited

participation. Systems theory is used in this section to highlight the value of civil society for the adoption of cleaner production.

Systems theory helps us to analyse phenomena that entails complex relationships. The theory see the entity or concept to be analysed as an independent system of its own with inputs, outputs, a boundary and a relation with other systems. As described in subsection 2.7.1 a system is made of subsystems which are a set of interrelated systems within the complex structure. In order to understand the greater systems it is necessary to first understand the relationships within its subsystems. The concept of subsystems within the theory allows to identify and to add new elements (or subsystems) to the system being studied. Every system is made of subsystems or lower order systems. When analysing a system, subsystems will emerge or be identified. In turn, subsystems will emerge from subsystems and so on (Carnegie et al, 2000).

Cleaner production is a broad concept that applies the concept of pollution prevention to processes, to products and services. The objective of cleaner production is to increase efficiency and to decrease risks to the natural environment and to the human being. For the nature of its definition the concept is clearly oriented towards the means of production or industry. Cleaner production has therefore become a very technical and industry oriented concept. But there is more to the equation than just industry. By aiming to decrease risks to the natural environment and the human being the concept also includes those who are affected by industrial activity.

Systems theory offers a simple way of looking at cleaner production and identify all its elements or subsystems rather than just focusing on its traditionally accepted subsystems. Cleaner production as part of the environmental transformation taking place nowadays is in constant evolution. Cleaner production has moved from being a matter between regulators and industry to include a variety of emerging actors, from being a technical tool to become a strategy and, from being a solution to industrial pollution to being part of the path to sustainable development.

The concept of cleaner production is a pollution prevention approach created as a response to environmental problems. Originally the concept involved those who were the cause of the problem (industry) and those who had the obligation of solving it (regulators). As the concept had evolved several actors have emerged and played a role in the adoption of the concept. Some of these include financial institutions, educational institutions and NGOs. Although it was a strategy to pollution prevention cleaner production early days were as a tool to improve industry operations. As the concept gained acceptance more of its strategic aspects began to emerge. It went from being a technical tool applied in industry to be a strategy applied also at a policy level. This transformation moved cleaner production from being an isolated element to become part of the wider strategy for sustainable development.

The acknowledgement that cleaner production is a comprehensive strategy to pollution prevention requires new approaches to the concept. In order for cleaner production to be successfully implemented it should be adjusted to the local conditions by local experts. The local conditions in Durban bring a new set of

challenges to cleaner production. The south Durban basin is not only a case of industrial pollution but a case of environmental injustice. The problems in the basin require not only a technical approach but also a social component to them if they are to solve the challenges the area experiences.

Seeing cleaner production in Durban from a systems perspective has the advantage of adding new elements to the system of cleaner production. The inclusion of these emerging subsystems provides a more accurate picture of cleaner production in a determined system. The local conditions in Durban introduce the communities as an emerging subsystem. Industrial pollution is not a problem concerning regulators and industry solely. It is an issue that affects the whole community. This is particularly true for south Durban where communities and industries share the same space. Cleaner production is an industry/production oriented strategy but it must evolve to acknowledge emerging subsystems that affect the outcome of the system.

Cleaner production in Durban seen from a systems perspective is illustrated in figure 6.2.

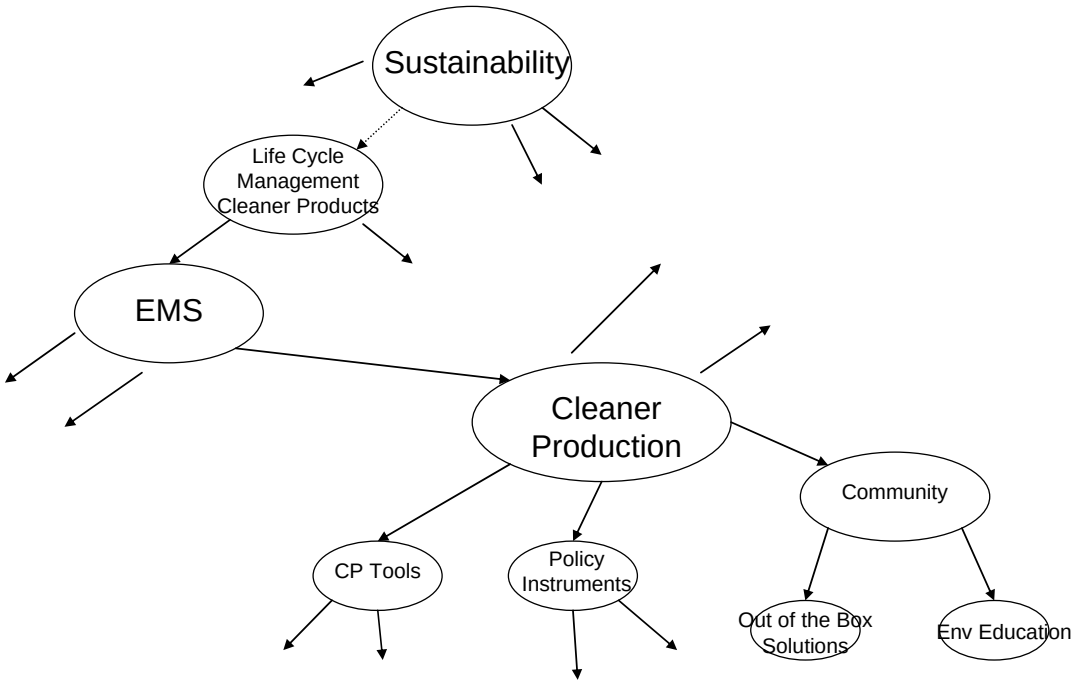

Figure 6.2 Cleaner production in Durban from a systems perspective (inspired by Carnegie et al, 2000 and Remmen, 2001)

Systems theory allows us to see cleaner production from a new perspective and put together elements or subsystems that otherwise could not be connected. In this way we can see elements of a technical dimension such as the cleaner production tools (waste minimisation, life cycle assessment, etc) together with a elements of a social dimension such as communities. Figure 6.2 puts cleaner production in two different contexts. First, cleaner production is a system composed of accepted subsystems such as the cleaner production tools and policy instruments among others. Given the local situation in Durban communities emerge as a clear component of the

concept. Communities at the same time are composed of emerging subsystems that bring something to the table in terms of advancing cleaner production such as out of the box thinking and environmental education among other subsystems.

Second, cleaner production is at the same time a subsystem of larger systems of pollution prevention such as environmental management systems which have many other subsystems of their own. Furthermore if we aim to see a bigger picture environmental management systems are a component of a life cycle management approach which is part of other systems such as sustainable development. The systems approach allows us to put things in perspective and understand the complex relationships that a system can have. In summary systems theory allows to see a concept or object from a fresh perspective that helps incorporate new elements or subsystems.

Durban is a city of an industrial character with most of its industry located in its south basin. The area has a long history of industrial pollution and conflict among industry, government and civil society. Communities have been instrumental to bring environmental transformation to the area. Civil society contributions to the improvement of the environment in the basin gained them the right to be included in the plans for a centre for cleaner production, which no longer exists. Civil society is currently semi-excluded from the undergoing cleaner production process in the city. Systems theory has helped validate the inclusion of civil society to the cleaner production equation. The participation of civil society adds value cleaner production. It is therefore necessary to create the necessary platforms to re-incorporate civil society to the process and move cleaner production in a more equitable way.

7 Conclusions

The thesis has provided an overview of the environmental situation in Durban related to industrial pollution. It has presented the reader insight into the introduction of cleaner production in Durban and the undergoing efforts to adopt this concept within eThekwini Municipality. The final chapter of the thesis, Chapter seven answers the research question presented in Chapter one; **how is the concept of cleaner production being adapted into the local context of Durban?** In order to achieve this, the Chapter provides an answer to the research objectives formulated in Chapter one; i) identify the concept of cleaner production and analyse the Durban cleaner production strategy and, ii) analyse cleaner production in Durban as part of eThekwini Municipality efforts towards ecological modernisation.

The Chapter is divided in five sections. Section 7.1 provides an overall account of the environmental transformations in the city of Durban within a framework of ecological modernisation theory. The section concludes on how far eThekwini has advanced in terms of ecological modernisation based on Mol (1999). Section 7.2 provides an overall view of the adoption of cleaner production in the city. It makes conclusive remarks on each of the domains (actors) and the different levels in which these actors interact based on Jamison (1995). Section 7.3 presents the conclusions of the plans for a centre for cleaner production case study. The section concludes on the strategy that the centre has taken and the type of ecological modernisation present in the case study based on Christoff (1996). Section 7.4 presents recommendations based on the conclusions and finally, section 7.5 presents reflections on the thesis.

7.1 The Environmental Transformation Context in which Cleaner Production is Taking Place in Durban

Durban is a city with intense industrial activity, most of which is located in its south Durban basin. The basin is a complex geographical area where communities co-exist in close proximity with a large number of industries. The area is one of the industrial pollution hotspots in the country and home to a sharp conflict among industry, civil society and government authorities. The conflict in the region is based on the immediacy of communities to industries and the effects of this relation. The forced relocation of predominantly non – white communities to the basin, the rapid industrialisation of the area, the basin geographical conditions and the long history of industry's poor performance with dire effects of the well being of communities have resulted in a long history of tensions, confrontation and conflict.

Durban has been undergoing a transformation of its environmental institutions and players in the recent years; a change process within different domains or actors, the state, industry and civil society. The transformation process has taken place among these actors in different levels, discursive, institutional and practical level. The discursive level refers to the way in which the different 'domains' or actors interpret

and word the environment. The institutional level refers to the structures or mechanisms that are responsible for the implementation of ecological change in Durban and finally, the practical level refers to the ground regulation or measures to take into effect this change.

The adoption of cleaner production in Durban takes place amid an incipient process of ecological modernisation. The advance of environmental interests among the actors in the city remains modest. eThekwini Municipality inherited a weak and fragmented environmental regulatory system from the former apartheid government that has prevented it from initiating more advanced and participative forms of regulation. The Municipality also faces several constraints such as lack of institutional capacity and a fragmented approach to the environment that are hindering a faster modernisation of its environmental institutions.

Environmental interests among the actors in the city are just beginning to be adopted. The Municipality is trying to communicate the message that environmental protection makes business sense. This message has not got across market actors due to the preference of an information – based strategy over public regulatory policy and particularly market based – instruments. The majority of industry remains indifferent or ignorant of the pollution prevention opportunities. Civil society keeps low levels of environmental awareness and does not apply significant pressure from a consumer point of view to adopt more ecologically sound alternatives. The use of waste reduction, best available technologies, resource recovery and reuse and cleaner technologies among others is just beginning to gain some momentum, but further environmental goals such as dematerialisation or phasing out smoke – stack industries remains in the distant future.

Technology is playing an important role in the environmental transformation of the city. The Municipality is incorporating cleaner production, polluters pay, life cycle assessment, waste minimisation amid others into their institutions. The most visible signal is the integration of some of these tools, principally cleaner production into the Municipality bylaws. Industry on its side is initiating the use of waste minimisation and cleaner production in order to improve their operations and clean up their environmental records. The city has also been a recipient of several pollution prevention initiatives that have promoted the role technology plays in advancing Durban's environmental agenda.

Civil society, industry, donors and international bodies have gained visible influence into the environmental transformations in the city. This influence has not resulted yet in any form of decentralised or consensual type of governance. eThekwini retains its dominant role with none of the former mentioned actors assuming any of traditional administrative, regulatory or managerial role belonging to the Municipality. There is a very small change in the relations between government, industry and government regulators. The sharp conflict in the basin, particularly between civil society and industry has prevented the actors in the city from working together, but there is also a growing recognition of the need of engagement to solve the problems the city faces.

The changes in the way in which eThekwini Municipality, industry and civil society are approaching the undergoing environmental processes in the city suggest an emerging trend towards environmental transformation; a trend that is in its initial stages but hints to grow stronger as the players move along the process. The thesis concludes that ecological modernisation is present at an incipient stage in eThekwini municipality.

7.2 The Adoption of Cleaner Production in Durban

Section 7.2 presents an overall view and concluding remarks of the adoption of cleaner production in Durban. The section structure is inspired in Jamison (2005). The section discusses the findings in terms of each of the three domains or actors (eThekwini Municipality, industry and civil society) of environmental transformation and the different levels at which they take place; discursive, institutional and practical.

	Regulators	**Industry**	**Civil Society**
Discursive	Sustainable Development	Pollution Prevention	Environmental Justice
Institutional	Responsive Regulation	Environmental Management Systems	Public Participation
Practice	Cleaner Production	Cleaner Production	Pressure Industry / Government

Table 6.2 Ecological modernisation in Durban, inspired by Jamison (2005)

Durban is familiar with the concept of cleaner production. The concept has been present in the city for many years as a result of eThekwini Municipality environmental regulators and a number of initiatives that promoted the concept of pollution prevention among the Municipality and industry and created awareness among some civil society representatives. Among the most important initiatives related to cleaner production there are the waste minimisation clubs for the metal finishing industry and the club for the Hammarsdale industrial region established in 1998 together with the cleaner production demonstration projects for the metal finishing industry, the textile and cotton growing and the fishing industry initiated in 2000.

7.2.1 The Adoption of Cleaner Production in Durban - Discursive Level

The discursive level refers to the way in which the different 'domains' or actors interpret and word the environment. eThekwini Municipality talks of sustainable development where it aims to integrate social, economic and environmental actions in a unified discourse. Industrial players speak of pollution prevention as their goal in terms of environment. Civil society speaks of environmental justice to correct all the wrongdoings from industry and government and restore the natural environment.

eThekwini Municipality – Discursive Level

The gradual adoption at a national level of cleaner production, the influence from the waste minimisation clubs and the cleaner production demonstration projects coupled with the necessity of economic development and the conflictive situation in its south Durban basin are the major motivators for eThekwini Municipality to actively seek the adoption of cleaner production. eThekwini Municipality officials have the responsibility of creating development, safeguarding the environment and protecting the well being of the city inhabitants. eThekwini attitude to the environment is therefore wide in scope. As a signatory of the Local Agenda 21 the Municipality has the mandate of ultimately aim for sustainable development. Cleaner production fits into the Municipality strategy to move towards sustainable development.

eThekwini therefore understands the concept of cleaner production from a triple bottom line perspective, people, profit and planet. Cleaner production has the potential of delivering benefits in the three aspects; increase efficiency and competitiveness of industry – thus create economic growth, mitigate the industrial pollution in the south Durban basin and provide a better quality of life to the city inhabitants. eThekwini is aware of these benefits and is aiming towards the adoption of cleaner production.

So far eThekwini has identified the necessity for cleaner production and the initial steps have been taken. The Municipality is moving cleaner production forward through individual efforts of its departments and the several pollution prevention initiatives that have taken place and in which eThekwini has been involved. The Municipality has yet to implement their efforts in a more coordinated way; so far eThekwini has failed to bring these efforts into an overall cleaner production strategy (see rest of the section). It can be concluded that cleaner production is being gradually institutionalised but at present there is no overall eThekwini environmental policy to pursue the widespread adoption of cleaner production.

Industry in Durban – Discursive Level

Cleaner production is a concept that is familiar to many sectors of industry in Durban, in particular to those influenced by the past pollution prevention projects and the regulatory actions of eThekwini Municipality. Industry in Durban is more aware of cleaner production than industry in other South African municipalities, yet the adoption of cleaner production has been modest.

Industry in Durban aims for pollution prevention. The use of waste reduction, best available technologies and cleaner technologies is at an incipient stage among industry in Durban. The main motivator of the goal of pollution prevention in industry is the financial aspect; the overall principle of pollution prevention pays. Industry is not engaged in pursuing higher standards other than what they need to comply with. The main drivers for environmental transformation are the financial aspect and for some sectors external pressure from customers or requirements from the mother companies. In this light industry sees cleaner production from a more narrow perspective, the economic side. There are only a few proactive companies aiming at improving their environmental performance with the majority of industry in the passive or reactive stage to environmental transformation.

Civil Society – Discursive Level

Civil society is an important component of cleaner production in Durban. Civil society has been instrumental for the environmental transformations that have taken place in the city. Civil society has a peculiar situation regarding the concept of cleaner production in Durban. One the one hand they are one of the primary stakeholders of the concept and on the other hand they are the actors that have the least relation with it. Civil society discourse is related to environmental justice. The black[16] sector of the population has been historically disconnected from the term environment due to its past white – created identity, a posture totally isolated from human impact.

Civil society then speaks of environmental justice which aims to incorporate environmental issues to correct the wrongdoings of the past and enhance the quality of life of communities. Civil society is still fighting for their right to a clean environment, for environmental justice. The wording of the environment for civil society refers mainly to the people and then to the planet. The economic aspect does not have much presence due to its associations to the powerful, to those who have perpetrated the environmental injustice that the discourse is trying to correct. The difference in the civil society discourse throws some light on their disconnection from cleaner production.

Each of the actors see cleaner production from a different perspective, eThekwini is looking at it from a triple bottom line, industry from the economic side and civil society from a people side coupled with environmental side. It can be concluded that the way in which each of the actors perceives cleaner production has led to their practices to the concept. eThekwini has identified cleaner production as a strategy capable of promoting economic growth and delivering social and environmental benefits but has not yet identified a core strategy for its adoption. Industry sees cleaner production from an economic point of view but the vast majority has not yet embraced the concept. Civil society does not see cleaner production as an individual element but rather aims at environmental justice and sustainability, hence its disconnection from the concept so far.

[16] Non-white (see footnote 1)

7.2.2 The Adoption of Cleaner Production in Durban – Institutional Level

The adoption of cleaner production at an institutional level refers to the structures or mechanisms that are responsible for the implementation of the concept in Durban. Cleaner production has been present in Durban through a number of developments that have spread the message in different levels to the institutions of each of the domains. eThekwini speaks of a responsive regulation that makes use of 'hybrid' pollution control techniques, cleaner production, pollution prevention among others. Industry aims to develop environmental management systems to improve their efficiency and environmental performance. Civil society makes use of public participation as an institution to advance its environmental agenda.

eThekwini Municipality – Institutional Level

The Municipality does not have an overall cleaner production strategy. It works towards cleaner production through its departments. eThekwini Municipality cleaner production related departments have incorporated gradually the concept into their activities. The Municipality has been working in cleaner production linked activities through its Water and Sanitation Department, Health Department and its Environmental Branch. The eThekwini Municipality departments are working individually on information based projects to move the concept forward. Up to now the different efforts to adopt cleaner production in Durban have been fragmented, discontinued and inconsistent. The approach has been department based and project based rather than strategy based

So far, the departments have been working towards cleaner production in an individual, isolated fashion. Pollution prevention initiatives, developments and legislation that have influenced the adoption of cleaner production in Durban have not come in an ordered fashion. They have come from different players at different periods of time and influenced different people in different departments and institutions. The lack of communication among departments has resulted in an eThekwini fragmented approach to cleaner production in Durban

All the cleaner production initiatives that have taken place in eThekwini fall in the category of information – based instruments. They have had minimum elements of public (regulatory) policy and market – based instruments and have focused on information based instruments such as demonstration, dissemination of activities and training to promote cleaner production. The objective has been to convince industry that pollution prevention pays rather than force it. The plan for a centre for cleaner production case study follows this trend. Overall, the information – based strategy has seen the adoption of cleaner production among some sectors of industry and an overall increase in the awareness of the concept, but the results remain modest to what could be achieved with a combination of instruments.

Industry in Durban – Institutional Level

Industry in Durban does not have institutions or organisations that are actively advocating for cleaner production adoption in this sector. There are some industrial associations that have some undergoing pollution prevention activities or plans such as the Chemical Allied Industries Association through its Responsible

Care program, the Metal Finishing Association created after a waste minimisation club and local industrial associations such as the Jacobs Environmental Committee. Additionally there are other organisations that have the potential to promote the concept among its members such as the Durban Chamber of Commerce through its environmental committee.

The cleaner production related activities from the Municipality have resulted in an increased awareness of pollution prevention / cleaner production among industry and a number of industries actively involved in the process. Overall, industry is more aware of the concept but this has not been enough to achieve a widespread adoption of cleaner production. Most industry in the city remains ignorant or indifferent to cleaner production. Industry is not doing enough in their efforts towards pollution prevention. Industry has only responded to eThekwini drive but other than some small projects and individual actions industry has not taken any measures of its own to pursue cleaner production.

Civil Society – Institutional Level

Civil society participates in the adoption of cleaner production through public participation. Civil society does not have any specific institutional arrangement that deals with cleaner production or cleaner production technical capacity. At present there are very few individuals within civil society that can contribute with technical knowledge to cleaner production. Civil society therefore does not engage directly into cleaner production activities. Civil society makes use of public participation in order to move forward the environmental transformation in the city as a whole, not only in terms of cleaner production.

Civil society is disconnected from the cleaner production efforts due to their current lack of capacity and the conflictive situation among them, regulators and industry. Civil society is an important component of environmental transformation in Durban. It is therefore necessary to acknowledge the role of civil society in the adoption of cleaner production and find platforms such as the cancelled centre for cleaner production to incorporate civil society into the environmental transformation process in a more participative way.

At the moment the majority of cleaner production efforts are made by the Municipality. eThekwini is working actively to advocate cleaner production through individual efforts of its departments making its strategy fragmented. The Municipality focus has been on information – based instruments with little use of regulatory instruments and none market – based instruments, this has resulted in a modest industry adoption of cleaner production. Industry does not have organisations or industrial institutions proactively promoting the concept in the sector. At present industry is at a passive or reactive stage to cleaner production. Civil society advocates for overall environmental transformation but .does not participate in cleaner production activities due to its lack of technical capacity. It can be concluded that cleaner production is being institutionalised at different levels among the three domains; eThekwini Municipality is on a steady process of institutionalising the concept although it has not yet identified a core strategy. Industry is just beginning the

process and is still lagging way behind the Municipality level while civil society has been disconnected from the cleaner production adoption process so far.

7.2.3 The Adoption of Cleaner Production in Durban – Practical Level

Cleaner production is both, a strategy and a tool that is usually seen working mostly at a practical level. The adoption of cleaner production at a practical level refers to the ground regulation or measures to take into effect this change. The Municipality and industry make use of cleaner production from different perspectives to move forward their environmental agendas. eThekwini approaches cleaner production from a triple bottom line with concrete regulation and measures. Industry uses the tools of cleaner production with a primary focus on financial objectives. Civil society applies pressure on government and industry to ensure they continue working towards improving the natural environment and the living conditions of communities in the city.

eThekwini Municipality – Practical Level

eThekwini Municipality faces a number of challenges in its adoption of cleaner production. The most pressing are the overall lack of institutional capacity that comprises a lack of qualified, trained personnel, financial constraints, inadequate standards and lack of capacity to enforce the existing regulations. Furthermore eThekwini has taken a fragmented approach towards cleaner production where its relevant cleaner production – related departments work in isolation and miss a more integrated approach in their activities. These constraints have limited their ground level cleaner production activities and have forced eThekwini to take an innovative approach to address its limitations.

eThekwini Municipality is one of the municipalities in South Africa with the biggest number of practical measures to pursue pollution prevention. The Municipality has made use of innovative approaches in order to overcome its constraints. These efforts have gained the Municipality a place as a frontrunner in terms of environmental regulation. One of its most visible examples is the incorporation of cleaner production into the Municipality bylaws. eThekwini is interacting with industry through permits where industry is forced to integrate a component of cleaner production and pollution prevention as part of the permitting system. Additionally, the regulators are trying different measures such as their ‘non – regulatory inspections’ to fulfil the enforcement of their regulation.

Industry in Durban – Practical Level

Industry has improved its environmental performance which reflects in a reduction of pollution levels in the south Durban basin. Pollution prevention plans such as the eThekwini – initiated South Durban Basin Multi Point Plan have helped achieve this reduction. Industry has been working on cleaner production related activities from a common sense point of view rather than as a strategy. Industry works through projects but has not yet institutionalised any approach to pollution prevention.

At a practical level industry is making use of activities such as waste minimisation and cleaner production in order to improve achieve financial gains for the most part and improve its environmental performance on a lesser level. Industry's pollution prevention activities are focused primarily on the promise of financial gains.

The majority of industries in Durban are small, medium and micro enterprises (SMMEs) with a few big industries. Most SMMEs in Durban do not have environmental personnel and have limited understanding of environmental regulation. The majority of SMME's have not grabbed the opportunities that cleaner production offers. SMMEs' cleaner production activities are usually implemented by consultants, who are an important component of cleaner production at a practical level. Big industries usually have some sort of environmental commitment and environmental personnel. Their struggles with pollution prevention are on the financial side rather than on the capacity side as many reductions in their levels of pollution require significant amounts of money. Although industry has improved their operations in Durban there is still ample room for improvement. Industries implementing cleaner production in their operations are still a small minority with the majority of cleaner production activities driven by the Municipality bylaws and other environmental regulation.

Civil Society – Practical Level

Civil society interacts at a practical level in the process of environmental transformation in the city through pressure to industry to improve their operations and to government to enforce the regulations. There is no interaction of civil society in terms of cleaner production at a practical level. This is mainly due to the lack of technical capacity of civil society but also due to the renounce of industry to have civil society as part of the process and the core belief by both, government regulators and industry that civil society does not have anything to contribute to cleaner production.

eThekwini Municipality has made use of concrete regulation in its bylaws in order to implement cleaner production. In addition eThekwini is making use of innovative approaches in order to balance the many constraints it faces. The Municipality excels in its practical approaches to cleaner production. Industry is making use of waste minimisation and cleaner production mainly in order to save money rather than to improve their environmental performance. The implementation of cleaner production by industry is still very limited. Civil society does not have any cleaner production related activity at a practical level due to its lack of technical capacity. Civil society contributes to cleaner production through the pressure they apply on industry and government, pressure that has been an important driver to the environmental transformation in the city.

7.3 The Plans for a Centre for Cleaner Production Case Study

The plans for a centre for cleaner production was an initiative of the eThekwini Municipality. The Municipality saw the centre as an opportunity to achieve economic growth through industry's improved performance and address the industrial pollution in the basin. The centre plans were based on a feasibility study and a business plan. These documents saw the consultation of a wide number of stakeholders, government officials, industry, civil society organisations as well as academics, environmental consultants and others. The centre gained momentum with several meetings among its stakeholders and came into a halt due to the absence of its 'champion', an eThekwini government official in charge of the plans, and the renounce of the primary stakeholders to work together. The lack of one 'champion' pushing the project and the failure of eThekwini to name another official to continue the process indicate an issue of sustainability within the Municipality. The collapse of the centre in itself offers an opportunity for eThekwini to reconsider its future project management. The plans of the centre were 'resurrected' recently by eThekwini officials who decided to transform the 'centre for cleaner production' into an independent party, a 'champion' advocating cleaner production within industry.

The plans for the centre indicate the importance that cleaner production holds for the city. Its aim was to promote co-operation and collaboration between industry and other stakeholders in the area with the ultimate aim of adopting cleaner production practices to the benefit of the social, economic and natural environment of the area. The centre strategy was based mostly on information based instruments with a minimum of regulatory – instruments. Its objective was to show industry that cleaner production made good business sense.

The 'centre' concept has now moved to a 'champion' concept. The 'champion' activities are primarily directed towards information based instruments and a cleaner production economic focus. The change to the independent party can result in an overall decreased institutionalisation of cleaner production, a reduced visibility of cleaner production in the city, a potential loss of innovation and networking, exclusion of civil society and an overall debilitation of the process to promote the concept in the city.

Furthermore, the centre for cleaner production case study provides an example of the type of ecological modernisation that is being adopted in Durban. The case study suggests that the plans for a centre for cleaner production were heading in the direction of a more equitable modernisation, focused on the triple bottom line approach, people, profit and planet, open and with democratic participation from the main cleaner production stakeholders; a strong ecological modernisation. The change of concept from 'centre' to 'champion' resulted in a narrow focus on economic aspects and the cancellation of civil society participation. Additionally the approach is also likely to weaken the institutionalisation of the cleaner production concept. It can be concluded that the 'champion' approach has moved from a 'strong' more equitable ecological modernisation to a weak ecological modernisation.

7.4 Recommendations

Cleaner production faces several constraints for its adoption in Durban. Some of them are not in the hands of the local players to be solved, some of them are. Based on the thesis conclusions the following recommendations are provided.

1. Coordination among eThekwini Municipality cleaner production –related departments. The lack of an integrated approach to environmental regulation is recognised problem at a national level. At a local level, each of the eThekwini departments works on isolation on its cleaner production approaches resulting in an overall fragmented strategy. Officials from the Water and Sanitation Department, the Health Department and the Environmental Branch have some informal communication regarding cleaner production, but there are no formal channels to pursue a unified cleaner production strategy and identify opportunities and areas of synergy.
2. Adoption of regulatory instruments and market – based instruments. Past pollution prevention projects and empirical evidence suggest that financial aspects are the major reason that moves companies to improve their environmental performance. The cleaner production strategy in Durban has been based primarily on information – based instruments. It has been focused on showing companies the benefits of the concept, on convincing them, rather than forcing them, to adopt pollution prevention. eThekwini is gradually tightening its approach to environmental regulation, but at the moment there are not enough cleaner production regulatory instruments and close to none market – based instruments to promote cleaner production. It is therefore necessary to integrate economic instruments into eThekwini's strategy to promote environmental transformation, this need has already been picked up at a national level by the South African National Treasure. eThekwini should combine its information – based strategies such as the cleaner production 'champion' with a mix of instruments and the experiences of past projects such as the case of the metal finishing waste minimisation club. The mix of instruments is necessary if eThekwini wants to move from cleaner production awareness to cleaner production adoption.
3. Inclusion of civil society. There is no doubt that the main focus of cleaner production is and will be industry. Cleaner production is an issue that concerns regulators, industry and civil society as industrial pollution affects the livelihood of communities. The south Durban basin presents a strong case where industrial pollution has affected the well being of communities for years. It is a case of industrial pollution but also a case of environmental injustice. In this context cleaner production as a strategy to solve some of these problems can provide a platform for industry, government regulators and civil society to work towards environmental improvement. It is therefore necessary to explore the opportunities and challenges that the inclusion of civil society brings to the concept of cleaner production.

7.5 Reflections on the Thesis

The thesis makes use of explorative research as its main methodology. The choice of explorative research was made at the initial stages of the thesis. At that time the thesis objective was not related to the adoption of cleaner production in Durban, but focused on the centre for cleaner production. It aimed to explore cleaner production from both, a technical and social side. Its objective was to help define the functions of the centre and argue for a stronger participation of civil society in the centre. The social aspect of cleaner production has been mainly ignored; it is a field that is relatively 'unexplored' hence the decision of using an explorative methodology.

The change of the thesis topic from a centre for cleaner production to the adoption of the concept and its strategy in Durban came six weeks before the delivery of the thesis. It was an unforeseen event. By the time most interviews had already been done and all the research was focused on a more social aspect to cleaner production in Durban. The choice of methodology remains valid as not much research has been done regarding the adoption of cleaner production in the city and cleaner production strategy however, the change of plans has debilitated the choice of research methodology.

The choice of the main theory, ecological modernisation remains valid. The theory relates strongly to cleaner production and has been useful to understand the environmental transformation undergoing in Durban. Ecological modernisation has been useful to provide an analytical framework to understand the environmental transformation in the city. However, the theory fails to incorporate social and political aspects in this environmental transformation. Social and political elements are an integral part of the environmental agenda in the city and have been major drivers towards environmental transformation in Durban. Its absence excludes a very relevant part of the environmental discourse in the city. It is therefore necessary to acknowledge the limitations of ecological modernisation and make use of other relevant theories to complement the theory.

The choice of the second theory, systems theory, was due to the social elements pursued originally. The objective of the theory was to argue on a theoretical level on the importance of civil society participation on the centre for cleaner production. The change from 'centre' to 'champion' weakened the usefulness of the theory. The paragraph above emphasises the necessity of complementary theories to ecological modernisation theory. It points out to the necessity of exploring other theories that can be more useful to the analysis of environmental transformation. Given the conflictive situation in the basin discourse analysis could be one of these theories.

The project makes use of Jamison (2005) in order to provide structured conclusions on the adoption of cleaner production. The thesis centres primarily on the eThekwini Municipality discursive, institutional and practical levels of the adoption of the cleaner production concept. There is not the same level of analysis in the other two

domains; as for industry this was due to the fact that they were not the point of departure of the project and in the case of civil society due to its current disconnection to the concept. This points out to the necessity of future research to provide a more comprehensive picture of the environmental transformation in Durban related to cleaner production.

The report that precedes this thesis[17] and the thesis itself were influenced on a personal interest in the social elements of cleaner production. As explained in the preface, the original intention of the data collection field trips to Durban was focused on a different concept. This interest in social elements of cleaner production influenced the interviews. The first set of interviews focused on understanding the problems in the region, the feasibility of establishing a network focused on social, economic and environmental objectives (Green Network) and later on a centre for cleaner production. The second set of interviews were focused on gaining insight on the functions of the centre and finding out how the centre could become a platform for stakeholders to participate. The interviews provided considerable insight into the adoption of cleaner production into the city and the strategy for its adoption but they were not primarily focused on those topics.

The thesis could have benefited of more focused interviews, a probable different choice of complementary theory and the inclusion of more government officials, industry representatives and cleaner production consultants in order to understand the adoption of cleaner production in Durban and the strategy of the city. The results of the thesis however present a useful insight into social and technical aspects of cleaner production and the context in which it takes place that could not have been achieved by research design purely focused on the technical aspects of cleaner production. The reflections on the thesis do not invalidate any of the conclusions reached. They point out to areas of improvement that can be addressed in future studies of the same type.

[17] Approaches to Public – Private Partnerships – A Case Study of a Centre for Cleaner Production in Durban, South Africa' (Marquez, 2006)

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Appendix A. Interviewees Contact Details. April – May 2006 Data Collection

Name	Position	Type of Interview	E-mail	Place & Date
Michelle Simon	Environmental consultant and ex-anti - apartheid activist	Personal	dmsimon@mweb.co.za	Glenwood, Durban, April 22nd, 2006
Muna Lakhani	Head of Zero Waste Institute of South Africa, environmental activist and member of Earth Life Africa	Personal	muna@iafrica.com	Glenwood, Durban, April 23rd, 2006
Karen Read	Project officerof the environmental NGO South Durban Community Environmental Alliance	Personal	sdcea2@mail.ngo.za	Wentworth, South Durban, April 28th, 2006
Kevin Cilliers	Project Manager at the National Cleaner Production Centre of South Africa	Telepho-nic	kcillier@csir.co.za	May 2nd, 2006
Judy Bell	Environmental consultant	Personal	judybell@mweb.co.za	University of KwaZulu-Natal, May 2nd, 2006
Siva Chetty	Former eThekwini Municipality Health Department's Program Manager for the "South Durban Basin Multi-Point Plant" and current deputy head for pollution control support at eThekwini Municipality	Personal	SivaCh@dmws.durban.gov.za	eThekwini Municipality Health Department installations, Durban May 5th, 2006
Chris Fennemore	Officer at the eThekwini Municipality Water and Sanitation Pollution Control Group	Personal	christfe@dmws.durban.gov.za	eThekwini Water Services, Durban, May 5th, 2006
Joey Singh	Operations manager for Heartland Leasing at the Umbogintwini Industrial Complex	Telepho-nic	joey.s@twini.co.za	May 8th, 2006
Chris Buckley	Academic, head of the Pollution Research Group at the University of KwaZulu Natal	Personal	BUCKLEY@ukzn.ac.za	University of KwaZulu-Natal, May 11th, 2006
Bas Kothuis	Head of the BECO Institute for Sustainable Businesses and a recognised cleaner production expert in South Africa	Personal	bkothuis@beco.co.za	BECO Institute for Sustainable Businesses, Cape Town, May 15th, 2006

Appendix B. Interviewees Contact Details. September – December 2005 Data Collection

Name	Position	Type of Interview	E-mail	Place & Date
Michelle Simon	Environmental consultant and ex-anti - apartheid activist	Personal	dmsimon@mweb.co.za	Glenwood, Durban, August 29th, 2005
Muna Lakhani	Head of Zero Waste Institute of South Africa, environmental activist and member of Earth Life Africa	Personal	muna@iafrica.com	Glenwood, Durban, August 29th, 2005
Vanessa Black	Environmental activist and member of Earth Life Africa,	Personal	black@ispace.co.za	Glenwood, Durban, August 29th, 2005
Chris Buckley	Academic, head of the Pollution Research Group at the University of KwaZulu Natal	Personal	BUCKLEY@ukzn.ac.za	UKZN, Howard College Campus, Durban, September 6th, 2005
Desmond D'sa	Head of the environmental NGO South Durban Community Environmental Alliance	Personal	sdcea3@mail.ngo.za	Wentworth, South Durban, August 31st, 2005
Alan Munn	Engen Oil Refinery sustainable business manager	Personal	alan.munn@engenoil.com	Engen Refinery installations, south Durban basin, September 8th, 2005
Ray Damon	Engen Oil Refinery public affairs (relationships) manager	Personal	ray.damon@engenoil.com	Engen Refinery installations, south Durban basin, September 8th, 2005
Siva Chetty	Former eThekwini Municipality Health Department's Program Manager for the "South Durban Basin Multi-Point Plant" and current deputy head for pollution control support at eThekwini Municipality	Personal	SivaCh@dmws.durban.gov.za	eThekwini Municipality Health Department installations, Durban September 9th, 2005

Sue Beningfield	Chairman of the Institute of Waste Management, KwaZulu Natal branch, and business developer manager for EnviroServ	Personal	SUEB@enviroserv.co.za	EnviroServ installations, south Durban basin, Durban September 12th, 2005
Mark de Souza	Branch manager of FFS, an oil recovery related company	Personal		FFS installations, south Durban, September 13th, 2005
Arnesh Telukdarie	Head of the Centre for Cleaner Production, Department of Chemical Engineering at the Durban Institute of Technology	Personal	teluka@dit.ac.za	Durban Institute of Technology installations, Durban, September 13th, 2005
Councillor B.D. Prinsloo	Councillor for the Democratic Alliance Party in the south Durban basin area	Personal	dweba@saol.com	Democratic Alliance Party installations – City Hall, Durban, September 14th, 2005
Di Dold	KwaZulu Natal Wildlife and Environmental Society of South Africa's environmental coordinator and former national coordinator	Personal	conservation@wessakzn.org.za	WESSA Installations, Durban, September 15th, 2005
Harald Witt	Academic, researcher at the Development Studies Faculty of the University of KwaZulu Natal, environmental activist as well member of several environmental NGOs	Personal	witth@ukzn.ac.za	Development Studies Faculty, UKZN, Howard College Campus, Durban, September 29th, 2005
Judy Bell	Environmental consultant	Personal	judybell@mweb.co.za	Field Hills, KZN, October 4th, 2005
Sandra Redelinghuys,	Head of the eThekwini Municipality Water and Sanitation Pollution Control Group	Personal	SandraRe@dmws.durban.gov.za	eThekwini Water Services, Durban, October 5th, 2005
Catherine Maloa	Sapref Oil refinery Environmental Manager	Personal	Maloac@sapref.com	SAPREF Refinery, south Durban basin, Durban, October 7th, 2005

Nelson Mbatha	Sapref oil refinery environmental technician	Personal	mbathan@sapref.com	SAPREF Refinery, south Durban basin, Durban, October 7th, 2005
Susan Barclay	Environmental consultant and formerly in charge of the Durban Cleaner Production Centre feasibility study	Personal	suebar@iafrica.com	Forest Hills, KZN, October 10th, 2005
Alan Murphy	Leader of EcoPeace, an environmental political party	Personal	alanmurphy@absamail.co.za	UKZN installations October 10Tth, 2005
Dr. B. Seetharam	Medical practitioner with over 30 years of experience with patients in the south Durban basin and environmental activist	Personal	seetharam@kznmcc.co.za	Meremed Medical Centre, Merewent south Durban, October 17th, 2005
Tony Carnie	Environmental journalist with many years of experience in the field	Personal	carnie@nn.independent.co.za	The Mercury Newspaper building, Durban, October 25th, 2005
Stephanie Dupreez	Secretary of the South African Metal Finishing Association involved in DANIDA cleaner production project for the metal finishing industry	Personal	sdupreez@samfa.org.za	Durban Institute of Technology installations, Durban, October 25th, 2005
John Danks	Saayman – Danks electro platting company and an active player in terms of the cleaner production initiative for the metal finishing industry	Personal		Sea View, Durban, October 26th, 2005
Anthony Botha	Environmental coordinator at the Durban Chamber of Commerce	Personal	bothaa@durbanchamber.co.za	Durban Chamber of Commerce building, Durban, October 26th, 2005
Timothy Fashuen	Head of the provincial government Pollution Control Department	Personal	fasheunt@dae.kzntl.gov.za	Cedara Agricultural College, Pietermaritzburg, KZN October 27th, 2005
Ian Naidoo	Environmental personnel at Natal Portland Cement as well as at the Durban Chamber of Commerce	Personal	Ian.Naidoo@npc-eagle.co.za	Natal Portland Cement installations, October 28th, 2005

Pat Foure	Director of the Clothing and Textile Environmental Linkage Centre	Personal	pfoure@mweb.co.za	UKZN, Durban, October 31st, 2005
Quentin Hurt	Environmental consultant	Personal	quentin@ecoserv.com	Pinetown, KZN, November 1st, 2005
Bobby Peek	Environmental activist, current director of the environmental NGO Groundwork	Telepho-nic	bobby@groundwork.org.za	November 1st, 2005
Gladys Naylor	Sustainable development manager at Mondi Durban, involved in environmental issues at a group basis	Personal	Gladys.Naylor@mondibp.com	Mondi installations, south Durban basin, November 1st, 2005
Liz Anderson	Environmental consultant, member of the Responsible Container Management Association of South Africa and former National Cleaner Production Centre KwaZulu Natal coordinator	Personal	liz@rcmasa.org.za	Gateway, KZN installations November 2nd, 2005
Brian Purchase	Academic, former researcher at the Sugar Milling Research Institute	Personal		UKZN, Durban November 3rd, 2005
Dr. Rajeen Naidoo	Deputy Director of the Centre for Occupational & Environmental Health at the Nelson R. Mandela School of Medicine, in charge of the Multi Point Plan health studies in the south Durban basin	Personal	NAIDOON@ukzn.ac.za	Nelson Mandela School of Medicine, Durban, November 3rd, 2005
Rory Linski	Chairman of the Sugar Industry Environmental Committee - Public Affairs Division	Personal		Mlhanga, KZN, November 10th, 2005

Appendix C. Interview Transcripts, April – May 2006 Data Collection

Interview with Michel Simon – Glenwood, Durban, April 22nd, 2006.

- Michelle Simon is an environmental consultant and ex-anti - apartheid activist.

1. Can you give me some background about the industrial pollution in the south Durban basin?

Basically south Durban comes from an apartheid decision which was taken from the local council in 1958. They decided that the basin was to be used as an industrial state and prior to moving industry in, the first industry was Engen in 1953, they had forcibly relocated people from Cato Manor, and there were also people who had been settled informally there. They also re-canalised the natural river for industry also, so the land was given to industry, very toxic industry. They needed cheap land; they needed land where they could get cheap labour. So they moved black people there beside industry. You have industry then exploiting the natural resources because that is a coastal area, the entire strip. They destroyed a lot of indigenous flora and damaged the natural resources. The area is geologically not sound for this kind of development. While they were maximising the use of natural resources, polluting the air they were making multimillion Rand profit. All the costs were externalised to these communities. First it was Engen then SAPREF in the 1960s and all the industries that established themselves in support of the refineries as well as the linkage with the harbour.

The history of the basin has been a long history of political conflict because industry has always been the beneficiary of the apartheid. The way in which industry conducted has always been racist. The poorest of the poor are black communities in the basin. The people in the Bluff area voluntarily moved as a consequence of the Group Areas Act, because they were black communities. Over the years the Merebank community increased their resistance. It was not done under a technical environmental agenda, because during those days the environmental agenda hadn't taken form. They realised that all the issues they had were dangerous, and industry does not care and the reason is that this is a racist country and so it continued. The resistance continued but in those days if you protested you were arrested and thrown in jail because you were classified as a terrorist. Any form of protest or dissent or opposition was classified as terrorism.

Merebank lead a very intertwined agenda of environment, politics and social issues, resisting industry and attacking government as well. Industry was well aware that they were protected. Industry has not changed. If you look at the management in industry they are all white. They were white and they are still white. All the factory level are mostly black. The majority of people exposed to industrial pollution are still black. Environmental racism is still perpetuated and it will continue until industry responsibly tackles their pollution.

The concentration of industry in such a small space (south Durban basin) is not sustainable. The carrying capacity has been exceeded a long time ago. The only technology that should be allowed in the basin is cleaner technology. Any future expansion must be based on the principle of cleaner technology and in the expansion of dirty technology.

One of the issues communities have concentrated on in the basin is air pollution whereas the water issues, the soil contamination, the land contamination they have not focused. Air pollution is more visible and is more felt. Kids playing on contaminated soil and getting rash – people are not making the relation.

SDCEA's focus has been largely on air pollution, but they have recently worked on the chemical

chrome contamination where they dumped a lot of chrome, which is highly toxic, is chrome six, into the soil so it has already infiltrated underground level. This happen in 2004, a company now called Lanxess. SDCEA has dedicated a lot of time to the air pollution, but other areas have not been addressed. It is too much to expect SDCEA addressing all the issues, but these are the gaps, they don't have the resources.

Industry has been aware of the effects of their operations. This is people who have been trained in the field of science with detail knowledge of the effects of these chemicals. South Africa is 20 years behind in enforcement and technology. These multinational don't have excuse, they come from developed countries with advanced environmental agendas. Because it is more profitable for them to use cheap technologies they have been blatantly violating people's human rights.

SDCEA and Groundwork increasing their technical expertise through government aid and linkages enabled them to argue in a scientific basis. Industry abused the fact that people did not have the technical knowledge and told them that all these things are benign they are not harmful, they were manipulating people. It took SDCEA accessing expertise and support that in fact those chemical were not benign and they were toxic and they had a range of health effects.

2. Are environmental NGOs and civil society cooperating more with industry and government to prevent pollution?

I think it is an analogy of criminal and a victim. If someone has robbed you and comes back and apologises for instance and says he will not do it and puts it in writing that he will not do it and they commit to all these things and you humbly accept and then you get robbed again and again and again. The victims of environmental crimes are the communities. It is very difficult for communities to engage in cooperation and relinquish their motif resistance when they are being abused. At a parallel level there are the cooperation agreements, the multi-stakeholder funds which need advanced environmental governance, but at the same time industry is still polluting and they are not being prosecuted and there are not strong disincentives of punitive action. If the criminal is not punished how is he going to rehabilitate himself without knowing the repercussions of his crime? There is no penalty attached to these crimes and these are environmental crimes.

Communities should never give up their power to resist because is the only power they have to ensure that their rights are protected. If they sign to agreements of cooperation they need not to compromise their right to protest or resist abuses.

At the beginning SDCEA was trying very hard to work with industry. Although they had agreements in place and the reduction of SO2 there were a lot of other transgressions that were happening, so industry was not handing it holistically, they were focusing on one thing – we are doing this, be quiet – while people were affected by gas, leaks, emissions, flaring, incidents. What do you say to struggling communities, silence your voices, silence your right to protest?

3. So you think that industry has not changed?

Industry has been forced to by the changes in the country to come to the table with agreements but if you look at issues in the basin, does it make sense to have multimillion Rand producing industry while you have an unemployment rate of fifty percent in the area? These are questions we ask. If they are truly committed the socio-economic conditions would also change because they would show that as a neighbour, as a functional component of that area you are responsibly changing the area.

4. Can you blame the companies for operating this way?

Yes. Because in the west they are dealing with different kind of people, usually white dominated communities. They are forced to comply with public pressure. Obviously our country has a different situation.

5. What functions would you like to see a centre for cleaner production in Durban perform?

They need to be autonomous. It should look at cleaner technologies that can be implemented in the basin, that are cost effective, that companies can afford. It must not have ties that compromise investigations. It should not be done to satisfy industry. The focus should be to create sustainable development in the area, creating sustainable local development, cleaner technologies, cost effective methods that benefit the environment.

You cannot say that communities and civil society cannot be equal partners, is their lives, they've got to live with the problem, so they must be equal partners.

6. How can civil society participate in the centre for civil society?

They will bring to the table all the impacts of industry, impacts that industry does not acknowledge with the aim of linking those impacts to their cause. The impact is here, the cause is here, so let's clean it up to reduce its effect. What communities bring to the table is lived experiences, the truth, the impacts of industry. You cannot have industry without the community, they give you various information and you don't listen to the true impacts if you don't listen to them. They put the arguments on the table and the alternative argument.

7. Do you think that there are enough qualified people to be equal partners in the centre for cleaner production?

I believe that self education led SDCEA acquiring a particular kind of knowledge and luckily SDCEA has academic activists and trained people that assist the organisation. I have a lot of respect for self education. People are struggling to access knowledge and information and against all odds are able to argue technically, I have a lot of respect for that kind of knowledge.

8. Some NGOs are disregarded because they are too radical, how can we get radical factions work together?

If you are saying that SDCEA and other NGOs need to work together with industry – industry needs to take the first step towards trust. SDCEA did engage with trust and cooperation, but it was reached with consistent incidence. It is very difficult to interact when trust is broken. Now what is needed is something to heal the process and industry has been arrogant blaming SDCEA. They live in cosy suburbs where they have everything; people in the basin sometimes don't even have access to water in some cases. It is going to take time to bring the community together. SDCEA frustrations are the communities' frustrations. Civil society is fragmented and industry takes advantage of it.

9. What kind of environmental awareness do you have in the south Durban basin, other than the people who are involved with the NGOs?

None.

10. Can I say that civil society should be an equal partner but other than certain individual there is still not enough capacity to do so?

Communities would never be at the same level of technical expertise, but communities are not there to be technical experts, they are there to protect themselves against industry. They are there to fight for human rights and environmental issues. They should not change, because once they change they become technocratic, they lose their grassroots. People should remain people. The participation of civil society will make the centre more efficient and more equitable. The ultimate goal is cleaner technology. Communities always give alternatives; why are you using petrol instead of ethanol, why are you using these additives when you can use this, why do you need incineration when you can look at steam auto-claving.

This country comes from a racial past where without civil society we would not be free. People would not be free. The role and respect that should be given to civil society comes from a long history of struggle. To diminish that role or to disrespect it in any way by reducing the contribution of civil society is against the very civil society liberation. Whoever comes with a cleaner technology centre must keep in mind that that civil society has freed this country, civil society has changed the political terrain of this country and surely civil society has a role in changing this country through environmental injustices, economical injustices or other political and social injustices.

Interview with Muna Lakhani – Glenwood, Durban, April 23rd, 2006

- Muna Lakhani is the head of Zero Waste Institute of South Africa, an environmental activist and member of Earth Life Africa.

The first thing you must do is challenge the title because the problem with cleaner production as opposed with clean production is that we are asking the wrong question in the discussion of cleaner production because the physical manifestation of cleaner production is this, it says for example being a little bet extreme; if this year 50 people die of pollution, if we do cleaner production only 45 will die. Where the question should be how we stop killing people. The fundamental underpinning of cleaner production is flawed. The reality is that we need to approach it slightly differently because if we don't question certain fundamentals cleaner production will fail. I predicted this when we set up the Hammarsdale waste minimisation club. Where by the way Chris Buckley never mentioned that I did all the training and training materials – they don't like to mention that civil society people did the hard work – although I did it on my professional capacity.

We predicted at the time that unless you have clean production they will not have the results they want. The prediction that I made is that the volumes of the heavy metals for example will drop, but will rise again and will not continue dropping. Of course there was people saying, what you civil society people know, you don't have doctorates in this, statistics show that it metals are dropping, bla, bla, bla. Of course that is exactly what has happened, they drop initially, but as volumes grow if you reduce your toxicity by 50 percent the minute you double production you are back again to where you started. So you might be generating fewer per unit, but if production increases then you go back to former levels. The other thing that we did not take into account is that civil society comes across sustainable alternatives much more that any person in industry has ever met. Or any government person has ever met. I don't think that there is a person in government or industry that knows one third of the sustainable alternatives that people in civil society do. They are busy running their businesses, I am not saying that it is because they are bad people; I am just saying it is not their business. They don't have the time, the energy or the inclination sometimes to talk about these alternatives. Nobody is questioning three fundamentals of cleaner production. One, we are not questioning the need for the product, do we need actually 742 different kinds of dishwashers. The need for the product, no one is questioning that. Second, no one is questioning the original design of the product. How can we make a product while making less waste. We must look into the processes, see where mercury for example is entering and remove it. So no one is questioning the product design, nor the product process. The paper industry for example, 70 percent of the biomass of the tree is wasted. Palm oil for example is another example, palm oil is the only product that comes from a palm tree, but probably there are 30 other products that you can make from a palm tree. There are many examples. Until you challenge the process and the design you will never make major changes. You get some initial big reductions but you are not going to get a long time reduction. The problem with the cleaner production approach is that you are not making any toxicity reductions. Toxicity issues are still the same. The only way you can reduce toxicity is revisit the design. There is no other way, What is toxic is toxic. You cannot be half pregnant. I think is as simple as that.

At a more philosophical level we are not challenging the system at which production exists. We are not looking at that at all. Do we support the right of companies to make profit at any cost. Just because it is

a business it has the right to exist? Even if it harms society more that it benefits it? Are we going to say we are going to do an assessment of what people need. We will need at the volume as well as the toxicity. If you only create only one kilogram of waste a year but if it is a radioactive waste it is a hell of an issue. We are not talking about the legal scenario where we are giving companies the legal rights of individuals. They get all the benefits of an individual but they seem to share none of the responsibilities. They are also not questioning the applicability of the current economic system to the larger mass of people. The fact is that with the last 30 years worldwide we have new economic systems and at the same time the gap between rich and poor people has doubled.

Cleaner production is not looking at the externalities, at the impacts outside. It should look at overall impacts even at the non – scientific basis. Social impacts should be taken into account. Probably the reason they don't want civil society is that they are scared that they are going to use the data in campaigns against them. So, we have a moral situation where they know it is wrong. If they did not think it is wrong why would they want to hide it? So they know they are wrong. Another reason they don't want us there is that they don't want to be exposed as doing nothing because they would have replications, financial risks for them and their shareholders, etc. So, what they are saying is we know we are wrong, we are not prepared to correct it and the little that we do is to keep government happy. They themselves acknowledge that they are not prepared to do the right thing by excluding civil society. The other one is that I know people in civil society are far more skill than people in government or business, or even academia which has been involved in cleaner production is very limited in their thinking. They are taught to be limited in their thinking. Academia is not taught to look at life. They are not taught to look at social issues. You can write a thesis only if you refer to someone else. If you have an original thought you cannot put it in your thesis so they are sticking to knowledge of the past. We are not moving forward in knowledge. While we are producing building blocs we are still struck with the same structure. We are not allowed to build new blocs. It is a limited process. Life changes very quickly.

Unless we are looking at reductions of 30, 40, 50 percent in resources and toxicity then we are wasting our time. We would achieve a lot more by simply regulating. Set a standard and make industry follow it. Simple. We need to unpack all of those questions so that the centre for cleaner production delivers the benefits that in theory should be doing. The simple rule guiding production consumption is that less bad is still bad. Less bad does not equal good. I made a new power point presentation, come, I'll show you; imagine a guy with a gun, he shoots a person we send an ambulance for the wounded, he shoots another person, ambulance, one more, ambulance, other person, ambulance. What should be doing? Take the gun from him. That is cleaner production and clean production. That is what we are doing building more ambulances. It is a very expensive way financially, environmentally and socially to reduce volume and toxicity.

I accept that there are people that don't know what to do. But I think that all industry know that they are polluting. They can't tell us they did not know. They cannot tell us that if there is smog coming out of your stack on a daily basis and you think this is not pollution; either you are a fool or an idiot. Most of the cases that there is resistance is that they believe that the profits will suffer if they do clean production, but that is only true for a certain percentage of industries, when so much of the costs are externalised that it has a dramatic impact on the profit. For the vast majority, I suspect, 80, 85 percent, if they implemented clean production they would drop the input cost so much, the risk so much and the efficiency so much that it would improve the bottom line. I have been involved in projects where within a year, year and a half companies are reporting 1.8, 1.6 million additional profits. That is a large amount.

1. Can cleaner production be part of an evolutionary process towards clean production?

It's an excuse. There is no scientific basis or practical basis for that. The reason they use it as an excuse is that they want 10 years to change it and not two. If they change the basic design they can get 50, 60 percent reductions in waste volume and toxicity within a year or two.

Pollution should be murder, a capital offence. The main reason they don't want civil society is because they have not quite seen that they need to pay. If we need 15 people in the centre for

cleaner production then we must look at the turnover of the companies and say each of you must pay one percent of your turnover towards the centre until they can prove that they got zero emissions. Suddenly the centre is well founded. They want the government to pay for something they are guilty. Why, don't I say to government I am using all this electricity and water but why don't you pay for it. Why don't we apply the same rules to businesses, why are they being treated so special for doing a bad thing.

2. Do you believe that there is enough civil society capacity to participate in the centre for cleaner production?

No, I don't believe there is enough capacity anywhere. I am also against the idea that government people who are paid as well as industry can serve on a centre for cleaner production, but civil society has to do it in a voluntarily basis. We have very few experts in cleaner production in our country relatively speaking and even those who know something only know it in very limited fields, sewage, and waste. We need to skill everyone and have a plain field.

Civil society can go through its own internal process of capacity building and nomination and civil society must nominate people who should get paid for being there. Just like industry and government. Otherwise we are in disadvantage. Second, it is unmoral and unethical to expect people who are the victims to fund the polluter. It is wrong. I am the one who is getting sick but I am the one that is giving my time and money to help them fix their problems. Don't people see that this is wrong?

3. Who are other people you see have skills to provide input to a cleaner production centre?

Very limited, technically, most civil society is technically not equipped to resolve issues. I accept that but still I insist that they should be involved, because they bring something else to the equation. This is not only about technical issues.

4. What does civil society bring to the table?

First, they bring the role of oversight. Just to keep an eye on people, what is going on, is it transparent, is it genuine, is it honest. They also bring their personal networks, so they may have colleagues who work around the world in these issues. Our people are doing this kind of thing, how are you guys approaching the same issue. So there is a basis for comparison. Industry can say, we are doing this are you happy with that? Civil society can send the question to the network and say, industry is claiming that they are doing this to solve this problem. What do you guys know about it?, E-mails get responded very quickly these days. That is total bullshit they should have stopped doing this 15 years ago. It helps keep the process honest. It is the honesty, transparency and accountability that is lacking. And there are also some of us that are technically very good. There are no reasons we cannot identify other good people in civil society. We have scientists who support the NGOs not business, so why can't they represent us in that forum. We can go through a denomination process and have them represent us, perfectly feasible.

There are a couple companies that are doing good things; there is a packaging company in Pinetown, while they still produce toxic packaging their waste is now turned to profit. There is the KwaZulu-Natal Waste Minimisation Reuse and Recycling Forum. They know about many good stories of companies doing stuff.

5. How can we begin cooperation among the stakeholders of the centre?

I keep reminding other activists about this. We must not forget that we are people first and we must always acknowledge this first. One of the nicest things that government and industry have said about me which is not relevant at a personal level, is just an example, is that I never play the man I only play the ball. When I debate and discuss and get angry and whatever I am only talking about the issue. I don't as a rule tell to any individual, 'you don't know what the hell you are talking about' I don't insult the person. I question the thinking, the outcome, the results, the process, the product, but after we finish we can talk even if we have very different points of view. Partially why it happens is

that we don't take the trouble in these processes to first manage for the people and then manage for the committee, board or whatever. All the terminology that you use in the corporate world to put people together does not fly, firstly because many of them have failed and continue to fail; they only work in some environments. Also the way it happens is usually associated with those environments as well. Industry will use words such as team building, I would be opposed to that term, because the word team means that you are united to fight some enemy. I suggest that when you need to solve problems and get people together you let each section have a process. Get people involved in the issue; invite other people involved in the issue in their own sector. They are saying 3 sectors. I don't think there should be three. I think there should be consumers as well. I think there should be more than just civil society as one third of the equation, and you need a proportional representation. We do a process where some accountability process is built. Everyone knows what everyone position is. That saves half the hostility. Where organisations are falling down in the justice struggle is exactly implementing alternatives.

Interview with Karen Read – SDCEA installations, south Durban basin, April 28th, 2006

- Karen Read is SDCEA's project officer.

The main problems we have in the basin are air pollution, water pollution, ill health and socio economic challenges; it is a very poor area. That is why health problems are so noticeable. Another issue is car emissions. SDCEA would really like to see a vast improvement in the transport system. That is why we get involved in all of these development projects.

1. How familiar are you with the concept of cleaner production?

It is certainly a concept that has been around and I think it could be a very useful one if it is implemented properly. It would be great if industry could begin using their waste as a resource.

2. What is SDCEA relation with government?

We have a very interesting relation ship with government, in some cases we work with them and there are terms that we are against. A good example where we worked with government was the Multi Point Plan. We lobbied for the new minister of environment to come and visit the area. It was important to bring our local problems to national attention.

3. What about industry?

Again some times we talk to them and sometimes we protest outside their gates. It depends on the issue, it depends if we have a dialogue. I would not say we work with industry, that would be really pushing it. We have a policy where we do not accept any industry money. There are some local organisations that have accepted industry money and we see that it has compromised them quite a lot.

I think it is quite strong feeling in this area that these big multinational companies, for example take SAPREF, their budget is bigger than the Municipality's or whatever. The heads of the refineries change but their strategy is the same. They still want to do as much profit as possible from what they do. They do lip service to the community but it is very difficult to see any change of heart.

4. Quiet strong feeling means environmental aware people or all the community?

I would say that I am talking for certain section of the community; I would say SDCEA and its affiliates. Many people work for industry, obviously they would not be against it.

5. How environmental aware is the bulk of the population?

Look, I think people in this area are more aware than people in other areas. A couple years ago I used to have a health shop and it many people from Merebank and this area would come to me and tell me they had asthma, what can we do? We do a lot of work with school kids. They are incredibly aware about the environment, industry.

6. Is there any other important industrial area in Durban besides the south Durban basin?

Sure, Pinetown, which is still among the Durban Metropolitan region. We don't work there because we are the South Durban Community Environmental Alliance.

We are getting very busy, down the south coast there is an EIA regarding the paper mill Sappi, we got involved in that. There is another EIA regarding the toll road in Isipingo. That is going to be a very hard issue.

7. What is your opinion of the environmental work that eThekwini is doing?

Look, sometimes we are able to work with them and sometimes they do quite a good job. We have a problem with enforcement of the legislation, especially the environmental legislation. I am sure you are aware South Africa has a brilliant constitution but the problem is that there is no enforcement; there is no capacity to implement it. Yes, Durban is better than the other municipalities, but we want them to be even better. That is our role, to keep them pushing their boundaries. There is a role for radical organisations if people are calling us radical. We have a very specific function.

Lately they have been terrible. There was a oil leak last week. They never informed us. We found out, we asked what was going on and they said, how do you know. I don't know why things have changed this year. We used to have a very good relation with them. In fact one of the books we did, we did in conjunction with the government. That is a good example; a comparison between permitting in Denmark and South Africa. Also when SDCEA applied pressure to prosecute Engen, that worked quite well. We sometimes question whether official have political interference from further up. Normally we find the average official quite open, but this year has been pretty awful.

8. What functions would you like to see a centre for cleaner production offer?

Information that is industry specific for cleaner production. Information that offer international best practice. Practical steps on how cleaner production can be achieved. Looking at ways to minimise waste, heading to zero waste. It would need to be quite hands on, practical and I suppose empowering for industries.

9. How can civil society participate in the centre?

Ideally it would be good if civil society can be seen as a partner in some way; if it is able to draw on terms of reference, funding, functions, etc. etc.

What happens is that government sets up these things and this actually increases our workload, and we don't have funds for it. Who is going to fund civil society to monitor cleaner production, EIAs or development, whatever. It is a tricky thing how you can participate.

I cannot see civil society working physically in the centre for cleaner production. I should imagine we would be able to put input into documents, terms of reference or possible functions, maybe training. Not technical training. I think where industry falls down is that they don't see the community as people. They just see them as people who complain and have nothing to give. If we could play some kind or role in terms of sensitising industry to community. At the moment for example you phone eThekwini Health and people don't have a clue how to take complaints, they don't know where the oil refineries are. The only way I think we can contribute is in some of the training, and just as there is much of technical stuff there is also the human side.

10. Does civil society have enough capacity to take part in the centre?

When we don't have expertise we go to local institutions that help us, or build up capacity.

11. So civil society is not ready to participate in the centre?

I think maybe some key individual. As I say there are certain academics that could take part of the centre. We try to target key individual with certain skills that assist us and help us build technical capacity. This is my opinion, to give you a SDCEA official opinion I would need to summon all the members.

This cleaner production centre could such an exciting place for students.

12. Besides SDCEA who else is putting pressure on industry and government to improve the environment?

We work quite closely with the Centre for Civil Society, they are a big support. We find that communities are supporting each other. I think networks are really growing. There should be other people… the Merebank Ratepayers Association…

Nothing has changed in terms of the relation we have with industry, if anything things are getting a little bit more antagonistic. People think that government has been in power for the last 12 years, why things are not getting better, are not changing.

Telephonic Interview with Kevin Cilliers – May 2nd, 2006

- Kevin Cilliers is the Project Manager at the National Cleaner Production Centre of South Africa

Let me give you a little background of where we are coming from; we started on about 2002. It was one of the outcomes of the Summit for Sustainable Development in 2002. Up to that point there had been a lot of discussion in the CSIR, because that is where the NCPC was born from, we saw the trends in the world and we saw that cleaner production was given a lot of attention and it was growing. An agreement was signed then in the Summit for Sustainable Development where Switzerland and Austria donated funding to South Africa to set up the Centre and likewise the Department of Trade and Industry agreed on that. The three parties put funding to run the centre for three years – 2003, because we started our official activities in 2003 to 2005, officially the end of March 2006. UNIDO was then assigned 2 responsibilities, handle the donor funding, and second UNIDO had a NCPC program around the world and we fitted in as part of that program as well. So we run according to the principles of the UNIDO program.

At the end of March our official contract with Switzerland and Austria came to and end and we are now embarked in another phase of the centre that will be primarily founded by the dti. The South African government has decided that they will pick up on cleaner production completely and they will fund the Centre completely.

We want to engage with international partners on specific contracts or projects, an example of this could be clean development mechanisms and other things such as chemical leasing, UNIDO is looking in that direction and some other things.

Our activities so far have focused on trying to create awareness in cleaner production. We run a couple of training programs where we actually invited participants from industry, government and the consultant sector to come along and we gave them a brief introduction of what cleaner production was and this was hosted by us, but the presentation where made by Swiss and Austrian companies. We did some training on what cleaner production was and then we attempted to do some projects in

companies; quick scans and in some cases more in depth studies just to give them an idea of what the impact of cleaner production could be.

1. Are these activities in specific cities or how are they organised?

We picked three main sectors and this arise out of studies that have been done by government departments, the Advanced Manufacturing Strategy Group as well as the National Advisory Council for Innovation, they did a number of surveys and assessment on what is happening in cleaner production in industry and they picked the need in the chemical, textile and the agro sector. These three sectors have quite a big impact in terms of employment in the counties economy. They are also quite big in terms of income generation. What you have to remember is that the dti is involved in this project from the point that their national priorities and initiatives are looking at creating growth for the country, increase employment in the country, we are quite strapped on employment figures. The dti saw that cleaner production could be one of the mechanisms that could help them to achieve some of these objectives; show the companies the financial benefits of cleaner production.

2. What is the status of cleaner production in South Africa?

It is quite a wide thing. The bigger companies are playing on the global market, they have quite a good understanding of cleaner production, they might not necessarily call it cleaner production, but whatever it is its quite close to cleaner production, some of them call it waste minimisation, or whatever, it is just technicalities on the name, but the idea is that they are aware of it. Some of the larger guys are doing well, some of them are doing ok, but generally they have the capability if they wished to. On the medium sized companies, that is probably where the part of the challenge lies, some of them might know what cleaner production is and they may have an understanding, they have just not quite grasped what the financial implications might be, they have still some suspicion or circumspection on what is this thing called cleaner production going to really do for my company.

Quite a lot of our focus is on the middle sized companies and then obviously the small companies. These guys don't have a clear idea of what cleaner production is and probably that is a general trend that you find everywhere. Those who have interaction overseas have an idea, but many of the small guys are just supplying to the local market so they are not looking at the demands of the global market – they are completely bottom line driven. That is certainly one of the biggest challenges, to get them on. The other issue around would be funding. We can do cleaning production, the challenge is to begin with the low hanging fruit and begin moving to actions that will require more significant investment. Where do I get the money to begin cleaner production initiatives – there are not that many incentives that make companies undertake cleaner production projects. That is why you would see that the bigger companies can foresight and do cleaner production but the middle and smaller ones don't have money to take on significant cleaner production projects.

3. How difficult or easy it has been to incorporate cleaner production principles into South African legislation?

South Africa does not really have much cleaner production legislation. What has actually happened in the last year is that South Africa has decided to create a cleaner production strategy and policy doc for the country. The public version of this initiative can be found in the Department of Environmental Affairs and Tourism. We were involved in from a reviewing point of view. We thought that at this stage we would not be involved in the actual setting up of the document. We thought it would be better to look at the document that comes up. DEAT involved a number of players, a number of industries. We were just involved in the reviewing of that document. At this moment one of the ministerial committees is being reviewed to see if it is suitable for government approval. Once government approves it, it goes to the public domain for comments from public then goes back to government and once approved becomes an official policy or strategy.

I know that we got recently the National Air Quality Act which has incorporated aspects of cleaner production in it. There is nothing at the moment that says that cleaner production must happen, is going to happen, you know that sort of thing. This may probably come up once that the

strategy document is finished. Most of the government documentations and strategy coming up in environmental areas is trying to put a strong focus on cleaner production. In terms of legislation I would not say that we have a big issue. The main issue is to give the government direction and leadership on it. We just need some commitment from government and I think that is now starting to happen. It is taking a little bit of time but we are going in the right direction.

There are no drivers or incentives for companies to adopt cleaner production, but I think in a very short term there will be some strong motivators for industry to move to cleaner production. eThekwini had already started at Hammarsdale with their permitting system. That is already a driver.

4. Are there any aspects of the NCPC that you consider are unique in regards of the UNIDO/UNEP NCPC program?

I don't think there is really any major difference. We are in line with what they think. The only challenge is the kind of projects we get involved. We already have a quite strong environmental service sector in South Africa. We have many consultants that think they are doing cleaner production. Not all of them good, not that they are really experts in their field. I think that there are just a handful of experts – Chris Buckley being one of them. Our challenge is that the activities that we undertake do not compete with them. We don't want to be seen taking money from them. We are planning to involve the existing consultants that are capable in projects in our behalf. I think that every country has a number of things that might be a little bit different but I don't think it is a big difference. We need to get industry aware and get them change their attitude that someone must fund the cleaner production activities. They need to understand that they need to make an investment in cleaner production themselves. A lot of the companies seem to just wait for government to do something. If they get something for free there is no commitment from them because it did not cost them anything. If they put money they can't just drop it.

5. What are the activities in which the NCPC is focusing currently?

We look at the chemical, textile and agro industry, we are also looking at brining the automotive industry. Those four sectors are the ones we are proactively approaching. Others sectors, we do when we see that there is a need or when they approach us and convince us that there is a problem we would certainly consider that. Obviously at this stage we are trying to focus so we get something working and not spread ourselves too thin. We are a small centre at the moment. There are only 6 of us. We are trying to grow within the next months – we want to get more people on board; that will allow us to undertake more things and be more active in some of the sectors we have not been.

Our activities are driven by the Pretoria unit where we are based. We have spread a bit, not to all provinces, but once we have more people we will.

6. What has been the response of industry to the activities of NCPC?

Industries are really positive when you talk to them. Yes, it is an excellent idea, yes, we must do that. The problem is to put the money where the mouth is – then it changes a little bit. The textile sector has been under a lot of stress. The chemical sector is quite a mature sector; it is also an industry that has a lot of potential that has not been achieved. Industry understands the need for cleaner production, but it is a little bit of a different game when it comes to invest money. We need to work in convincing top management to invest in it. Often you get the CEO quite happy on cleaner production investments but then you go to the management level that is accountable for how the money is spent , sometimes there is not so much enthusiasm.

7. Is industry aware of your existence?

That is something we are trying to address. Industry is aware of the centre, probably not quite as we would like it to be, probably we need to work on more case studies and get that information out to industry to promote our existence. We are moving around. We have been involved with the DEA and we have been going out to the different provinces to talk about the cleaner production strategy and there we try to expose cleaner production more. In some areas there is a good

knowledge of the centre and in some of the provinces where we have not been active maybe there is less knowledge and understanding of what the centre does.

8. What about civil society? Are you at this point working with them?

Not really no. We mainly limit our activities to industry and that is where the dti is focused and concentrated. But we are aware that civil society will certainly have a role to play from the point of, we have a number of environmental groups. Some of them are aware of us, for example EarthLife Africa. But we have not really concentrated on them. But we hope that the employees of industry exposed to cleaner production take the message to industry.

Last year we also offered a training course in cleaner production to some of the guys who work in rural communities to be able to go and spread the cleaner production word out there. How can cleaner production work for you as a community. Maybe they can run water saving projects; you know water is not always available to you as a community. But it has been limited, we had just a workshop.

9. What kind of people are involved in the NCPC?

At the moment we have two kind of forums, one of them is the executive board, that is limited basically to the founders of the centre. They look at the overall management and give strategic guidance to the centre. Second we have the advisory forum which helps us focusing on what industry needs and what the centre should be looking at in terms of technical issues. It has a wide audience, government officials, industry, industry associations, universities, representatives from labour, at one stage we also had representatives from NGOs.

10. What is the relation of the NCPC with eThekwini Municipality?

That is an interesting relation. Basically when eThekwini started their pilot project in the Hammarsdale area they wanted to see if the NCPC could come and support them with training and doing assessments in the region, help them spread the cleaner production word as part of getting the permit system up and running. It did not happen quite the way we wanted to, largely because initially we thought we industry would be briefed well already about cleaner production and the NCPC would come and assist them. When we came a lot of them were not really clear about the centre and were not informed about being involved with the centre. The idea was that eThekwini would put cleaner production on the permit and we would come and support the program, examples of that, we did seven or six quick scans, highlighted problems in the companies that they could pick up and run with them. The problem is that the companies were not willing to fund anything besides the quick scans.

Do you know how the permit system works? The guys in Hammersdale are under Umgeni water tariffs. eThekwini has different tariffs. Lower tariffs that the companies can switch too if they comply with some of the discharge limits set in the new permit system and certainly if they can show that they have a cleaner production plan in place and if they can show up that they are running according to that plan. It is an incentive, if they switch over from the Umgeni tariff to the eThekwini tariff some of those guys can save up to fifty percent of the existing effluent charges they are paying, that is a big incentive. In some of the companies that can be up to 40, 50 thousand Rand a month.

We been in close contact with eThekwini officials to get a close relation with industry and get them to understand the concept of cleaner production. They could be the stick and beat the companies and we were going as the good guys telling them, you got a problem; we can help you solve that problem.

11. Was the NCPC aware of the efforts in eThekwini to create a centre for cleaner production?

We have been aware of the cleaner production program or group that they have. We don't have a problem with that. The only thing that eThekwini needs to understand and be aware of is that us being the national cleaner production centre, we are the national authority, they must be careful or cautious of running a cleaner production centre that might conflict or tries to compete with us. We don't need to drive everything. If they have a unit that handles cleaner production that is fine, we can

collaborate with them in certain issues, we don't have a problem with that. But they need to be careful about trying to promote as a cleaner production centre that is competing with us or see it as a centre separate from us, that they try to get a cleaner production centre status that might affect us. There is going to be issues that will come from heart; the dti will look at them, the DEA as well and say, why are we supporting a cleaner production centre, yet we have here another centre set up which is doing the same work or competing. They can do the same, no problem, but they need to have discussions between the director of the NCPC and any other centre of wherever region to make sure they are not trying to create a separate entity.

12. In case that a centre for cleaner production is created in Durban it should fold under the supervision of NCPC?

It may not be even necessary to fall under our supervision, but I think they'll need to have quite a strong link with the NCPC to make sure our activities are aligned and that we preach the same gospel, you don't want two different messages being spread and you also don't want to get to a situation where they say, don't talk to the NCPC, they don't know what they are doing, they are not from here, they don't understand your problem. It needs to be a coordinated thing.
We could have a good relationship between us and them to the extent that they run session programs and projects in our behalf, and if we could secure funding for them that would be something we would do. We definitely would work with the guys, they just need to be careful how they market and promote that agency.

13. Are there any other municipalities that are looking at implementing CP centres?

I am not sure at this point. Cape Town is quite strong in cleaner production as well. I am not aware myself of cleaner production centres there.

14. At this point the NCPC is not promoting the creation of regional centres in South Africa?

No, we haven't picked up that as one of our things, no. We did have regional people based, but it became difficult to manage. The centre was struggling with some of its activities, so we thought it was better to consolidate and just try to get everyone here and run the program from here. In the future we could think of setting satellite offices, but that is something for the future.

15. What sort of functions would you like to see a centre for cleaner production in Durban offer?

Run training programs to create more awareness of cleaner production. Cleaner production audits and assessments to get industry on boat, to show industry what cleaner production can do in your company. Let's be honest, at the moment there is not enough legislation to keep people towards cleaner production, the only thing that can push them these days is if they can see any financial benefit to it. That is really where you have to go. The centre can be a catalyst to begin cleaner production in industry.

16. **What is the role of civil society in a centre for cleaner production?**

What we are doing at the moment is that we are finalising plans. The dti has put together what they call customer sector plans, for each of the different sectors in South Africa. They would like to see these programs in industry. We are going to be one of the implementing agencies to help them run these projects. In terms of local programs we try to involve local consultants in the projects to build additional capacity in the cleaner production sector. We were coordinating this from Pretoria but we would have local consultants. Once the centre grows to a size that allows it, we could explore other activities.

We haven't given too much thought about it, but ultimately you need to have the people on the ground involved as well, that can make a big impact too. You call it civil society but they must be working somewhere as well, indirectly they are in the business as well. There are certainly

projects they can be involved. I would certainly see a possibility for them to get involved. It just needs someone that is willing to be involved, someone who has obviously understanding of what cleaner production is and how it can be applied. At the moment we have not really put much focus on civil society.

I think one of the most important things for a cleaner production unit or whatever they call themselves is that they definitely try and must link with the NCPC otherwise they are going to pick up problems where the government will not be willing to support them. They definitely need to support themselves as the overall entity and they need to make sure that they have in their plans; that is critical. Otherwise the government will not support two units doing the same thing that are not talking to each other.

Interview with Judy Bell – University of KwaZulu – Natal, May 2nd, 2006

- Judy Bell is an environmental consultant

DANIDA put too much emphasis on the environment and none on occupational health and safety (OHS). They come to visit very often but they still have not got it. There is no way you can do environmental issues if OHS is not taken care of first. They need to integrate those. I have been recently in many companies to help them with their occupational health and safety and I am horrified, I wonder how nobody has died there yet. I am sure that there are many people who get injuries there but because many of them are temporary workers they don't get that much attention.

You always make sure that people are safe and then you do the environmental stuff. In this country the Department of Labour does safety and health and the Department of Labour is a mess. They don't have their inspectors anymore, they had many inspectors who were specialists but they decided to change that for generalists – the specialists went to industry and the Department ended up with people who didn't have any skills.

I have not seen much activity related to cleaner production, no newsletters, no communication, nothing these days. Sandra Redelinghuys and eThekwini are having problems with what they call the intermediate waste contractors, they offer cheap waste disposal solutions that are causing a big environmental damage and the city ends up cleaning their mess. eThekwini is now developing a system to stop this.

1. What is the attitude towards cleaner production in Durban?

It is not that nobody cares about cleaner production these days; it is that there is no focus on it. The authorities are trying their hardest but they don't have the money. There needs to be some sort of pressure to industry to implement cleaner production. Like what happened in the metal finishing industry. There needs to be some enforcement behind it. The project worked because there was pressure. They had a common problem that was costing them a lot of money. They got together as a negotiating team and out of that they realised that there were other ways to save money – but it was not because they wanted to make things better environmentally, no way. Unless it is going to save you money and it is easy to implement companies don't care.

The first thing that you have to ask industry is if they want the centre and they will say, yes! And then you ask, well, will you pay to use it? And they say; no. So maybe it does not to be a centre, maybe it needs to be a virtual centre, maybe it needs to be a repository of expertise and information. I see a lot of problem with companies when they lose history, like for example have you met Gravlin from Water Affairs? When he leaves all of that history is gone? Same thing happens with many people in industry.

The centre needs to be a section 21 company that uses the carrot and the stick. If you mention cleaner production people glaze over, they immediately think that this is high tech, this is something with all of those buzzwords that nobody can understand. People like Engen and Sapref, those are not the guys you want to nail. It is the smallest companies, the electroplaters, the galvanisers. Have you

been around Jacobs? It is scary, those are family businesses that have all sort of stuff piled, they are horrific.

For me the big companies had done a lot. In the last say, 5 years the big companies have started to improve and improve dramatically. I think that once you are on the journey you don't get off, these companies are driven overseas, the local guys put the pressure on them, but they move on the global context. It is the smaller guys who do not have minimum standards. Sandra Redelinghuys (Water Services eThekwini Municipality) says that in eThekwini they have 800 effluent producers. I think it is much more. You just drive on the major highways and you will see the backs of the industries and you will see the reality.

Maybe what a cleaner production centre has to be is a centre of excellence, where you integrate safety, health and environment. For me the first thing would be what is the law? I have visited galvanisers and they don't know what the workers need; the guy has been in the business for 30 years and have not heard of any regulation. They didn't even meet the baseline. They didn't know that there was a hazardous chemical regulation.

On top of that you put aids. You expose someone at work to gases, forget about the environmental issues – you heat substances that when mixed become carcinogenic. They go directly to your lungs, and you got people with aids, first thing that comes is TB, what these people going to do? They are going to die. I asked him. Have you got a program for HIVS. He says to me what should I be doing, there is so much I can be doing. I explain to him that he can put his employees under a system that costs 140 Rand a month that gets you retrovirals, training and they can see a doctor anytime they need. I asked him how much it is costing you to let a person die? The hidden costs, you have to pay the funeral, you have to find a new person, you have to train the new person, more than 140 R a month? I am sure, plus all the moral issues…

I see the centre as a repository of information and a network opportunity. I see government, industry and civil society as users of the centre. A user defines the centre. A user is the most powerful participant because is the one who says I want to know more about that. For me it is going to be someone at the end of a computer answering queries and putting people in touch with people. Networking, advice, a centre of best practice, a coordinating centre. I don't see it as anything else. There is no way it would work. Otherwise it would be sitting there with big words that would not work.

For example if you are looking at using waste to provide you with energy because the other options are costing you too much. You know that civil society will say no way, so what do we do? Why don't we form a little group and we use the centre as a facilitator. I think that we need to look at innovation. We need to involve managers in the centre, people who are capable of innovative thinking.

2. What can you tell me about the NCPC?

I have been to meetings where they are present and they just occupy a seat. They have no energy. They are a barrier; they have no enthusiasm, or motivation. They draw salaries every month and they don't show anything.

3. How different is cleaner production in South Africa compared to the UNEP concept?

It is just environment. It is just looking at the environment. That was my biggest shock.

…South African industry is very conservative – don't come and tell me how to do my process, because I have been doing this for fifteen years and I am terrified of changing. If you ask me to go back to the beginning and change my raw material, it is working now as it is, why do you want me to change?

Interview with Siva Chetty – eThekwini Health Department, Durban, May 5th, 2006

- Siva Chetty is the former eThekwini Municipality Health Department's Program Manager for the "South Durban Basin Multi-Point Plant" and current deputy head for pollution control support at eThekwini Municipality.

1. Could you talk about the status of the centre for cleaner production?

I think it is something that will settle up organically. I think there are many things that are happening towards cleaner production; for example there is a national process that focuses in cleaner production that we are bringing into our cleaner production IDP plan. It is happening slowly, we are also trying to put it into real problems, in terms of air quality we look at the Jacobs area, which is a very complex area and we want to select some 20 industries and then select 10 until we have one, so that we work with them informally, what can we do to improve the process. And then we are thinking of selling the idea to the chamber.

We need capacity, so you come from Denmark, there may be linkages we can make; funding, bringing experts. We don't want to go through a formal process. We want to start with a problem, apply the principles of cleaner production to the problem and see how we do. I see it as an organic process.

2. Were you appointed as the champion of cleaner production?

Nationally we have the NCPC, I am in the advisory. Locally I am one of the champions getting cleaner production to move. There is a commitment of the city to introduce cleaner production into our pollution mitigation plans. We are currently focusing in the Jacobs area. My focus is on air, which is an integrated approach with other eThekwini departments.

3. Is the eThekwini Health Department working with other departments in regards of cleaner production?

So far it is independent. We don't want to force it. Sandra (eThekwini Water Services) cannot come and suddenly work on air. As the concept evolves there will be need for harmonisation.

4. Who are the people who are pushing the creation of a centre or initiatives to move cleaner production?

Myself, Debra Roberts from the Environmental branch, there is also a strategy document that is coming from Economic Development that goes for innovation, cleaner form of production, but that is more at a policy level, it does not go to the ground. We are making sure that cleaner production is also written into business plans, licenses and permits. We have a new approach to permitting as we permit new industries or existing one we are introducing the concept of cleaner production. We want industry to do a good assessment of their processes. For instance look at this (showing document) this is a permit issues by the national department to a company, it does not say much, it is very limited. We want to integrate process thinking.

We are the Health Department and one of our key chapters in our permits is the occupational health and safety (OHS) component. Maybe you have some developments in Denmark that you wan to share with us. OHS is certainly not neglected, for instance if there is an instance dealing with benzene, we would put that into our permit and require the company to do report on worker's exposure, etc.

…Our problems are so complex that you don't where to start… I can get some funding to the point that we have a cleaner production officer…

We worked with the NCPC to write their national business plan. Their work has not translated into action. They want the business plan approach. I like the situation were we have a lot of

discussion formally and informally and apply things, this way things take off, also in the process I want to get a good understanding, institutionally which way we go, because you have a different framework in Denmark – I cannot permit the companies and get them to do cleaner production on a voluntary basis. The approach we will take is we will use the principles of cleaner production to assess the company and write it a permit after the assessment and hoping that the cleaner production assessment helps develop a permit that fulfils our objectives. We need to find some drive, for example the air quality data. That is almost our legal basis, or complains, you know that is how we are focusing in the Jacobs area, which companies are notorious for their environmental performance. We want to select not a very complex sector in Jacobs, one where we can apply the framework, the theory and give them results and build on that.

… we try to integrate all principles in our permits, they apply to all sizes of industries…

5. Now that you think of growing organically, are you thinking of creating a steering committee to advance cleaner production?

In the next year we would like to have an informal cleaner production focus group, parties from the south Durban basin, Environment and Health Department officers and the Economic Development people to come every quarter to see how we are applying the cleaner production approach to solve all our problems – and probably we can produce a document that points out the need for more cleaner production, and then we can appoint a cleaner production officer that would report to me. At the moment there is no one focused on cleaner production solely. I can only take the leadership position and advocate for cleaner production in one industry, at the moment I cannot do it for the whole area. I think this approach is better than the national approach; you cannot have a highly structured approach.

I have been invited to the Jacobs environmental committee meeting to see what is happening. This committee is only industry…our industrial culture is very different; here they think that pollution control is about closing down the company and losing jobs. If you do this exercise of cleaner production you don't lose jobs…

6. Who will be part of this pollution focus group you were talking about?

Government, Durban Chamber of Commerce… you see we have to play politics very carefully, if I just open the floor to communities they will challenge me holding me accountable; you are working towards cleaner production, why do you allow dirty industry here. The politics are harsh and very complex. You enter in the debate of you should practice what you preach. It would be internally until we have some good solution we would take it to the public.

…We have been invited to participate in the EU Environmental Health framework to advance the European environmental health strategy… UNIDO thinks of us as the best municipality… we have been thinking of engaging with the Pollution Research Group to do some studies …

7. How many industries would you say are aware of cleaner production?

It is a minority; I think they are the ones that Sandra influenced through pressure

… Muna Lakhani has had a few engagements with me, he is working in a program in waste minimisation in the community area, he has also some links with Debra Roberts…

The NCPC was bad in regards of civil society participation, but that is because of our politics and our industrial conservatism, I asked them why they did not want to have civil society and they said no this is between government and business, if civil society comes in business recoils you know, which is partly true. You need to create another forum where civil society can have an input, having said that I am noting what I said earlier that if I create that option to allow civil society to participate it can be exploited to the point of not being productive. I have no problem in engaging community in this approach, sometimes you need that debate and push. Also to test the ideas, for example with Engen we had the communities involved with the permits and the communities said – you got a

permit with them, why don't you prosecute them for their exceedances, we cannot really do that, we cannot prosecute someone, politically it does not go well. You have to find other solutions. That is why you need a more mature industry. It is a very slow process. It is always the denial syndrome, can you prove it is me and all of that.

8. What kind of relation do you have with the NCPC?

We need to take the effort to do talk to them. The best way is to start some concrete work here, and then you go there, that is where we are at the moment, we got the theory, the centre, let's put it up to work. As I said we have already selected the Jacobs area, we take 5 industries and then we solve the problems of one using cleaner production.

9. With the organic growth you are talking about cleaner production will there be a centre sometime in the future?

Finally we will have a centre for cleaner production, I would say in the next coming five years.

10. What functions are you trying to move forward in regards of cleaner production?

Initially we should focus in production, at the production processes, solving real problems and in the process create awareness to bring some other topics, like reducing consumption.

… we are only pollution department that has largely a black team and I am committed to training…

… I can appoint someone as a cleaner production officer within the next six months, we have funding for that. Once we have that person an agenda will come, and I believe that after that there will be resources coming because we can demonstrate that resources are coming and the city is becoming more competitive…

In terms of permitting I put a lot of energy in the permitting, but we have a whole team of officers that negotiate these permits with industry, but of course they have to be trained, we have a limitation in our capacity, for instance when I got involved in the permit with Engen within six months we got it out because a lot of energy went into it. But then we have some officers that have been going out with a permit for one year and that is because of capacity and our officers are also locked into old ways of thinking, old paradigms.

Interview with Chris Fennemore – eThekwini Water Services, Durban, May 5th, 2006

- Chris Fennemore is a officer at the eThekwini Water and Sanitation Pollution Control Group

We are trying to get something going on in the south Durban basin; it is only yesterday that it began to be resurrected. We are going to pick from the documents of the centre, the feasibility study and the business plan, we were not very happy with that one actually. We are having another meeting tentatively on the 6 of July, 2006 in the south Durban basin area, with a gentleman called Lee Dee who is the area based manager. He is trying to resurrect this project in the industrial basin. We are in the initial stages and our feeling is that perhaps we should identify one person that is an expert to actually get something going in the south Durban area and he will be funded for three years by the Municipality with the view to be self funded afterwards.

We have to get the funding, we have to get the person and then get going. There are many people involved, there is a guy called Keith Barnett, he was there, I was there, Jessica Rich, Lee Dee and we tried to get Siva there, but he sent his apologies, but he must really be involved. We are trying to get the

Durban Industrial Promotion Agency as well, there is a guy called Russell Curtis who runs that.

The scenario has been that you got the Municipality here, the community and industry and you have a situation where you just go in circles; the community does not trust the Municipality, the Municipality does not trust the industry, the community does not trust industry and the industry does not trust the community. The only thing we have here is a little bit of enforcement from the Municipality, officially it could be a lot better, our fines are only a thousand Rand, maybe our monitoring can be improved as well. Hopefully then we can drive some kind of improvements. Then the problem is that industry is really ignorant about opportunities, as soon as you start mentioning the environment they go in denial, but if you get an independent party who seems to be credible, it must be someone local who knows a lot about industrial processes, someone independent that has nothing to do with enforcement at all this enforcement side by the Municipality becomes easier, because the cleaner production people are doing something, the community can see improvements and we are starting to get somewhere. We just need one person with a laptop, a cell phone, a broadband connection and it could be anywhere, we did not like the idea of calling it a centre, maybe a network, a champion or something like that, we don't like the idea of officer either because it shows enforcement. We need to show the impartiality of this guy. We need him to be trusted. The trust must be build between industry and the practitioner.

We see this guy starting little waste minimisation clubs, which can initially be free and slowly as information comes he can start charging a fee, he could then as a network to bring in some foreign aid, the Norwegian, the Austrian and the Swiss, the Danish. That is as far as we have got, we will take the following steps in July.

We see this as something slow, if you look at the budgeting year there is no money now for something like this, our budget goes October this year and then it may be approved by January next 2007 and it will be available in July, then we need to advertise for the position and we don't even know if it is going to be approved. That is best case scenario, so it is going to be a slow process.

What we are doing at the moment in the area, Lee Dee who is the area based manager is looking at environmental indicators, obviously air pollution will be one, we have invited Siva to come to the meeting in July, water pollution will be another one, we are talking about soil but that is very nebulous, then we can have a platform to talk to the politicians and say, listen guys this is the status of your river, this is the status of your air, and we do it in a format that they understand, red is danger, then we are communicating and becomes critical, there is no point in saying the levels of chemical 'x' is one, we want to make simple and we need to improve enforcement, that is the cane, where is the carrot? Where is the incentive coming through? That is where we see this guy coming through.

1. What is the status of cleaner production in Durban?

I believe in Chris Buckley's and Susan Barclay's efforts and the Danish and Norwegian probably the city is more aware than most cities, but we are still probably 25 percent of the road in getting cleaner production awareness. We got a situation in Hammarsdale where we got permits, a new five-year permitting system which involves concessions in trade effluent fees to try to make it more viable for companies to put cleaner technology and best available technology. That is written into permits, they need to set targets, so we give them a concession for that, for example one company together with the end of pipe treatment they are saving 75 thousand Rand a month as from last month it was just for the tariff, forget all they are saving in chemicals and all of that. There is another company which is installing a treatment plan, if it works, they are having some trouble commissioning the plant, but we truly believe it will work, if it works they will save 400 thousand Rand a month, plus they can get a product that they can sell, 400 thousand every month!

I cannot believe is that still some of these industries are not taking the bait, I cannot believe it. I think a lot of them have just poor management. One thing for sure is that beginning of July 1st next year we say enough is enough and we are going to start prosecuting you. The courts aren't that good, mechanisms are that good, the fines are around 1000 R and it takes forever, probably it takes three quarters of a million Rand to find someone for 1000 Rand which is really not worthwhile. There is another mechanism we use, we call it non – regulatory inspections, non-reg inspections; if a

guy doesn't comply we ask him what is he going to do about it, we give him a certain amount of time and then we come back again and we charge him for that, so he gets the kilometres, the amount of time, the phone calls and everything, if he keep on doing this for some time this amounts for thousands of Rand. This is not a fine, they are charges for our services, but it is a driver.

There are one or two industries that have ISO 14000 and they set some targets, but they are quite low still, but apart from that they are not good.

2. Are there any changes in legislation that will help you increase cleaner production?

We drive it through the permits we have, there are other drivers that will help promote cleaner production, one of them is the waste discharge system; basically this is a charge for all the discharges to rivers that the Department of Water Affairs and Forestry is intending to levy. Generally this will bring an additional cost for discharging to rivers that will make it more desirable for people to go for cleaner production.

3. Which are the main departments working towards cleaner production?

We, eThekwini Water Services, the Health Department and the Environmental branch.

4. How much cooperation is there among these three departments?

Until yesterday I would say non-existent, almost non-existent, Siva and I got quite a good understanding about cleaner production issues, we chat informally we don't actually work formally, Jessica of course disappearing for a year, of course the whole issue fell apart.

Other people who are working are the Keep Durban Clean, they have a component of waste minimisation, they go around promoting solid waste. The Water Research Commission, the NCPC come occasionally, Arnesh Telukdarie from the Durban Institute of Technology, in civil society there are people who are interested, some people push for it but they don't know what it is, some people do, Groundwork is good, there is an association starting in Island View, Muna Lakhanni, that is it I guess.

We are working with the textile industry, Arnesh is on that, the metal finishing industry seems to be taking the back seat for a little while; we are just pushing that industry for a while. We did have Liz Anderson who has slowed down a bit. The DEAT, Timothy Fashuen, DWAF is also promoting it because it is in their best interest, so there are a lot of people who talk the lingo.

5. What sort of functions are you expecting this person perform?

I would see this person being an expert with a very wide network, also somebody who is disarming who can get to communities, someone without political agendas, totally impartial, very motivated with a lot of drive, promote advocacy, have a small budget and perhaps have a few articles in the newspaper, have a few seminar, attend some conferences, have some papers at conferences, pushing cleaner production, create awareness, maybe to do one or two case studies, to do something physically himself or herself, start waste minimisation clubs, acting as the secretariat, and being the linkage to put people to contact each other, there must be passion and network.

6. Only focused in cleaner production?

No, obviously there will be a knock out effect, we have not given it a thought, but I agree with you, cleaner production should be health based as well. We are putting people first, we are actually finding that people are exposed to dangerous levels of pollutants, the south Durban industrial basin is badly planned, we have people right next to refineries and industrial areas, it is disgusting what is going on there, you cannot blame them for complaining, the lobby has been so strong from the community that it is from them that the drive is coming. The lobby has not come from people in industry.

7. What is your relation with the NCPC?

We have an excellent relation with the NCPC, I would like it to be more effective and efficient; unfortunately I see it as being neither. It is staring to become a little bit more effective, but efficiency, not yet. I have severe reservations about their sustainability, they are trapped in bureaucracy, there is only one person who gets out and actually manages to do something. It is barrier to cleaner production; those resources could be deployed a lot better. My feeling is that it should be a section 21 company with a little bit of accounting expertise and I think you can get a away with a couple people with a laptop, a cell phone and a broadband, you would not even need an office. They don't seem to be active at the moment; I expect that they get active. I have sympathy for them, I worked for the CSIR too and I know that it is a very bureaucratic organisation. If you are not careful you may end up just attending meeting without achieving anything. I have sympathy for them but they need to get out of that stage.

8. How much impact do you think this person would have in cleaner production for Durban?
I would say it would have a major impact. I would like to see a 40 percent reduction in emissions and utility usage. One person is just purely the network, he would act as liaison. He would link with the NCPC. We must not work separately. We must work together. I reckon one person, or two people max, financially we cannot get two people, so one person should be enough, see the example of Bas kourtis, he is a biologist, he is not even a chemical engineer or anything, he is doing wonders in Cape Town.

9. Are there any other projects in eThekwini to move forward the environmental agenda?

All sorts of things going on in at the moment; we have a guy undertaking water loss management for the municipality. An electricity saving scheme, I am not sure about its status. We are working with Chris Buckley to model sewage works for a number of reasons, such as efficiency and tariffs. We continue moving forward with our permits, we have seven at the moment but we are expecting to have 50 in the next couple of years. We are improving our auditing system to include cleaner production. We are using the regulators guide from DANIDA. We find that very useful indeed. We would like to see in the future industrial clusters, industrial symbiosis. It is a long way still, but the idea is there because we do have an influence in planning. One thing that I did through the Chamber of Commerce in Pietermaritzburg was a waste exchange. I was getting people email a little website and post what they had. Email to the website the waste they had available and the idea was that the Institute for Waste Management and other people go forward and see how they can use, it was a simple thing. Unfortunately it collapsed when I left.

Our environmental agenda is going forward, but we still have a long way to go. Our biggest issue is sanitation for rural areas. We are dealing with pollution prevention on the industrial side; we are looking at trade effluents. That is going to be a big issue also.

Telephonic interview with Joey Singh – May 8th, 2006

- Joey Singh is the operations manager for Heartland Leasing in the Umbogintwini Industrial Complex.

Let me give you an introduction to the Umbogintwini industrial complex. The company I work for Heartland Leasing takes care of many environmental aspects of the Umbogintwini Industrial Complex. The site here is almost 100 years old as a chemical manufacturing site. There are a number of products that have been manufactured over time here. Originally all the industries in the complex belonged to the same company. Currently around half the companies belong to it, including Heartland Leasing.

1. What was the first encounter you had with pollution prevention technologies?

Our company has had international involvement with international environmental best practice through our parent company. We are fortunate because we have been involved with the Chemical Allied Industry Association through Responsible Care. And we have had a number of initiatives. Government

has pushed us through their permit systems. Our service providers interestingly enough had offered us opportunities which had had economic benefits as well.

Let me share with you some of the initiatives we have had in our site related to cleaner production. One company here built a water treatment plant, with all their information made publicly available. We have improved our monitoring of air emissions, as well as reduced emissions, for example Tioxide, one of the companies on site has spent around 100 million Rand over the last 10 years on cleaner production to improve their performance. Currently we are spending 20 million Rand related to Sulphur dioxide and other chemicals. Other company on site has changed their operations to improve their air emissions. We have had a few other projects to improve our performance. We are looking at opportunities to see how we can go further. Many of the companies here have started programs to recycle and reuse waste. I can send you our Safety, Health and Environmental report that we issue on a yearly basis where we put our activities in the year in perspective.

From our perspective we believe that there are further opportunities for cleaner production within our business; the whole question about carbon credits for example seems to be very promising but at the same time very complex at this stage. People are just intimidated about carbon credits.

2. Where has the pressure to move these developments come from?

I think in many cases it has been as a result of collaboration and pressure from authorities and customers. For example if you look at Huntman Tioxide it is part of an international company, they have obligations coming from their parent company that obliges them to have continuous improvements. In our case we have opted to go for ISO 14001 certification to manage our environmental impacts and we are now committed to continuous improvements. In addition we operate in a very sensitive environment and we have communities surrounding us that are very sensitive. We have very good working relations with them. We engage in a positive manner, we don't have much antagonism with them. We work in a collaborative manner, but there is still pressure from the communities.

The Municipality is also putting pressure on us, we have been approached by them in regards of air emissions licenses, where we look at best available technology, so it is not only the initiative of the companies but also the communities and the authorities who are putting pressure on us.

We engage in more than one level, are you familiar with Responsible Care? One of their management practices relates to communities, community awareness and emergency response. In 1995 we had a care committee established in the Umbogintwini, the first one in this country, based on the Canadian principles. That was the forum by which we communicated with people around us. As the political situation has changed in the country we have changed the way in which we communicate. We agreed that we would come up with focus groups; we had dedicated meetings to discuss specific issues. So you had a meeting to discuss air emissions, so people who are in our interest database are invited. It is an open meeting where also anyone else can come and provide input. In an annual basis we have a stakeholder meeting to discuss the progress of each of the forums. We also engage with people in an individual basis. We also have a toll free number where people can call and report any environmental concern that they think may be related to the complex. For example people from the local community might smell something that they think that is related to us, so they call the number and we would have someone investigate it and get back to them. Sometimes the calls are not related to us, but most of the times their complaints are valid and related to the complex.

3. Are there any individuals within communities providing also alternatives to your problems besides reporting them?

We have come a long way with our communication; we have people who have a very good understanding of our operations, they have spent time with us and their understanding has improved. Also many people have worked in industry or have even worked on site, so they have an understanding on what is going on, but there is still a great need for education and capacity building among local communities. We have a community liaison officer who is a Zulu speaker who shows

people around the industries. Also during the meetings we have translation to isiZulu, although the meetings take a little while we have seen this is of tremendous value.

4. As an industry representative what are your necessities in regards of cleaner production?

Just talking of the top of my head, improving our understanding of carbon credits would be very useful, the question of networking would be very important; we can share best practices and success stories but also challenges that have been faced by different industries, capacity building in the community, where people learns about the available opportunities. The other aspect particularly with smaller companies, they need to have an understanding as well, these companies usually cannot afford to have an environmental officer, they usually focus just on production and they might not recognise that there are opportunities to save money and operate within the requirements of the law. There also needs to be an improved focus and greater support from the authorities' perspective. In many cases they are lacking resources, they don't have sufficient manpower, so it is also a case of assisting the authorities, engaging in partnerships with them.

5. Have you had any contact with the National Cleaner Production Centre?

None that I can recall, maybe some of the companies on site have, but I am not aware of it.

Interview with Chris Buckley –University of KwaZulu-Natal, Durban, May 11th, 2006

- Chris Buckley is the head of the University of KwaZulu-Natal Pollution Research Group and an expert in cleaner production.

1. What is the status of cleaner production among industry in Durban?

That is very difficult for me to assess. I haven't had much involvement with industry since the last waste minimisation club. I think that eThekwini Water Services are more aware of it, Chris Fennemore and Sandra.

2. Do you see any differences between the UNIDO approach and the South African approach towards cleaner production?

There were two different schools; we were looking from a perspective of waste minimisation clubs and the club concept while UNIDO was intending to look at people who knew how to do it, payment for services as opposed to having a club and club activities. The clubs were waste min, moving people towards cleaner production; I think it was a very good start, moving people towards efficiency, getting and understanding and slowly through that moving to other more advanced and complicated aspects such as LCA. The difference between the UNEP approach and the waste min approach is that we look at the financial aspects since the beginning. UNEP was more into the environmental side and we were more into the money side which catches more industry attention.

3. How is cleaner production going in Durban, South Africa?

There is one thing I forgot to mention, that is that every two years there is the KwaZulu Waste Awards which has increased the awareness in cleaner production, some of my students were doing a project for it. That is an opportunity towards cleaner production.

4. Do you know of other projects other than the waste min and cleaner production demonstration projects to move cleaner production forward?

There was the Norwegian project last year on cleaner production in the pulp and paper industry. It was founded by NORAD. It ended up quite well. The problem is that there is a lot of turnaround in the factories where knowledge is lost and the momentum disappears. It just takes longer to see the results with this high turnover.

5. What are your views on eThekwini choosing a person rather than a centre to work towards cleaner production in Durban?

I was told two days ago about the city Major presenting a cleaner production award to an industry in the Hammarsdale Industrial Complex. I think it brings a fantastic message. There are many political reasons by which they are doing it also. There is a lot of political baggage around it. But companies are saving a lot of money and improving their environmental performance. It is a very important issue also for job creation. The fact that the city is recognising it and that other departments are integrating cleaner production in their bylaws as well as creating projects related to cleaner production is a very strong indication that cleaner production has now been cemented within the city. It is not just policy but also actions taking place. This is a very gratifying signal; this institutionalisation of cleaner production at a regulatory level. eThekwini further wants to train their inspectors in cleaner production.

6. Is there enough cleaner production capacity in Durban?

We got five or six good people in the country, two or three people in Durban. That is it. I think that it would be very difficult for eThekwini to find a person with the qualifications they want for the cleaner production exercise at the moment. I think they could take someone for a year or two where this person gets training. That could be a way of doing it. You in a way know more about this than I do now.

7. How do you see the NCPC in relation to cleaner production in Durban?

I don't think that they have helped too much. Durban is going on their own; they have other strategies they are focusing now. I think that flying people around from abroad is not really the right thing to do, you want to build local expertise, not rely on people you need to fly around. As far as I know they get most of their training from overseas. I think they could have got some of that training locally. They did not need to go overseas. By doing it you marginalise local people. What the NCPC is doing is focusing on the strategic level, on the policy level, which is in a way a good thing.

8. What areas should the cleaner production person be focusing?

A lot has already been preordained, focusing on the Hammarsdale area, there is a lot of pollution coming down the Umbilo River now, I think that focus on the Pinetown area would be quite good. Focus on the waste water treatments would be really good.

9. Have you found some people in the civil society area with knowledge of cleaner production?

There are many people who know about cleaner production and talk about it, but very few people can practice it and make a contribution. I don't think that communities can come up with technical solutions. Even some consultants just focus on waste minimisation rather than on the whole cleaner production concept. This gives you some idea.

Interview with Bas Kothuis – BECO Institute for Sustainable Businesses, Cape Town, May 15th, 2006

- Bas Khurtis is the head of the BECO Institute for Sustainable Businesses and a recognised cleaner production expert in South Africa.

1. What is the status of cleaner production in South Africa?

I would say South Africa is at least 10 or 15 years behind countries such as Holland and Denmark in terms of cleaner production. There is still a lack of political and legislative support to cleaner production in South Africa. There is the administrative will to do things differently but this changes when you go to politics, there is still no will to do things differently.

2. Is there enough capacity in South Africa to implement cleaner production?

There are only a few institutions or people who do cleaner production in South Africa; BECO, Susan Barclay, Chris Buckley, CSIR through their NCPC and other groups. There is definitely need for more cleaner production capacity.

3. What are your points of view in regards of the NCPC?

In the past the NCPC has not done much, they have been just structuring themselves. They had a lot of internal changes, but in the last half year they are beginning to come to steam; setting up different programs, building infrastructure, appointing people and finding sources of funding. I expect that in the upcoming 12 months industry begins noticing a lot more the NCPC.

4. What are your points of view regarding civil society participation in cleaner production?

The easy answer is that civil society participation is very important. The reality is that there are very few examples where this has happened. I cannot think of any in South Africa. Greenpeace had some involvement on it in the early 90s. They put pressure on industry towards cleaner production. They produced a book related to it. I think it was called 'the NGO Handbook for Cleaner Production' but I am not sure, just google it to find out. I cannot recall of any similar example in South Africa, if you consider the universities part of civil societies some of them have involvement in cleaner production.

There are some NGOs in Cape Town that are registered as Company 21, for non-profit organisations, they do cleaner production. We have competed against them. I refuse to recognise them as NGOs; they just take away job from us in a dishonest manner.

Civil society in theory puts pressure on industry to move towards cleaner production, but I cannot think of many examples. A centre for cleaner production can for instance bring industry and civil society together and have them talk about cleaner production; that would be the end of it. Realistically I don't see civil society participating in cleaner production. It will be an industry – government exercise for the foreseeable future.

At the moment environmental awareness is just related to conservation, about saving the rhinoceros, the elephants, the wild life in general. For instance if you look at some of the major environmental NGOs operating in South Africa, Wildlife Environmental Society of South Africa, WWF and EarthLife Africa are mainly focused on the green agenda instead of on the brown agenda. Civil society does not currently have any capacity to make any contribution to cleaner production. Most environmental organisations are just small organisations without much to contribute.

5. Can you talk about the social focus your company is following?

You have people, profit and planet; currently we are just focusing on profit and to some extent planet or environment. The people aspect has been neglected and here in BECO we are trying to address that through corporate social responsibility, we are integrating that aspect in our business. South Africa is very good on regards of the people aspect, there are many projects going on related to aids, communities, etc. Two years ago I did not see CSR happening that much, but it is beginning to pick up now. It is slower than expected but I see it will improve as time goes by. Most companies do not take a preventive approach – BECO is doing it. We have a case where a company gives their waste paper to a school so that they recycle it and get some money out of it. The company can do it directly but by giving it to the school they help them create some environmental awareness as well as earn a little money while improving the relations between this company and the community.

In the Cape Town, Belfield south is an area with severe air pollution problems, beside it there is a teknicom and the Western Cape University. There are many professors in those institutions with strong knowledge on pollution, in particular one of those professors began the Belfield South Environmental Forum and thanks to it many things have been done. It is an example similar to what has happened in the south Durban basin. You can get more information with this professor, his name is Cairn Cross, professor at the Cape Peninsula University of Technology.

…In terms of the situation that you describe is taking place in Durban I think that you need both a person promoting cleaner production and a centre for cleaner production…

Appendix D. Interview Transcripts, September – December 2005 Data Collection

Interview with Michel Simon – Glenwood, Durban, August 29th, 2005.

- Michelle Simon is an environmental consultant and ex-anti - apartheid activist.

GN comes from a place where citizens trust the state, where the state acts responsibly on their behalf. That does not exist here (Durban.) You cannot superimpose a more advanced western model in a country that will take a long time to get to that state. Apartheid is still alive in the economic, social and political relations that have continued within industry.

About my career, I have been practicing privately for the last two years as an environmental consultant. I needed to be available because I have a 5 year old daughter. My core work comes from the university, from the Centre for Civil Society; I come from south Durban. That is my home. My knowledge and academic career has come from my experience with the pollution. I am also doing some work for the provincial environment looking at cooperative governance to make the environmental department to function a little bit better in terms of conservation and the environment. People always assume that all consultants are for the money, but I am a socialist, a lot of the work I do I don't get paid for, specially with the locals, to me that is a spiritual connection to make sure that environmental consultancy is used for having good housing rather than just dumping people in the most atrocious kind of conditions and call that housing. I am now starting with National Environment doing community environmental education.

I started in the environmental sector when I was 15. I started my political involvement in the anti-apartheid struggle at that age. That is how my involvement started; I grew up in Merebank in south Durban, which was a very stronghold for political as well as environmental stuff. You cannot separate environment from apartheid, because when you live in a community where the beneficiary of the apartheid is industry and the government and industry have this relationship of polluting on black communities because of racism, you cannot separate those agendas. By the time I grew up there was not a clear definition of environment. You have to remember that in this country as in other south countries black people are very detached from the environment, because it was initially very bio centric and it was defined by white people, by white middle class activist that were saving the plants and the trees and totally isolated from human impact. But we knew we were fighting industry for polluting. You can see the difference, you have Merebank, Wentworth and other black communities all been polluted and then you have white communities where they have everything, they have water, clean beaches and in your beach you find oil in the sand. You have been dumped upon and you can see those discrepancies because of apartheid and you fight against them.

So I decided to study something about the environment, because that would mean that I can give something back to my community, and my greatest development did not come at the university. My greatest development came at the community level. I went to study environmental management at the university and became a research assistant during my second year. And after that I went to work to Jo'burg, to the health and environment department, which was something new. In Jo'burg there were a lot of blockages, I was facing a lot of racism as well as my other black co-workers. I left that job and went to the Environmental Justice and Networking Forum (EJNF), I was the working as one of the coordinators. EJF was the first environmental structure in this country and started in 1992, and it came from global pressure. So it was the first structure that brought the brown agenda and matched it with the green; we need to protect the earth, but we also need to prioritise human health, issues from industry, the direct relation between industry and health. EJNF was very successful, because the black people, if you live in a township the last thing in your mind is going out and save the earth, but you

need to create and understanding of how the immediate things such as access to water, electricity, etc. all of them have an environmental relationship.

In 1999, there were problems in the organisation and it still exist but the main activists that formed the organisation pulled out, so you know when that happens a lot of nastiness goes on among people because of personal conflict, and it makes the broader collective struggle fail. Out of that Bobby (Peek) set up Groundwork. So, Groundwork replicated the mandate of EJNF and took over a lot of the core competencies of EJNF. It's sad, because civil society as a whole suffers when these conflicts happen. There's a lot of politics on what people in civil society do. A lot of political activism came from Wentworth, that national kind of strategic underground as well as Merebank. There is a clear distinction of the identity of these communities during apartheid in terms of their political identities and Merebank had both an underground movement as well as a very strong community based structure.

How the environmental movement started in SDCEA is that SDCEA is post - apartheid. All the activists in SDCEA are post – apartheid activists. Post – apartheid, all the activists that sacrificed their entire life for the struggle. A lot of the activists were very exhausted after the national democratic election. They were waiting to be free, so that they could also have real life, because your entire life was consumed by your freedom fight and you did not have time for your family or anything else. It is Merebank where the environmental movement basically started that the activists disappear because they focused on jobs. Many of them went to government jobs or left for other provinces, just to explore a new life. I define that as an activist drain. Many activists left post – apartheid. SDCEA basically saw the need that now that you have the constitutional rights and these freedoms in place it was a good time to push the civil society towards fighting for these issues, because this does not happen with the elections, the change of government. The government changed but all of these grassroots issues still need to be pushed. So SDCEA, Bobby got involved in a protest in 1999 in the Engen plant when Mandela came to open a new plant. That is how SDCEA started.

I worked for SDCEA, I started in 2000, I developed the ideas of the Danish plans, all of them. One of the outputs was the refineries comparison; the second one was the pollution map. Unfortunately there were a lot of problems in SDCEA. I think is important not to hide things and not to keep them silenced, which a lot of people expect when you are an activist, but I think you cannot rectify things that are not right. It is unethical and you are seriously committed to exposing them. SDCEA was very controlled, Desmond D'sa has been the chairman forever, since it started, and I thin this is not right. I believe that if you are really committed to civil society you need to let in fresh blood and make sure there is fresh thinking, because you have this dominant old god that is bureaucratic and very fascist in his approach. The irony is that you are fighting industry, you are taking them on and you are taking on government and you criticize them for this bureaucracy, yet you are the same. I am very radical and it comes from the fact that I have been in the apartheid struggle, that is a very ethical struggle, where there is no glory, you don't do it because you want attention, you know you make this commitment because it is a collective commitment because you want to make sure people are free in this country and SDCEA is a post – apartheid activist. They don't think in the same way, they don't have the same organisational ethics and there is nothing wrong with that. You cannot demand the same from them, but the fact is that you need a consistent degree of ethical organisation in order to make sure that the organisation is truly representing its constituency.

I had a lot of problems in SDCEA with these issues, to me you need to make things right. The ordinary people in Wentworth and Merebank have the same thought, they are saying the same thing; 'look, this organisation is not representing all of us because they are not engaging continually'. SDCEA has a strong base in terms of its immediate membership and people know that they have to fight industry, that they have to fight government, but there are a lot of things internally that are wrong. Anyway, I resigned because there was racism internally. There was a guy from the member constituency, from the board. It's easy to be racist to a staff member, because you can cloud it as a staff problem. An organisation should be democratic, that is why I don't believe in hierarchies in grassroots organisations, unless people understand that it is with the sole purpose of coordinating. It does not mean that now you dictate to everybody else. Anyway, this guy had a sticker of Hitler in his car, he was a neo-Nazi campaigner and he belonged to SDCEA. He was from Germany and he had a sticker of Hitler in his car in 2002 and in the past he was a Neo-Nazi campaigner during apartheid. He

contributed, but there is a direct human right conflict there. I left and the other progressive people left as well.

SDCEA mostly work in Wentworth and Merebank and the Bluff mostly and the other areas are isolated. I did some work in the south Durban area assessing public participation and I will let you read all of that. I worked in the townships, in areas where SDCEA does not even go to, where they are facing very basic environmental issues such as lack of water and sanitation as well as being beside industry. In a way SDCEA holds a very racial identity, it is still the most privileged organisation.

1. What are the main environmental organisations in Durban?

Non governmental organisations have levels and many of them are structures funded by corporations. SDCEA falls into that level they are NGO, yet community based, because they are funded, they have resources. And then you have the actual community based organisations, such as HIVS, religious groups, etc. Many people left SDCEA; one of those activists is Peter Drier, other one is Harald Witt, a lecturer at the UKZN

2. What is the relation between communities and industry in Durban?

For years industry has been identified as perpetrators of apartheid. Because they benefited, but they have also conducted themselves in a way that showed total disrespect during apartheid and post – apartheid and because of the change in the country they are trying to create this surface impression of change, and in a way they changed forced by the changes in the country. Industry has been doing piecemeal sort of agreements. Whenever you see SDCEA pushing and demanding, industry has been forced by the authority to do something. Anything industry does besides the law for them is voluntary and we should say thank you god. Over the years with the pressure form NGOs, especially from EJNF, who has established national pressure points, Groundwork and SDCEA have pressured to make it happen.

Industry operates from the fact that communities don't have technical knowledge. People believe what they are told because the information is coming from 'experts', but it is so easy to manipulate information to your advantage. For example, they used to say, SO2 is a problem, let's focus on SO2, let's monitor SO2, that is the issue, but that was to divert attention from other problems. Like H2S for a long time when people smell that rotten egg smell they would say "it's just a bad odour and it is benign". When I was in SDCEA it took me just very little research to find out that this was in fact a new neurotoxin with a lot of problems associated to it. It takes time to monitor how people are affected on the ground, so when people were phoning and saying we smell rotten eggs, we are sick and we have headaches and we are nauseous it was in contradiction to the industrial information that claimed it was just a bad smell.

Over pressure from civil society the environment minister reacted. You are charged with the function of making the constitution right, the EH&S real and if you don't do it you are losing support in the ground. So they began developing the Multi Point Plan.

I think today industry is still arrogant, they still have this attitude, look, we will do what we are forced to do, anything else be grateful we are doing it. They still have exceedances, they still breaching the limits, they are not moving towards more progressive development and this is built upon history, if you look at the managers all of them are white, they allow black people in, but not to take decisions, and most of the factory level people are black. Industry is strategically positioned next to poor people, they moved people informally. You have 4 refineries in the country, two of them in Durban, it's a nightmare.

Industry operates from the notion that they have economic power and they can hold government economic ransom, because these are multinational corporations and all they have to say is, we will pull out. They operate here with dirty technology because they make more money, instead of directing the profit margins to cleaner technology, they can pollute on people, externalise those costs and make more money.

Countries like Denmark have so strong citizen power that industry cannot mess around with them, that is different in SA. For example a Sasol pipeline that was been objected by the community, government at a national level had agreed to let that pipeline run, so no amount of complain would do anything to change that.

3. Do you consider that there is necessity of a GN in Durban?

I think that it does exist, but not as a network, but as the MPP. If you look at it, the forum has similar bearings, something like a GN. A MPP reflects similar intentions, getting all stakeholders together and make them work together.

4. What can motivate industry to form part of the Green Network?

The problem is when they exceed emissions and nobody is issuing a penalty. Juts until recently Engen was issued a penalty. What is the point of having laws in place if you are not going to fine, we need to maintain boundary issues, they break the law they are fined, they exceed, they are fined. The amount of money they were fined was R1000. That is the money that they spend in teabags, is nothing! The crime and the fine need to match. Those are environmental crimes. If you speed with your car, there is no negotiating, you were speeding, here's your fine. A rapist that has irrevocable evidence that he raped someone, the judge is not going to ask him, are you sorry, do you feel remorseful. OK, no fine, no imprisonment. And that is what happens with industry. Industry rapes the land, rapes resources, and abuses people and they are not fined.

In terms of building relationships, the only way you can trust industry is if they show more advanced commitment, beyond the law, and when you go beyond the law and you do more and you are honest, you say 'look I am wrong' and you take responsibility, you take ownership, because there bound to be errors in industry. Things happen in a plant, but they need to be honest and open. They need to understand that they must release information to community. They edit this information. In the constitution you have section 24, environmental rights, and then you have confidentiality clause. What they do is that they block important information claiming is confidential. As an environmentalist I don't care about their trade secrets, but everything and anything that impacts on people beside the fence line, people have the right to know. And that information must be released. A GN will work only when it has prerequisites in place, those prerequisites are; an open, honest, complying industry in terms of international standardisation and one that goes and shows respect and social responsibility to the immediate neighbours and paying back from the resources they take.

5. Would a GN help solve some of the problems caused by industry?

I think yes. A lot of the good advanced environmental standards actually place a lot of pressure to attain that level. They show that it is possible and necessary in order to create harmonious relations between industry and community if you force them. This means that all the arguments that industry use, we cannot do this, we cannot do that, can be nullified when you show them that there are living example of this thing happening. It is very progressive. If you show the government successful case studies, they kind of feel more obligated towards that achievement. Good case studies put pressure to follow those good practices.

6. What should the network focus on its initial stage, OHS, improved environmental performance, CSR or a combination of two or the three of these options?

The 3 of them. We've waited too long. This would force government and state to match the constitutional promises with the reality. There is necessity for something radical, strong and well formulated.

7. Who should provide the funding for the GN and what kind of funding system would be the most appropriate for the GN?

There will be a need to match it with donate, because of the stretch fund that government have. Industry must commit to it, but with the condition that there are no strings attached. Industry contributes money and they hold strings to it, and they use it as a power tool. That mustn't exist. In Denmark the network is mostly the relation between the state and industry. In South Africa it cannot work like that. It must be all 3, state, private sector and civil society, and it must exist like that because it would never work. It would be flawed from the beginning, because there is a lot of mistrust as well as lack of respect for public participation. There is a difference between public consultation and public participation. I see public consultation when you call a meeting and you cannot engage with people attending, you just stand there and tell them how things are, but in public participation people understand what you are talking about, it creates informed decision making. In SA you cannot do what has been done in Denmark, there is no trust among the stakeholders, and we cannot allow the government to make bilateral agreements and decisions with industry, because, trust me, based on the economic priorities and the way economic policies are structured in this country it would be to the disadvantage of the communities. It must start with an equal stakeholder contribution. It sounds like a brilliant idea. I don't know much about the GN, except how DK as a case study works. This could be a blueprint for possible stakeholder's structure on a broader, beyond the environment structure. Unions should also be involved.

8. Would GN be an appropriate platform to begin a cooperation approach rather than confrontation with industry / government?

It would force them into a consolidated approach towards managing their responsibilities as well as compliance.
It may be more of a problem for industry than to the other tow stakeholders (government, civil society) in terms, because they have more to compromise in terms of their dirty operations.
One problem that I see in voluntary stuff is that there may be cloudy issues in a structure like this. Industry may think that because we are doing things here, we would like a little bit of leverage here. You have to be aware about possible spins offs. Wherever industry can get away with something in order to save money, they will do it. Industry would be the most reluctant partner in the GN.

Interview with Muna Lakhani and Vanessa Black – Glenwood, Durban, August 29th, 2005

- Muna Lakhani is the head of Zero Waste Institute of South Africa, an environmental activist and member of Earth Life Africa.
- Vanessa Black is an environmental activist and member of Earth Life Africa.

(Muna) A centre concerned with issues of production is a good idea, the form it is beginning to take is a little bit scary and potentially bad. This afternoon I had a call from the National Department of Environment, I have been involved to develop the strategy to develop the National Centre for Cleaner Production, and they call it cleaner production, as opposed to civil society who would like to have clean production. What you find in SA is that business is very concerned with having civil society in the process and this is reflected in many ways, it got reflected in National Centre for Cleaner Production. They are concerned that civil society sits at the table, because they will find out how business is fucking up and therefore use it in campaigns to embarrass them and damage the shareholders, etc. One of the key concerns is how to address that. The truth is that South Africans trust NGO's the most, lawyers and politicians the least.

The legislation provides for a local provincial and national Environmental Advisory Forum, unfortunately the government has decided to set up the national one first. The vision is that the local ones be set up and they would nominate and select the provincial people and then the provinces would select the national people, so that they are accountable to the ground. But that did not happen.

The key issue about trust is that industry has had limited engagement with civil society. Business is not

aware of the level of integrity of the communities. If I give you my word that what we discuss today I will not discuss with anyone else, I won't. So the trust issue is not from civil society and in fact I can show you government people that are more comfortable with civil society than with business.

(Vanessa) But I think that also depends of the community.

(Muna) Sure, for example South Durban, SDCEA, we are supporters of them. But they also take every opportunity to take any information in cleaner production or other to come back and hit industry. Earth Life Africa uses that information but more strategically.

(Vanessa) But also depends on the campaign, for example in the nuclear campaign whatever information we got to know we released.

(Muna) I did a presentation last week and funny, the oil industry came and said thank you so much for making an honest presentation. The assessment of the situation was good, this is bad, and this is what you can do. Industry forgets that if I want to find out what you are polluting as industry, whatever industry, we go Google it and we know. So they are not denying us information by not engaging with us, we already have the information. Information you think you would leak to us if we are in a forum that we would use as ammunition, we already have that information. We know what is the pollution from the plant is, we know the best international practice, we know what the sustainable practice is, so what they need to do is to get in a room with us and engage. This would help a lot with the Green Network or whatever you want to call it. As long as they are convinced of two things, we will not take it personal, you know, we can argue until we are blue, but after the meeting is finished we go and have a drink. The second thing they need to be convinced about is that we don't treat other polluters differently, because then they would see that it is a competitive advantage and a financial difference. No, all polluters are wrong. But they don't have the trust because they never engage. The guy who heads Mondi worries about me. He knows that I know about Mondi. But yet, he has never has a chat with me for half an hour.

(Vanessa) There is a long history of distrust in terms of establishing a forum to speak openly, for two reasons; one is around monitoring committees around particular plants that had problems. We lobby strongly for a long time to have monitoring committees, but the problem is that once they were established they were controlled by industry. We were saying that industry should pay for them as part of their responsibility but they must not own the process. What happens is that industry would pay consultants or members of the community that then would take the easy line. So we had a whole set of guidelines how a steering committee should be established and that people should be aware that industry pays into, but that the community can select their own consultants or experts to help them interpret the information. That is another thing, when community people are not able to understand all the technical documentation. So the company will interpret it for them. So you have a whole bunch of people meeting every month not achieving anything because they could not interrogate it because the experts would not help them understand it. There was also a whole big blow out about these environmental management corporate agreements around finalising environmental policy. Industry went behind negotiations. In theory they should be a good thing because the way they work is individual agreements to improve on baseline. So it is like a baseline standard where government and industry agree on a better standard. Compliance means you need to be this clean, but the corporate agreements make it better. But that is not how it went out; firstly because we did not have baseline standards, we did not have minimum standards anyway. It was setting a contract that would last 'x' amount of years around a particular thing that then would be eventually lower international best practices, so people were very weary, there was a big fight about that. People were trying to get away of those agreements because so many industries already had permits or permit applications that over relaxed and because they were set over a number of years, you could not get them to improve because they had this legal paper and you are stuck with it. So as soon as you start taking about this corporation agreements (EMCA) everyone goes 'ahh'; is this another way of industry not to comply with the legislation.

(Muna) One of the things we do in the Cleaner Production Centre, where I am the only civil society representative is to say; all voluntary agreements should be only post compliance. Only

after the company complies with the standard then we can enter to voluntary agreements (EMCA), then we have a forum for you to improve, but first industry needs to have a minimum standard, and they want to use the EMCAs to reach a minimum standard, but we need to have a minimum standard first.

1. Could you please talk about your organisation mission and its objectives?

(Muna) Zero waste has been a volunteer thing so far, we are in the process or registering as a non profit organisation, so formally it does not exist. Zero waste as a concept has been running in this country for 10 years. Zero waste fights against incineration and land filling, no dumping, no waste going anywhere.

Earth Life Africa is a lot stricter, is a more activist approach. You will take full responsibility for what you do. We will do two things, we will expose what is bad but we will also put on the table what is the sustainable alternative. Whenever we have a campaign if an industry is doing x, y, z we put alternatives to what they can do. It is quite hard line. It is the tradition that Earth Life Africa is the most radical environmental organisation in the country. We always take a harder line that the other organisations do because it pushes them to improve. It is our role, so that there is progress, so that things go forward. In some ways SDCEA is more radical, but they are also more political.

2. What do you think of the pollution in Durban caused by industry?

(Vanessa) There are the big polluters, these big industries are being targeted but there are a number of smaller, subsidiary industries that are also bad. The government does not even have a list of who they are and what they do. So you cannot go there and say we need this. So you can start organising for support.

(Muna) The big names always come because they are the volume producers, so let me give you an example, Sapref claims to be emitting 40 tonnes of SO2 a day. When the community organisation did bucket brigades found it was much higher, so they eventually admitted that they emit 52 tonnes a day. So they were under reporting for 12 tonnes a day. A refinery of that size in Amsterdam produces only 12 tonnes a day. I was discussing this with one big company, who said you always come after us because we are easy targets, and I said, if it was murder, I will go for the serial killer quicker than for the person who murdered one. I will chase harder the person who killed 10, especially when we have limited resources. We are volunteers.

There is certainly a focus on the volume, which is a good thing, but there is not always a focus on the toxics. We have no information of the chemical being used in our country. There are between 100 and 700 thousand chemicals being used and toxicity tests done in less than 2 percent of them, this excludes cross toxicity, when 2 chemicals mixed we don't know what happens. So we don't know 98 percent of chemicals and we don't know 100 % of mixed chemicals.

3. How effective has been NGO / local communities' pressure to improve the environmental performance of industry in Durban?

(Muna) Without NGO's nothing would have happened. So the vast majority of the impact has been because of NGO's.

(Vanessa) They have been quite good at mobilising solidarity. I fear sometimes NGO's such as SDCEA or Groundwork don't have enough support outside south Durban communities that are directly affected. They not always get solidarity from other communities. In Durban because of the wind people do not see this is a polluted city. They complain about Jo'burg and whatever, but if there was no wind they would see the extent of pollution here.

4. How important is Green Marketing in South Africa?

(Muna) Labelling a product would be a good thing; most of civil society does not know the issues. Because a label does not say 'contains sulphur dioxide as a preservative' people assume it is clean.

People's knowledge is low. Labelling would be good for people to make an informed decision.

(Vanessa) There have been a few supposedly green industry environmental standards. I cannot remember the name of which one it was now, but it was so ridiculous, because industry going praising themselves for how wonderful they are, their environmental reporting etc. and giving each other awards, it was so bad that Thor Chemical actually got an award for this environmental standard, so they were actually listed as a good company. That is bizarre.

(Muna) ISO is a standard given by business, within business, from business. Government has minimal input in the ISO standards and civil society none. So it is actually a meaningless standard. ISO 14000 is the highest environmental business standard. It means, question, from a checklist do you have environmental measurement, yes, you passed. Doesn't ask what kind of environmental measurement standard you have, doesn't ask what toxic chemicals you use, does not ask what your impact is, what your energy and water resource usage is, does not ask any of those questions. It just checks that you are improving from your baseline. Your baseline could be killing half of Durban. Do you comply with the law of the land, yes. What is the law of the land, they don't ask.

(Vanessa) One organisation you should speak to is Chemical Allied Industries Association (CAIA). They got very strong environmental lobbyists. They will always have a say in all the policy making and environmental forums. They push for industry. It would be interesting to ask them if they would trust such an effort. If you have an organisation like that (GN) it would have to be a completely independent body, which would mean a complete set of resources, because there is no organisation at the moment that would have those kinds of resources. There are some organisations that do CSR but they are not trusted.

5. Do you consider that there is necessity of a GN in Durban?

(Muna) I started by mentioning the LAEF, the Local Advisory Environmental Forum, then the provincial and the national, something like that would be part of a local environmental body.
Yes, there is a need, but not as a separate thing. Legislation allows for a Local Environmental Advisory Forum, that forum can choose to do whatever it wants in a normal democratic society; the main aim of LAEF is that all decisions made in the local government go through them. It is like a clearing house. The intent of LAEF is to have government, business and civil society working together. I think civil society is to thin on the ground to have multiple organisations, the cleaner production, zero waste, GN should be linked to LAEF, because what happens is that we get stretched, we don't have the capacity.
You need a LAEF that is formalised by government legislation structure, that structure can have groups; there can be a group around CP, a group around zero waste, whatever, etc.

6. What can motivate industry to form part of the Green Network?

(Muna) Many things, I think that the line is between those who are subsidised by the environment and those who are not. It is also defined by those who wish to be world class in the real sense of the word and those who don't care. The only way for it to happen is to begin and see what happens. We can intellectually discuss this over many glasses of wine for many years, but what we should do is to identify 10 key industries, 10 key civil society people and 10 government people and put them in a room for a week and see what happens.

(Vanessa) If it does not impact the shareholders, it will not make much difference. Export industries are another big one, their exports need to be green, and the EU markets are huge.

(Muna) Only a few companies care, but most of the companies don't know how. I suspect that if they were in a secure environment where people are engaging with them and aware of what they are doing they would improve. In Hammersdale, there is the first WMC that we set up; it is still running, after 7 years. That is amazing.

Another motivation would be capital funds, some business can see the benefits, but they don't always have the cash to invest. The vast majority of zero waste, CP interventions cost nothing.

7. Would a GN help solve some of the problems caused by industry?

Only if it is integrated into other structures, not as a stand alone. I think it should start as improved health and more jobs. Zero waste thinking automatically creates more jobs.

8. Would a GN be a legitimate institution that you as an NGO would respect?

(Muna) If it has teeth yes. If an industry has been engaging in the network for a while, and they decided they don't want to be there anymore because they don't want to stop polluting, then the network should have some power at the local level to say, 'government we tried, they are not according to best practice, so you need to change their permit or business practice to make them do it' Which is why the LAEF is the better vehicle, because in theory the LAEF can have teeth. Or a GN with teeth. At the moment there is no teeth.

(Vanessa) People would probably not want to attend other forum were they just talk. Especially communities and organisations in Durban south particularly, they are fed up with talking with government. They are distressful, very suspicious, they don't have the capacity and there is also seemingly a strategy of industry to wrap people with meetings which completely exhaust you. It is called 'stakeholder burnout'. There is a better term for it. It is a tactic of industry.

Without a clear framework with clear teeth GN would die.

9. Who do you see as the main driver of a possible GN implementation?

(Muna) Ideally civil society if they had the resources. Technically is the responsibility of the government. Unfortunately what has happened is that government has formed this partnership with industry against civil society. Mainly because government thinks they need industry more than they do. Every time industry is settled by legislation, standards, they say, it is going to cost jobs and because government does not know the difference, they shut up.

(Vanessa) There has to be a really honest approach. Say, we are going to try this thing for a year, can you all come to the table, and make a go of it and the make an assessment. If it was not real change, then people can drop out if it. 'This is the intent of the forum; this is how it would be enforced'.

(Muna) If there is no enforcement, there is no point. If GN does not have a good faith agreement that is enforceable then it will fail.

10. Would you envision it as an organisation where you would like to participate? If so, to what extent would you like to contribute?

(Muna) If those conditions are met, yes. Clear objectives, clear mandate, clear teeth.

(Vanessa) We would give it a try.

(Muna) But if they start playing games, and using it as a green wash, there is no chance. We would embarrass the hell out of them for their rest of their lives, until I die.
In Norway they got a very good system; they first set the standard, and say, 'industry, you have 3 years to meet the standard, if you don't meet it, we will legislate, in the meantime we will have an industry and civil society forum' It works very well, but that is because industry there is slightly more mature. The problem here is not civil society.

(Vanessa) There is a general predominantly feeling that if you can get away with something you will. If you can get away with breaking the law, then you would do it. It is a post – apartheid condition, and it is very difficult to overcome. Because the majority of us did not respect the laws under the previous government, the tendency is the same with the new government. If we had enforcement in this country we would not need the Green Network.

11. Industry says that they are doing their best, but they don't see any recognition from civil society, what are your comments in this regard?

(Muna) Not difficult. If they say they want recognition from achieving the minimum standards, then it is bullshit. We are not going to recognise them for not being criminals, we are only going to recognise them if they are beyond compliance. First demonstrate compliance. They want to be paid for not breaking the law. Being a law abiding citizen is the minimum, not the maximum. Don't expect recognition for compliance. That is stupid.

(Vanessa) It depends on what industry, but they do little things. They have corporate responsibility programs where they fund certain things for the communities, almost to buy loyalty. There is a program in a township outside Richard's Bay from Richard's Bay Minerals, which is a large mining company, nasty, nasty company. They founded this project that says overalls, it is nice stuff, but it is so little but they make it look as if they are doing so much. While they pay you nothing and kill your family they give you little crumbs to make you feel better. That kind of dishonesty makes people feel very angry.

(Muna) If they want trust from civil society, they themselves should be trustworthy. Trust is a two way street.

12. What should the network focus on its initial stage; OHS, improved environmental performance, CSR or a combination of two or the three of these options

(Muna) The main thing is that you break those in different things, you are going to lose. They are the same thing. If you clean up your environmental act, then you are improving the other two.
Post compliance there is little bit for CSR.

(Vanessa) People here would not be that worried about the social responsibility part for the reasons I mentioned. There is such distress for the way it has been used, that at this stage it should better focus on cleaning the environment. Communities want the corporates to focus more on environment. Because then more people benefit, not only some people on the project. Only the company benefits here with CSR. It is not only the company, but just a small group of people.
There is this company based in Johannesburg that manages toxic waste. They would do things such as, they were planning a new toxic waste dump right next to poor people, what they did is they went to these very poor people and said 'if you allow us the we will build you a clinic'. It is like a ransom, you can either have no medical services or have a horrible toxic industry that is going to make you much sicker but you will be able to have medical treatment. And that is exactly the kind of distrustful evil thing that companies have been doing. There is a term we use in our circle, 'that is just another FODE' "Forces of Darkness and Evil" that is what we need careful of. It is a joke, but it is also serious. Because only a FODE will go to a poor community and do something like that.

Communities in Durban would say we don't want your nuisance, we don't want to move, and the bottom-line is clean up your mess. People in Durban south have been moved several times for government to accommodate industry; some people have been moved three times, so they are tired.

South Africa has a mindset where people don't share information. Even NGOs, they usually will not tell you what they are doing, they will have all the publicity, but in the ground there is nothing. There is also a lot of egos there.

13. What other measures / alternatives do you see to tackle pollution in Durban?

(Vanessa) Zero waste, stick to legislation. SA has good legislation, but only at policy level. No regulation. We have this Clean Air Act now, but that is ridiculous, you get caught and get a fine of 1000 or something like that. With that kind of fine there is not much you can do.

(Muna) First transgression R 50.000, second transgression R 500.000, and third transgression they put you in jail. They will clean up like immediately.

At one stage there were six inspectors for air pollution, and then people retire or whatever and at a point they were left with one person for the entire country to check and monitor all air permits. You cannot monitor anything. Durban is doing this south Durban basin monitoring thing, is bullshit, is better than nothing, but is bullshit. You put a monitor in each pipe and then you know who is polluting, simple.
Water pollution is another big problem, there are people who have sued companies and lost everything they have. There is a person who has been fighting Eskom, because the whole community has been given up, this person is completely bankrupt and now owns quite a big amount of money.

Interview with Chris Buckley – Chemical Engineering Faculty, UKZN, Howard College Campus, Durban, September 6th, 2005

- Chris Buckley is a professor at the University of KwaZulu Natal and leader of the Pollution Research Group, among many other activities he is one of the initiators of the WMC in KZN.

1. What is your current relation with government - industry in Durban?

Government is implementing many strategies and laws. I think it is a general feeling in industry that government does not have the capability to follow through these, and that there is a lack of capacity and understanding of the nature of industry by officials, certainly when it comes to get permits and thing like that, it appears that bureaucratic take far too much time to actually get to happen. So people plan for permits and they don't get them in time. There is a general feeling that government is moving too slowly in that regard. I think industry at times feels that it has been overregulated, that the number of forms they have to fill in have become excessive. It is not only environmental issues it is just generally they feel they have been overregulated and the data or information has not been used it is just sitting in a desk without being used. It is not only environmental, it is employment, equity, it is a whole range of aspects and I think if you look at some of the studies that show the time and cost of starting business for example in South Africa compared to other countries it is very expensive and time consuming. It is all companies; also for the small companies the amount of time taken becomes even greater for the small companies than for the big companies. It is taking the one or two people away from making money. There is a concept of tax holiday, by May or June you stop working for the government and start working for yourself; this is related to how many days of the working year you have to use to pay taxes. It is considered high. Therefore that is why reducing the amount of bureaucratic input will assist companies to be more profitable in the short term and environmentally better should be attractive.

2. And what about the relation industry – civil society?

Civil society covers the whole spectrum of political and ideological beliefs; there are various civil society organisations that seem to have good relations with industry. Di Dold from WESSA is an organisation that takes environmental issues but they are not as keen on pollution as SDCEA and then there are other organisations such as the International Union for Conservation Organisation or something like that. I think if we are looking at social responsibility there was a supplement in the Mail and Guardian (South African newspaper) a few months ago in social responsibility, the larger companies put quite a lot of money into social responsibility programs, it tends to be more focused on education and social uplift rather than wildlife and things like that, environmental issues don't really get looked in that way.

There is a lot of political baggage that hangs around people and factories, because people often lived near factories and the opportunity for people to move is difficult and in the past there were no opportunities, if you live in a place for 30 years you particularly don't want to move and the economics of moving are difficult and the history of forced removals and so on. The relationship between factories and the communities is one of great distrust; both sides quite feel hurt and injured by the other side, they have been let down, promises have made and not fulfilled, expectations have been

raised and not met, from both sides, the factories start to have a relation and suddenly the NGOs sue them and suddenly the NGOs start doing something they should not be doing. The real mandate that NGOs actually have is people who go to a meeting and sign a petition, but maybe if people have to pay a membership fee even if it is a modest one it gets more of a commitment, what cost is it to a person in a community to say they support something, this is just a question, making concrete contribution and there are aspects of accountability and responsibility and then the NGO can really be representative of the community. An interesting aspect more from the regulator perspective is that the local member of the parliament or the local chancellor is in fact the representative of the people in the area as democratically elected, and therefore what the councillor says is an important issue, so we see a different view of democracy and the size of the world … I am not too sure if that is taking us where we want to go as far as I am concerned, GN. We need to think of GN as something between the regulators and industry, the NGOs can be involved, but the NGOs are not the objective of the exercise, they can have observer status and they can be informed, but I don't believe they are an equal partner in the exercise, certainly not at the beginning. GN is a partnership between authorities and the industry.

3. DK has a different history than SA, so you don't think that a GN in SA would lack legitimacy without NGOs?

There are many partnerships between government and industry and there are partnerships between government and NGOs, there is not a single way of doing something depending on the issue at stake. I am not sure if that is a very important aspect that you raised there, because there are certainly other … as long as other issues as EIAs and there is public consultation about changes and processes and the fact that you have government supporting industry, the two working together for environmental issues, I don't think that NGOs would be too important to that stage.

4. How much has pollution increased or decreased in Durban in the last, let's say 10 years

It is very subjective, just knowing certain numbers that you see around, certainly the SO2 has diminished a lot, the smoke incidences have diminished, I would say at a whole it has got better, all the indications are there that the situation has improved and it is planned to improve even further.

5. How effective has been NGO / local communities' pressure to improve the environmental performance of industry in Durban?

I am sure it has, the south Durban basin has specifically been singled out as been as one of the air pollution hotspots of the country, there are maybe 2 or 3 other places that have been identified to be in problem, how much of the identification of the places has to do with NGOs is difficult to say, but certainly they have been putting political pressure on politicians for a long period of time. I would imagine NGOs have been effective.

6. How important is Green Marketing in South Africa?

I don't think it is going to be very important, I am not too sure how widely known and accepted is ISO 14001, I think in a way it is more the case of companies getting something useful out of the membership, because the usefulness of ISO 14000, mm, it does not make it any better. I don't think the general population is going to choose a green product or move to a green product if there is a higher price on it.

7. How good or bad are industry compliance levels

I think through exemptions and other things like that, if we say most companies don't comply then they should really be shut down, the fact is that they are not being shut down, is it because they are legal or because of an exemption?
I would say most of them comply with the majority of the regulations.

8. SDCEA and other NGOs say industry does not comply, Engen for example says it complies.

The first thing those factories have to do is comply with legislation, or if they don't comply they have to be in the process of complying. There might be technical reasons by which they don't comply, for example they applied for a water permit, and after 2 or 3 years they have not received their permit, sometimes the lack of compliance is due to slow bureaucratic processes rather than doing something wrong.
I would tend to say the far majority comply. 80, 90 % comply.

9. If all the companies comply, why is there so much fuss about pollution?

It is a question how high and appropriate the standards are, and whether or not there are exceptions, companies comply but the ambient conditions are not particularly good.
The laws are changing and what you probably find is that companies don't comply with the new regulations when they come through, the new regulations will fade in a period of time, and the standard today tomorrow will be something else.

10. What are the most pressing issues your companies are facing now in SA?

If we talk air pollution, I think traffic needs improvement, fugitive emissions from small companies, certainly the refineries are major contributors as well, I think one of the big problems which is not industrially orientated is people's contamination of rivers and water, metals, heavy metals are still a problem.

11. Do you consider that there is necessity of an organisation such as GN in Durban?

Yes, because industry needs assistance to improve their environmental performance, it is not a question of what the regulation says, they need more of a consultant wise. I have been always a very strong advocate for GN.

12. What can motivate industry to form part of the Green Network?

We found it on the WMC, or CP, where we took them through the stages and they saw major financial savings and subsequent environmental savings. One of the best ways to make companies abide environmental regulation is in fact to do CP; it is to hear success stories from their peers, John Danks stands and says we should do a whole set of things, then all of a sudden, he has credibility in the industry, more than Chris Buckley or somebody else. It is industry telling industry, business to business communication; where regulators actually set back and are not heavily involved and are willing to facilitate industry take the right direction.

13. Could a GN help solve some of the problems caused by industry?

Unlike WMC and CP which had a single purpose, and some companies incorporated it into their production, where GN has a much more ambitious mandate, it does not stop with a single issue, WMC could be an activity in GN for example.

14. What other benefits do you consider / expect a GN could bring to local communities

I think the whole point of the companies involved in GN is that they become environmentally sustainable, they become financially more profitable and therefore they will expand and probably employ more people, you have all kind of benefits, you have more jobs, better quality jobs, safer jobs, better working environment, reduced toxic materials and chemicals, water will be of better quality, there are ramifications way beyond saving industry environment. It is crucial for Durban if it is to become a sustainable city.

15. Would you see GN as a legitimate institution to help improve environmental / social industry performance?

Yes. Maybe another key constituent would be Durban Chamber of Business, they have an environmental committee there, the person to see is Ian Naidoo.

16. What should the network focus on its initial stage; OHS, improved environmental performance, CSR or a combination of two or the three of these options?

I think there are other organisations nation wide that are adequately addressing the other 2 issues, I think there is a big lack in the national program to assist industry in environmental issues, there is the NCPC but it has not gotten off the ground.

17. Who should provide the funding for the GN and what kind of funding system would be the most appropriate for the GN?

We certainly have the regulators very supportive of it, I don't think they want to be the main driver of it, but they can certainly provide some of the resources, providing the office, etc. I think industry is the major partner to it, I think industry and regulators should have an equal share, but maybe industry is a little bit higher. I don't think the NGO's, I don't think the should have major participation, because when industry wants to talk to strategy, the trust between NGOs and industry is so bad that there is no way that industry is going to admit any of its problems to an NGO.
I think industry providing the funding is a possibility. CP is being included in all sorts of policies and legislation, regarding energy, water, OHS. Probably this is a different situation when GN started in DK. It is sufficiently recognized that there are economic benefits in CP, not all the time, but there are, the low hanging fruit. A CP initiative is more driven in the department of Trade and Industry than in the department of Environment.
It makes sense in order to make industry more profitable that one of the incentives to do it, but you have to be careful on how to do it, on how to start it, you cannot subsidise your industry, but you can begin promoting environmental responsibility. I am not an expert on this, but you will have to look carefully at any government subsidy, but I believe it makes a lot of economic sense. Employment, job creation, it makes a lot of sense to spend money in efficiency; it makes a lot of sense to assist industry to become more profitable. The whole range of job creation, wealth creation, efficiency affects sustainability at the end of the day, if factories are not efficient they are not sustainable.

18. What specific services do you foresee GN offering?

I would start up by building on what has proven to be successful, WMC, CP, I would expand that concept and extend it, in that way you begin having the trust from industry, you start having paybacks and you see the benefits coming through quite quickly . Then one needs to listen very carefully to what people want. I am starting to see people talk about environmental LCA, also some things in product procurement, green purchasing, what we need to do is to prepare for that.

19. Originally GN is a P-P partnership, should other stakeholders form part of the organisation?

I think we talked about that before, civil society can be informed, come to the open day meetings and be told what is going on, but I don't believe they should be on the central decision making.

20. Would you envision it as an organisation where you (university) would like to participate? If so, to what extent would you like to contribute?

I think we certainly would have a role to play, I think industry would be happier if they run it themselves, it is their money and they look after money far better than the university, I think the university can assist with research, investigations and training people. We need to create more consultants; the role of the university is education and research, anything should be seen in that light, provide training for people who want to be consultants or people who want to be champions in their organisations, and if there are new ways of doing things people can come to the university.

21. Would GN be an appropriate platform to begin a cooperation approach rather than

confrontation with industry / government? In what other ways can this be addressed?

We proved it with the WMC, there was a little suspicion at the beginning and the government realised we were achieving results, so the 2 have ultimately similar objectives.

22. Why nobody is pressing more vigorously for the GN to happen?

There is a great difficulty in service delivery, unemployment is very high in the country, there's some people who can't find any job and there are some people who haven't got the time to do the work they should be doing, Jessica not being at work makes a significant impact on it, I think Siva Chetty will be the new responsible for it, after the MPP is over, also at the end of this year the health study should be drawn to a close, and categorically there should be evidence that links pollution incidents to health episodes.

23. How realistic is the creation of a GN in the short future in Durban?

It will happen. I would say within tow years. In the past there was no absolutely understanding of what CP was, what they thought waste minimization was compacting waste and incinerating it, when you look that now and you see that CP is everywhere, in so many different legislation and regulation, you actually feel quite humble that you were there at the beginning. It is just moving forward, it is unstoppable. It is better that it happens in a structure fashion so that it does not collapse in a useless exercise, rather be patient and get something worth.
I think it is important in the subsequent job you do, is to have a manual of activities that should take place and what is needed to move them forward, what's next. It needs someone to write it down, someone from faraway sounds better than someone from here.

24. What are the plans NCPC plans for Durban?

I will tell you Friday next week.

25. What other options do you consider could help tackle pollution?

Traffic is a major cause, a better transport system, a better system to make trucks go out of the city faster, I also would like to see a hot water reticulation system, to have an industrial symbiosis, maybe textile industry beside the oil refineries.

Interview with Desmond D'sa – Wentworth, South Durban, August 31st, 2005

- Desmond D'sa is the head of SDCEA.

We don't have strong laws here; we don't have enforcement in this country. That is another pitfall for us. The biggest industries are still in the apartheid mentality, they have not changed and more importantly, the multinational corporations are controlled from Europe, so when they come to Africa, third world countries they have double standards. They don't have the same programs they have for Africa that they have for Denmark. A GN will not work here in SA now; it just will not work now. It will work when we have the systems in place, a different vision for South Africa.

The way the treat us is that we are inferior. Unless the perception changes it is not going to work. I went to Shell and expose them, go to the media, and you see the differences, we compared the refineries in Denmark and we know. The refineries in Durban are across the street, they are killing us like hell, and the flare in Denmark is so small, I was shocked; modern equipment, technology is different, the crude is different, the crude we use here is dirty middle East crude. The technology that is used here is outdated, is 50 years old, it is falling apart.

That is why Green Network will not work in SA, how can you reward a rotten refinery? You cannot. In Denmark, the GN reward you for good practice, but also in DK, one man's waste becomes other man's energy, it is called symbiosis. We don't have that here. We call it cradle to grave; production, storage, export and then waste goes to black communities in SA, how do you reward those companies?

So a GN is going to be very difficult to set in SA. I called them murderers; their hands are dripping with blood.

The way the systems are set up here is that the government only goes after poor black companies. For instance they went after a furniture company; a guy who is dumping some hundreds litters of diesel, but the guy who is dumping millions of litters of diesel – nothing!

1. What is your current relation with industry?

Adversary.

2. Has the pollution decreased in the last years?

Pollution is measured only for 5 chemicals, sulphur dioxide, particle matter, nitrogen oxide, CO2 and other. On the one hand measurements are showing a reduction over the yearly average, but on the 24 hour measurement it is increasing. At the same time we don't have any standards or guidelines we can work with, so if you say decreased to what standard? So it is very difficult for me to say.

3. What is your current relation with other NGO's in Durban?

We work a lot in a number of issues, social issues. We have a good relation with them. We are the most vocal NGO in the country in environmental issues. There is no community that has not been touched by us in Durban. We are the most comprehensive, inclusive organisation, fighting for housing, water, evictions, we do education, we do poverty and we do development of youth.

4. How effective has been NGO / local communities' pressure to improve the environmental performance of industry in Durban?

Very effective, you saw us the other day in our presentation. We are the most effective, we collect a lot of data, every single complain, we capture it and we put it in the GIS and report back to communities.

I was in a meeting last night with this German company, another example of a European multinational corporation disrespecting community people. Initially they were denying it, dumping chrome a carcinogen for years and now the chrome is into the drinking water. They still play the denial game, hiding information, not being transparent, that would not be allowed in Germany. Can you dump chrome and you will not know that this is going to be dangerous?
I developed this attitude of confrontation because if I am not firm with these guys, they are going to do just the cheapest, they won't do risk assessment, they won't do sampling. They will do it on their own, bring us the information and want us to trust it. We said no, there is no trust, there is never been trust over the years. The trust factor is broken now.

If you go to each industry and ask how many people work on the environment, they have over 20 or 30 people, they got about 9 or 10 communication liars, engineers, specialists in their fields, but the communities have to find their own specialist. We need the Danish money, it's true.

We need strong law. We need command and control.

5. How important is Green Marketing in South Africa?

Green Network is a very positive thing, the reason that it will not work here goes back to the apartheid era. Black people were placed next to dirty industry, which was a strategic move by the apartheid machinery. The industry were part of it, they made many millions out of us, at the

expense of our health, our fathers and mothers. A lot of us are products of forced removal, so we got relocated from all areas, they stole the land and never compensated the people, brought us into this valley, called Wentworth, Merebank and so on. They placed us here and used the cheap labour, to increase their profits. They were benefiting other people while raping the country and at the same time destroying people's health, many people in this area has cancer, leukaemia, asthma, etc.

A GN will reward those companies and we are not in favour of that. We are saying when these companies get to the same standards of other countries, we will accept GN. Because it is a voluntary agreement; a voluntary agreement only works after you have strong laws. In this country we don't have strong laws. We don't have the political will to enforce those minimum laws we have. Who is going to pay for the damages of people who have been living for years at the fences of these companies? Industry is not going to pay for it. This is the mandate we have; we want them to put together a medical fund, where we get 24 hours, 7 days a week, 365 days a year a free doctor. In Denmark you get free medical care, you pay high taxes, you get free university, even get a free house, we don't have those thing in this country, it is a very different scenario. In DK industry pays high taxes and if they are doing well, if they invest in the plants, they get rewarded. South Africa, these are rotten industries, the plants are falling apart, how can you reward bad behaviour? And there are still issues in our mind of reparation that I cannot drop. I don't have the mandate to drop. People say reparation is an important issue in their minds. That is what people want.
I agree with the Green Network, but in our scenario, it is not good.

6. What other options are there to abate pollution from industry?

Strong legislation, more legislation on corporate accountability, I wish we could lobby in Denmark for Danish companies abroad, these companies operate well in Denmark, but when they come to other countries after a few years they realise that there are no laws, we can do what we want to do and they do. The Danish can articulate, export some of the experience, knowledge they have. We are light years from GN, Green Network is a good thing, but we are still light years away from that day. South Durban is receiving attention because all the work we do, all the exposure we do. If south Durban is bad, Richard's Bay and the triangle is worse, that area is where 50 % of the GDP is made, and it is poor black communities.

Industry has huge lobbies in the presidential office, in the national parliament, huge lobbies in the provincial government, in this province they call it 'Economic Growth Coalition'. Economic growth at any cost, I can show you hundreds of EIA's we have of companies.

People complain about serious odours, bad chemical odours, like benzene or sulphur, but everything is fine according to companies, they are still in denial. They say they are still learning, 50 years and they are still learning! We have set hundreds of meetings, 7 years of sitting at Engen and Sapref, solid years. We never achieved anything. They want you to sign agreements about things people don't understand. One day I saw some black labourer working there, no safety glasses, no overalls, no nothing, working removing waste, chemicals, after two weeks I don't see him again. The guy has gone to his farm to die. I asked to the guys, why you did not give the guy a permanent job and access to medical facilities and they said, 'no, we can't do that'. So what they do is to hire people through a labour broker, temporary labour, don't give you all necessary equipment, no mask, no anything and you work with dangerous chemicals, all you have to do is accept it. I know their evil ways.

7. You took part of the talks about a centre for CP in Durban last year

Yeah, Susan Barclay, a consultant, we said we were in favour of that, we support it.

The refineries in South Africa have 50 years learning. Shell, one of the biggest multinational corporations, that have access to the best technology in the world and they claim that they are still learning, even against their own policies that they sign up, with double standards, will that want to shift those imbalances.

I admire the Danish people; they also told me it did not happen over night, it took 80 years for them. I know that in 11 years of democracy we are still far away to where we want to get. But for SDCEA we want to document everything so that someone takes it from there. That means that we are aware, we are not in this struggle for a short time, we know this fight is not going to end up tomorrow, it is going to take long. We continue to document every thing we can.

Shell has hundreds of leaks and they still refuse to change their rotten pipelines. They still want to do it on the cheap, is like your car, if your car is full of rust, instead of buying a new car for R 100.000 you paint it for R 2.000. It is exactly what they do. It looks like they don't do it in the short term and do it right, but rather on the large term and maybe these guys will all die, but they are foolish because we keep documenting everything. We need to work with the Danes. I met with Danida 3 weeks ago, talking on how Danida can fund us in the work we need to do, they were excited about what we were saying. We've been talking about the one stop knowledge shop, GN, cleaner fuel, issues of clean technology. It is a long time of lead free gasoline in Denmark, we still have 85 % of our petrol lead, the industry is talking about 2006 and they are still not sure about it.

8. What about the smaller companies? is SDCEA doing something about them?

We are looking at all their EIAs, at their records of decisions. The sugar refineries are also bad, they have coal boilers, and we are hitting them hard there. We analyse their data and put pressure on them. We get our data from the monitoring stations, there are 14 of them run by the city, and they measure only 5 chemicals, we also take our own bucket samples.

9. Would you see support GN as a legitimate institution to help improve environmental / social industry performance?

We would support it as long as there are strong laws in place. You cannot put the cart before the horse. Strong laws in place, yee! I sign tomorrow.

I worked 20 years in the chemical industry, where industry always says everything is fine, but who pays is the population.

10. How many people work in SDCEA?

Around 22 people a month and then we have academic volunteers, socials scientists working with us, people working analyzing the air, I am also part of the Centre for Civil Society. Bobby was part of SDCEA, and then he left for EJNF until it collapsed and now he works in Groundwork. We still work close together, it makes sense.

You wanted to know about Mondi, they are part of Anglo American; they are based in New York. They have a very bad story in Durban of abuse, firstly they deliberately did not want to develop an alternative route for their trucks, so their trucks were killing our children on the roads and then they were forced to after a lot of protest. Before that in the 70's they stole the community land, this caused many people to relocate. Mondi has been accused of stealing the land and they have not compensated the community, just like the mining industry. Lately, there is huge evidence of dumping sulphur and other chemicals. In 1999, we formed the Sulphur Dioxide Committee, Mondi came to us and said 'we want to change', and we were suspicious, and they told us they wanted to change to gas you know, develop gas boilers, and we sign the agreements and gave them the contract to go and do it and after around 3 years they come to us and said no, we are going to put off the gas boiler is too expensive, we now want to increase the coal usage, and dump more ash as they have been dumping illegally so far, we have closed down one of their ash dumps and they took their ash to another black community, were we also closed them down. They have a long history of dumping illegally; they have a history of doing things on the cheap. So now they are going to take their ash to a proper landfill site, and they're going to put scrubbers to reduce emissions. So they want to burn the ash, so they are building an incinerator that they call a multiple boiler, and all evidence shows that this will produce furans. For the literature I have been reading of incineration I am not willing to accept incineration. So Mondi is guilty of a

number of things. I have whistleblowers in all companies, people working in hospitals, I just called them up and they give me the information I need.

11. Are there any other relevant stakeholders to be taken into consideration?

I will give you a list of people you can contacts from civil society if you want to speak to more community groups.

Interview with Alan Munn and Ray Damon – Engen Refinery installations, south Durban basin, September 8th, 2005

- Alan Munn is Engen's sustainable business manager.
- Ray Damon is Engen's public affairs (relationships) manager.

(Alan) Did you talk to SDCEA already? They have surely told you all kind of basically rubbish. They published some books on flaring, refineries comparison. I am asking you to ignore all of that crap in those books and do your own research, ok, into the facts because we have a problem, I am actually going to become quite antagonistic now, I am actually quite fed up with people from Denmark coming here and telling me, in South Africa how to run our business, when if you look at the refineries in Durban and SA as a whole we are streets ahead of what the refineries in Denmark can do. And we have done it without the package of environmental incentives that are available in Denmark. SDCEA published books of flaring which are just full of lies, they published books on the comparison of the two refineries, we asked them, have you seen that book?, did it come with a piece of paper that describes all the lies, all the mistakes that are in that book? They promised us that when they give that book out it will have that piece of paper in, and I am not aware of a single person they've given it to with that paper in. And the other permit book as well. It is just full of rubbish.

What I see is the Danish government funding DANIDA, I think it is, and they come and interfere on the ground and they have caused so much damage. We have an environmental club here that stop us at every opportunity of improving our environmental performance. They got an appeal to a gas pipeline. Which more than halves our emissions, they actually stopped us from trying to start this and they have a partnership with DANIDA.

DANIDA to me is a representative of the Danish government and I actually think is quite disgusting that a reputable government is actually funding money into south Durban to basically cause trouble. I am quite happy of the money that comes to south Durban if it is used constructively to assist; we have environmental problems, we have social problems here and we desperately need to tackle them and what is happening is that we get these people coming here interfering costing a lot of jobs, nobody would invest in south Durban apart from us because these people across the fence, the ones you pretend are protecting the environment are actually not interested in any more jobs, they are doing everything possible to stop expansions and job creation and so on, even when it is green, when you are reducing emissions. I just have this problem that people phone from Norway, Denmark, Denmark specially, come across and they have actually done so much damage to south Durban. I see the community around us desperately needs more jobs, desperately needs to improve the environment, desperately needs so many things, and everybody seems to be coming from overseas working with local community groups, a particular one (referring to SDCEA) and it is not helping, it is actually making it worse. So, private – public partnerships when Denmark is involved, I just stay, I just, I think is amazing …

I disagree with you (about industry – communities tensions), I don't think that there is actually such a problem, I think there are some community groups which for their own agendas causes more trouble to industry as they can, and NGOs have the right to do that, I respect that right, ok. I just think they are not doing it in the interest of the community. So, in terms of government and industry partnerships I have no problem in developing relationships and partnerships, there have been some nice examples on

PP partnerships, our industry (oil industry) does not seem to have many and I think a lot of that is because we are seen as a bad industry because of all of that rubbish that SDCEA put out, so politically is not wise for anybody in government to actually have partnerships, relations with us, so this industry is a bit of a different case. It would be nice if we work closer with government instead of the antagonistic approach that is happening at the moment which is not too bad, but it is still there, it is individual in government. Generally we try to work close to them, we got a lovely example, we just are going to spend, 8 million Rand housing more than 100 families. At the moment they live in the worst of the houses in Durban in the corner of Tara road, and we as a company are going 50 – 50 with Durban municipality and E-Thekwini municipality and buying new houses for them, which are really nice houses in comparison to the existing ones, and I might add that some of the members of the community we've been talking about (SDCEA) are even objecting to it. They would rather that people carry on living in those disgusting houses, they don't even have partitions on the roof, and they got nothing. The houses are not there yet, it takes time to get the whole process.

1. What is your current relation with government – compliance authorities in Durban?

(Alan) I would say it is actually pretty good. We've been, historically government at all levels haven't known really how to manage industry, not only refineries, the refineries are pretty well managed, compared to the other industry, the small industry, what we've been doing is working with them at every opportunity to actually help them to manage us better. If government manage us tightly, then they will manage everybody else tightly and then the environment in Durban and SA will get a lot better. Because actually we are not out of compliance, believe or not, it is actually a lot of rubbish what we read, we are actually responsible for quarter, maybe third of the air pollution, the two refineries, it is probably about half in total of south Durban and most of it is at high level, if we actually want to clean the air and the environment in south Durban, we have to focus on the other hundred plus smaller industries and of course the traffic that everybody refuses to recognize causes pollution. So our approach is to help government to basically, it is a patronize term, to capacitate government so that they can manage everyone, so we were willingly the first that have a new permit type, we worked with the Norwegians to develop that permit process, and they hit us with that permit process I think unfairly but politically they had no choice, so we receive the fine recently, but it is not a major issue. The air pollution from a number of sources has got right down, again because the government is getting up speed, for the monitoring network and the health study industry has paid something like 9 million Rand, or has committed to 9 million Rand, I think we paid 2.6 or 3 million, I can't remember the exact number. We are very happy to help them put in place better systems. Nationally and provincially we have reasonable working relationships, on an individual person perspective, I think we got very well together, but there are political dimensions where they have to be distant from us, because that is how government should be and I think we all work fine together to make sure everybody is doing the right role.

2. What is your current relation with civil society in Durban?

(Alan) I actually think we have pretty good relationships with most of the communities, I think there is a particular agenda from a few of the leaders in this area, who actually just cause trouble for the sake of it. Once you actually put those aside and you start looking for over leaders, and there are some real good people in Durban and in this area. If you look at most of the NGOs in this area, they are actually doing an incredible job and we support them, they do things to improve people's life and that is why we support them. Apart from 2 or 3 trouble makers…

(Ray) It is a handful of people in this community that are against Engen, most of the people see us as positive and also they would like to work here. If we were such a bad player in the area, they would not even want to work here. On site now we have I think around 600 people, additional people, normally is 1200 hundred people that come through the gates that work here, we have 1800 now, the additional 600 mostly from this community, and they all want to work here.

3. How much has pollution increased or decreased from let's say the levels 10 years ago?

(Alan) In the refinery our emissions have gone down, it depends on what emission you are looking at, we have reduced SO2 by 60, 65 percent, the stacks are clean now, 10 years ago there was smog coming out of the stacks all the time, the flare is not as bad as it used to be despite of all the rubbish you hear about that, SAPREF and Mondi have done a lot, the big disappointment in terms of pollution is probably the transport, which actually got worse. The country missed the opportunity to insist in catalytic converters, we have them now, but only in the last year they are compulsory. We are the biggest platinum supplier in the world; it is like shooting yourself in the head. We should have introduced them earlier and as a result the emissions are a lot higher. The small industry, large improvements, a lot of them have changed to Sasol gas, generally with the exception of transport the air quality in Durban it is far better than it used to be. Still a lot room to improve, I am the first to say that, but it is a lot better.

4. What about people in the area sick with cancer or asthma that claim it is because of industry?

(Alan) In SA there are a lot of people with asthma, there are a lot of people with asthma in Durban, and if you actually look around Durban, I know a school in Chatsworth which is nowhere near the refineries where there is a lot of people with asthma, it is a worldwide problem. Britain is supposed to be the capital world of asthma at the moment.

We have a ridiculous health study by the Michigan University which is still not been reviewed, despite they say they would do, there are a whole set of conclusions being drawn in that study which are simply quite wrong. There are stupid things, if there is a small increase in the SO2 ambient levels now, let's say the world health guideline is here in 191 and somebody is breathing air here in 70 or 80, or even less and there is an increase here by 10 or 20 parts per million, still below the guideline, people in this study are saying that tomorrow there will be an increase in asthma. And I am sorry, but all the people I have talked to that know anything about asthma and all the research I have done there is no proven mechanism for one day delay in asthma attacks at very low levels of SO2.

5. You say that accusations towards industry are unfounded?

(Alan) I believe they are unfounded. However we support the health studies to confirm that. I know what causes asthma, because it causes it to me, when you get a cold front coming from the cost and suddenly the temperature drops, I have problems breathing and I don't have to be in Durban to have that happen, you also have a hole lot of other courses of allergens like pollens and mould, we live in very humid climate in Durban, a coastal climate and you know, mould, termites, and all of that kind of stuff, which are generally accepted as but in Durban we have 2 refineries so let's ignore what causes asthma everywhere in the world and lets just say it is the refinery. The same with cancer, now cancer is a though subject, and if you got cancer, and I just happen to have a family member that has just gone through chemotherapy, so I know how it is like when people are suffering from cancer, it is not pleasant for anybody and you want somebody to blame, but in all the reading we've done there is one sort of cancer which is a particular type of leukaemia, not allsorts of leukaemia, one type of leukaemia which is being shown that can be caused by benzene, now we read things in the newspapers about cancer and there is lung cancer, they don't ask the guy if he's been smoking, he's probably been smoking for 50 years and there are six other members of the house smoking, but this lung cancer, breast cancer, colon cancer, nothing to do with air pollution and yet they are cancers, so they are on the list, now I also know that some of the environmental activists like Bobby Peek has some friends who suffer from, I believe one type of leukaemia, but when you ask him for details you can actually analyse and say it is the right type of leukaemia and let's talk about their exposure so, where they are living next to the refinery, where they are going to school, the wind direction exposure, so we can start to say maybe there is a chance, maybe it is from benzene, from Engen, from Sapref or from whoever, they don't give you the information back so we can't actually do that, we actively support the health studies, but a health study is not going to solve the cancer issue, because it is not looking at that and I think it is a big disappointment to us as a company because we want to answer that question; if there is a massive incidence of cancer in this area, we all want to know if it is there and what is causing it, because until you know that you can't solve it.

6. Are you referring to the health study of the MPP?

(Ray) Yes. We are paying for the majority of that.

7. How important is Green Marketing in Durban, / for your company?

(Alan) Certain markets are very concerned about green issues, but that is not the income consumer market, and even then I don't know how much % of the whole consumer market. The majority of the market is actually not interested and you can see that quite simply, more than 80 % cars can use unleaded fuel at the moment and yet only something like 30 % of the people actually use unleaded fuel, and the price is essentially the same, just cents difference. The vast majority of people are just not interested. The bigger companies are interested in ISO 14000 certification, Sapref is certified, we are going for the certification in the next, I am not sure period of time, I am not sure, but we are working on that, but it is definitely not a consumer driven issue. Some companies are beginning to ask us for certification and it is only a matter of time before they say if you are not certified we are not going to buy your petrol, this is company driven as opposed to consumer driven. These companies are mostly international. It is not really happening yet. The time is now for us to be certified.

8. What about CSR?

(Alan) I would say in the main interest for Engen. Quite simply the refineries will have some negative aspect; I mean nobody wants a refinery next to them; it is never going to be pollution free. It is always going to be an inconvenience. So you have to weight up with a positive side, the obvious positive side is jobs, money into the economy and so on, but you also have to balance it with investment on particular issues. So Engen as whole puts a fair percentage of its CSR budget into these projects in this area.

9. How do people react to Engen's CSR initiatives, positively or negatively?

(Ray) It is a mixture of the two. It depends on who you are dealing with and what time of the year or of the month is. In particular, if it is Wednesday in the middle of the August, you get a flow of requests to support Woman's Day, and you support them and by the end of the month they have forgotten that you supported them and they are back with the history of whatever they were going on about, most of the time is pollution and all of those kind of things. It is a mixture, it is really a mixture. The suspicion is there but at the same time you try to let them know that you are not buying it. I have a particular case yesterday. A guy phones and says he wants us to support his prom and we have not agreed to that and at the same time he says to us 'you know the pollution is very high today, I can smell it ' in the same breath that he is asking for money, you get what I am saying?

10. How is Engen compliance in regards of environmental regulation?

We are essentially fully complaint; there is an area where there is still a problem, which is that we now have a permit that requires that the ambient ground level concentrations of SO2 to be farther lower than they have been before. And Engen impact on that is a problem. So, 99.999 % of the year we are compliant, but there is a fraction of that % where we are actually having a problem, and the issue there is the new permit with a new standard. We cannot reduce those SO2 emissions anymore until we do major capital modifications which is going to take 3 or 4 years. We are in a transition situation, and we are working on it, on how we can manage it, there is nothing we can do, especially when our neighbours complying to stop us. If I put in a sulphur recovery modification now to reduce our SO2 emissions, our friends on the hill here will object to the EIA, and they will make the EIA program take 18 months, far longer than necessary. So we are basically out of compliance very occasionally on that issue because the standard has changed.

11. What about the statement that you make huge profits but do not want to invest in better equipment?

We spend something like 300 million Rand on the last few years, any responsible company will spend what it needs to solve the problems and I just said that in order to meet the new SO2

requirements it is a capital solution that will take 3 or 4 years, which says that we are going to spend what it need to spend to solve it. What you are describing is actually a myth, ok, it is a myth caused by people who like to cause trouble but industry will spend what it needs to spend subject to its resources to solve the problems. The same people who spread that myth also have their pension funds on the providence funds with lots of investments in the stock markets and they are actually the ones who own the companies, Engen is the case, and I don't see them going to the board and telling 'I want you to spend other 100 million R please to solve pollution'

Operating out of compliance is not an option. It is not an issue to spend money for compliance, there is an issue to spend money when compliance changes, when the rules change and now you suddenly have to find an extra amount of money. A company has shareholders to whom it has to answer to, as well as other stakeholders, but the government can come to the party and assist a bit more with, I am not going to say incentives, but a lot of the things at the moment are actually disincentives, and the whole tax structure, there is a lot of issues, where if government came to the party we could get to the solution much quicker and to a better solution, because if we are out of business it does not make anybody any good and if you were in Engen, would you want to throw all your profits to the environment?, you wanna throw a fair chunk at the environment but you still want to satisfy me as a shareholder and the other shareholders, it is all about balance. Government, I believe has an schizophrenic approach to industry, to business, on the one hand, and it specially applies in a developing nation such as SA, you will hear government people saying we need more industry, we want more investment, we want more business because that is generating jobs and all of us agree with that and if you are going to solve the unemployment problem you need to encourage business and on the other hand the same people will say industry is evil because it is polluting and they are interested only in profit, and you will find that those developing nations that are succeeding, some of the far east economies is because government has not got an constraining approach. If we, in this country want to succeed government actually needs to decide if it is supportive of business or it is against business.

12. What are the most pressing issues your company is facing now?

Environment, there is a lot of pressure on this, the hard part is actually to sort out the truth from the myths of perception, there is a lot of pressure on us. Focusing on the real problems and not allowing the pressure from government, politicians I should say and local disrupters sway you of the correct path. Socially we are always under pressure to employ more people.

13. What is your opinion in regards of public – private partnerships and voluntary agreements?

I am very much in favour. But I think government needs to understand where they are because 9 times out of 10 you hear government people say industry will just pay and their definition of a PPP is 'industry will just give us money' and that is not a partnership.

14. Do you consider that there is necessity of an organisation such as GN in Durban?

(Alan) I like the idea of more partnerships, politically it would be unacceptable for anybody to allow more self regulation, personally I think that is wrong, when the fiscal messages are correct and good environmental performance actually makes sense that is the way industry will fulfil and exceed the requirements. Politically to allow us to just say here is what your emissions should be, now manage yourselves, we actually would do it, but the anti industry people in the community will never accept it.

15. How important is it for Engen to count with a local community 'license to operate'?

(Alan) It is very important. You have to have community approval.

16. How realistic is the creation of a GN in the short future in Durban?

(Alan) I think it is a possibility. But I want to correct you; in general industry complies with regulation, the problem in this country is that regulation has been so slack, so they need to catch up with new regulation, so the impression everybody gives you is actually not true, that we are not

complying is not true, we just have a study from some of the plants on the refinery and the technology we use in many cases is BAT and has been for years. Which says that we are already very good refineries and that applies to other industries as well, we are not actually behind. The next step, the so called beyond compliance step, there is a role for it, but we are already beyond compliance in many cases, the government has not caught up with that, and the community has not caught up with that.

17. What specific services do you foresee GN offering?

That is the problem, here you use the example of a centre for CP and I support CP very much, I have involved in this CP thing for Durban, I am actually in the committee for the NCPC, but in terms of what it does for me as a refinery, it actually does not do much, and the reason is, I got 50 chemical engineers, 50 good well trained chemicals engineers as good as anywhere in the world, some of them better, and actually I don't need to go to an outside organisation that does not specialise in oil refineries to tell me how to make this refinery better and you will find the same situation in any other big company. The Toyota plant here is probably the best Toyota plant in the world, these two refineries are extremely well run despite the crap you read, because we have very good skills here, the technology is here and no CP is going to tell me how to solve my problems on sulphur for example. I am going to go to the sulphur expert in Texas or wherever it is I am going to bring him across and fix it. The multinationals companies don't actually need a local resource centre.

When I asked the question to people involved in the textile industry in Hammersdale, how many of these industries employ chemical engineers, I found that none of them has chemical engineers. If you actually want a CP to work the best thing is to give free chemical engineers to a plant for 6 months with the task of understanding the plant, bringing new technology and sorting everything out, ok, that did not go well, because unfortunately chemical engineers got bad reputation, and there are some good reasons for that in some cases, so, a CP telling the big industry how to do CP or CSR, all of these issues I don't think it is going to be of much use. But for smaller companies, I think it could be very strong. That is why I have been supporting it so much.

18. How can the confrontation with community groups be changed to cooperation?

(Alan) I am not going to pay them what they want on principle. What I am seeing is that the average member of the public is seeing through a lot of the crap, they are losing credibility and basically as the big issue is environment, as we find the health study is out coming and we are not an issue, because I am convinced, there maybe 1 or 2 areas, but in general we are actually not an issue, the pollution is getting better despite the rubbish they tell, the leaders who keep speaking this nonsense will just lose credibility and we see how already the new leaders who are emerging, people who want to work with us, who want to actually discuss the real problems and I think the other big issue that will make a big difference is unemployment, that is probably the big issue in the obstacle area and we can't tackle it, we are a capital intensive industry, we don't employ that many people, when that is resolved a lot of the problem will disappear.

(Ray) The other thing is that we invite people to the table, continuously, on a monthly basis to talk and they refuse to talk.

(Alan) I don't know if I told you that, but we have monthly liaison meetings, we invite them to talk to us and they refuse to, because they know we will put the facts on the table and once they are confronted with the facts they morally obliged to stop telling that rubbish.

19. The NGOs I have talked to say the opposite, they would like you to have an honest approach

We said we want an honest approach, the difference is that an honest approach is not going to them and say; 'we are poisoning you', because that is a lie, we are not poisoning them. What they are telling you is if industry comes and basically bends over and gets shot by them that is an honest approach, well I am sorry but I am not going to bend over to industry. I did not get a degree in chemical engineering and spent 25 years in this refinery improving its performance and reducing its environmental impact to go

to people who have a self interest in screwing it. I am going to tell the truth, and the truth is that we are nowhere near this bad as they are making up we are.

We at Engen have often paid for a technical expert, an independent technical expert to be employed at SDCEA to review our EIAs and unfortunately what happens is that the technical expert actually says 'what Engen is saying is true', so SDCEA does not want to use the technical expert anymore.
They have an image that we are poisoning them and that we are killing them and anybody who tells them anything else is in their view biased on our side.

20. So, you are not in denial of your errors as NGOs claim?

(Alan) It is denial from them; it is not actually denial from industry. Having said that, there are still a lot of smaller industries that are hiding behind, Engen, Sapref and Mondi and are in denial, we are trying to get the government to manage all the industry correctly.
If they sit down with us and talk about these EIAs or any other technical report on a one to one basis, like we routinely invite them, then they can ask their questions and we will answer them, so, there is no excuse in their behalf for not understanding what it is in the report.

21. For my understanding, could you speak about if industry benefited from poor black communities during the apartheid?

(Alan) Let's speak about Engen in particular. I am not sure how we benefited from black people. The economy of the country was completely stopped up by apartheid for so long that in a purely economic note, the growth of the economy was completely screwed up and as an oil refinery that basically revolves around refining a product and I f the market was not increasing because the economy in the country was screwed up, how did we benefit? So that is actually a myth. It takes 2 seconds for a smart person to see that.

The original parts of the refinery which are actually not left now, were built around 1952, commissioned in 1954, that kind of thing. Despite what you hear, this valley was essentially uninhabited, there were people herding cattle, and there were some houses in the area. So essentially there was nobody here. They we built the refinery and then people came to live next to us and even that is not strictly true, because the community here (pointing at a south Durban aerial map on the wall) that is a township were basically coloured people, using the 'lovely' terminology we use in this country came to live next to us, forcibly, and that was in the 60's. There was another township, the Indian township near Merebank. We build a lube oil refinery next to an existing community, I am not sure who was there first in this case, in this case we were first here, but it was not their choice to live here. But do these communities benefit the refinery? I don't think it benefited us at all. Unfortunately what the system did is that they have 'lovely' laws in place, like the National Key Point Plan, which basically said that we were not allowed to talk to those communities and that caused a lot of barriers, resentments and problems which even today have not been resolved, that is actually the basis of the distrust, because we as an oil refinery were a key point for the country, so even though we were not owned by the government we were seen as a necessary good. It is common place that people in the community see us not as an independent company, but as government.

22. What other options could help tackle the pollution in this area?

(Alan) The reality of pollution come down to good science, it comes down to the MPP which is understanding who is involved and then putting in place standards that we all achieve and it comes down to the health study to understand the health impact of industry, understand what it is, if there is a problem, fix it, so the MPP is the way forward. If we are having an impact that is unacceptable, we will fix it, it may take years, but we will fix it and we have always done that.

23. Are there any other relevant stakeholders to be taken into consideration?

Talk to Selva Madalay, Quentin Hurt, a consultant that worked with the MPP, he is from Ecoserv and Vicky King from WSP.

24. Is there anything else you would like to say before finalising the interview?

Please take the message back about the Danish Government interfering negatively; I make that a strong point. I don't believe that any European government wants to deliberately cause trouble and problems and I think it is only happening because they are not close to the ground.

Interview with Siva Chetty – eThekwini Municipality Health Department installations, Durban September 9th, 2005

• Siva Chetty is the former eThekwini Municipality Health Department's Program Manager for the "South Durban Basin Multi-Point Plant" and current deputy head for pollution control support at eThekwini Municipality.

1. What is the current relation between government – compliance authorities and industry in Durban?

It's been a process of change, you have the apartheid situation where the relationship was quite poor, leave us alone to a situation now where there is an increasing awareness within industry that government has the role to regulate, often it is covered with tensions because industry want to get away for as long as possible because it is in the interest, with the MPP that has been announced there is a process to get more dynamic involvement through multi stakeholder arrangement, where industry commits to come to the table and discuss things and begin a debate. Industry has changed, but we still need to quantify how much it has to shift, that is the role government has to play, to get the parameters right, what is it that industry has to reduce, how much, there is uncertainty, we just have the constitution now. We need more transparency, more public scrutiny. In Durban we have this industrial complex, they have done a lot of work to improve air quality and they've produced a report called the Sustainable Journey, but what is sustainable? Is it only about greening, I am concerned with the deepest levels of sustainability. They pride themselves they have done something and sometimes they just produce these nice magazines and that is it.

LCA, Eco-Audit, Green Purchasing can be for example useful tools to shift to better behaviour, but we would like that it happen more rapidly and in an organised way. We need a CP Centre, but how do we start, we need your input there, what is what we can do first

2. What is the current relation communities and industry in Durban?

In the case of the south Durban basin it has been adversarial for a long time, it is negative, the MPP has helped to bring some understanding, but still not enough.

3. How much has pollution increased or decreased in the area?

There has been a 50 % reduction in sulphur dioxide emissions; there's been a good reduction.

4. How effective has been NGO / local communities' pressure to improve the environmental performance of industry in Durban?

I think it has been strategically important, for example Mondi once planned to create an ash dump site near communities and that was vehemently opposed and Mondi was forced to go into other direction, to look at gas, to look at different types of boilers, so there have been very positive developments where community pressure has shaped the industrial terrain. Engen wanted to work in an expansion, but could only come with a reduction plan; the same with Mondi, pressure has been used as a good bargaining tool, and has helped to reduce emissions.

5. And how about the relation government – civil society?

It varies depending on the area, government works in several fronts, environment, pollution, housing, air quality, etc, sometimes is positive, but with the MPP has been consultative with various tensions, which is probably necessary.

6. How important is Green Marketing in South Africa?

I am not sure how DK compares to SA, because the land planning arrangements can be a huge obstacle, the fact you are close to communities, you can have the best technology, the best OH&S and still be seen as a concern. We need to have reductions first, where everyone comes into compliance then we can talk about perfecting the system or having an excellence system. Before you have a GN you need general compliance, specially the big pollutants.

7. How good or bad are industry compliance levels?

How do you measure compliance? we are starting to put up a system of measurement, it is not always uniform, it is full of complexities, have you been to the Jacobs area? Lots of small industries, every now and then an industry causes an emission or a problem and it frustrates the community. One can use the elements of GN to begin improving the situation and starting it up at other level, make into a compliance system for example at the beginning.

You need to give me a paper about what are the first steps to take to set up a GN. That would help me.

It is important to bring the area into compliance and then the next step would be to improve the housing and the environment.

8. What is your opinion of PPP?

Generally, well, I don't think we have a big involvement in PPP, except for the case of water, where there was a water treatment plant under a PPP, probably Chris Buckley talked to you about this. The MPP can be regarded as an intent to achieve PPP, where government and industry contribute money to setting up a plan, that would be a good example and a CP Centre could be other example, I see that we need to use our information such as the data from the air monitoring to help industry improve the situation, use the centre to help industry reduce complaints from communities.

What is the cost of GN in DK? Any figures you can give me? I would like to know how much money the government contributes to the GN and how much the industry contributes, also the operations of GN, I would like to study this. It will be something to work towards. Sow a few seeds down and see what we get in 5 or 10 years time.

9. NGOs in SA complain about PPP being abused, what is your opinion?

We need to understand the mechanics of partnerships, but there can be abuse, if you look at the whole attempt of EMS, I think some see it as a useless exercise, you don't want to put targets in your report to achieve, you want to show a positive picture and we would like to have a sign that the company is driving for improvements, this is where we are and we would like to be here by this time and then you can use this statement to publicly commit and ask what is your plan to achieve this and when you fulfil your commitments what you do then, because it is a partnership. Communities of course will be critical of that issue. I don't think industry will be bold to commit enough to improving, suppose that your objective in your environmental statement is to reduce your episodes of pollution by 20 %. That is a good statement. That is what we would like to see.

10. Is there necessity for a GN in Durban?

Yes, but I don't want to put my own views, I need to have other views to challenge mine, we are having difficulty setting a CP centre, I welcome your visit here because it helps me think out of the box.

11. What can motivate industry to take part of GN?

A marketing image, improved reputation, improving the environmental situation.

Do you have refineries in DK that are part of GN?, what kind of industry sector forms part of GN? Can you find that information for me?

You cannot just locate a GN here; we need to find a drive for it. In DK, and an international perspective you want to reduce your footprint on the global environment, greenhouse gases, waste materials, here in SA everything goes to the dump, it is something we need to explore.

12. Do you have enough resources for your work?

We have just basic resources to issue a permit, to get big issues such as violations, to look at each company and inspect it. We must think of something, I seriously want something, it does not have to be a GN, it does not have to be a CP centre, it can be just a person using all of these tools, networking and bringing industry together.

We can even start informally, meet every quarter, show results of what you are doing and formalise it afterwards, we have to start something, it will happen. Maybe you can help us with some tactics to begin the network, maybe you can come speak next year after you finish your research and present it, I want to report on a good basis, improvements, challenges and solutions and academic support will help.

13. What should the network focus on its initial stage? OHS, improved environmental performance, CSR or a combination of two or the three of these options?

It is tricky, our city got an approach called area based management, which looks at the physical environment, the roads, the rail network, etc, that is one layer, but you got the air quality and OH&S, the social and environmental layer and we look at CSR from the government point of view, but that could come to a later stage. I think initially GN can begin on the environment and OH&S.

14. Who do you see leading GN?

I don't think civil society, it is too fragmented, I think government can be a referee or in the middle of the team body.

15. Funding by whom?

Probably seed funding from external donors and then a shift from government and industry to support the network. There is enough funding, private donors that can contribute to set it up and later it can be sustained by partnerships of government and industry. The main objective of the first phase is to demonstrate results and it goes on, that is what we have done with the MPP, initially industry was reluctant to cooperate, but we delivered results and they contributed money and then they begin asking when we should contribute, it gives confidence.

16. Originally GN is a P-P partnership, should other stakeholders form part of the organisation?

Who makes government, politicians? Political parties? If we don't have the 3 partnership here there will be suspicion. Civil society should be able to make an input into your annual plans and future planning, not just observers; they should make a contribution to the partnership improvement, but finally the decision should be taken by industry and government.
The network will certainly help to shift towards increasing cooperation to achieve sustainable environmental management, you need to work together (3 sectors) because the past mistakes were related to not working together, working in isolation, you need to work with it through an evolutionary process, for example suppose I start a process where I collect results from our monitoring network in the SDB, we show high and low levels, and people observe over time that pollution

high levels are coming down that is building a certain psychology of trust which polarises to a GN, that is what DK is being doing now, you got an institution that has been created to begin challenges in environmental management, you need to build upon that institution, you cannot suddenly impose it, because everyone will have their views.

I think the fundamental problem in Durban is the location, SDB cannot be treated like DK, you cannot get the Danish model there to run, it simply will not run.
I would not force this (GN) but I would spend a lot of energy to try to achieve at least minimum standards, WHO standards.

17. Can you speak about the MPP?

MPP is an initiative by the government and run through a policy stakeholder process, community, industry and government to specifically address air quality issues at the SDB, it has several components to the plan, the main component is the development of the air quality management system, out of a budget of R 30 million over R 20 million will be spent on developing the air quality management system, which is your network and the emission inventory system and the database to collect all the information and have high quality data, there is a huge focus on quality of data, in the past there has been some monitoring but the data quality has not been good, it did not move to the resolution of the problems because of data quality. The other components of the plan in the health study to look at how air quality has an impact on health outcomes and what are the linkages between pollution and toxic components and health. The health study results will help us with the future air quality management planning and help us decide how much we need to reduce the levels of pollution, that has been translated into a national plan in target areas to reduce, the other component of the MPP, because it is a pilot plan, is to inform the national process on how the Air Quality National Plan can be implemented, the model is tested here and later it can be used in other municipalities.

18. As part of the NCPC, are you already thinking of a local centre in Durban?

Well, there is a NCPC, I think they need some time to evolve. I have been only to one meeting of the advisory board, but that was more an information meeting, I will go next week to another meeting and see what happens. In the other meeting one of the issues I was not comfortable with is that they did not want to allow civil society to take part of the process, it is more like government – industry, which I think is a bit of a shortfall, because you don't have all the elements, and they make soft arrangements, it can end up as a talk show. The intention is to see what we deliver, what impact have you had.

Recently Engen got nailed because of good environmental information picked up that they were causing a problem, this caused a big embarrassment to the company, so they called the city management and said they want a relaxation of the permit to, because the industry is part of the city, part of the lection campaign, so if you relax things for industry it makes things easy at the political level. Mondi last year in one month had 120 exceedances, but they reduced this to 1 or 2 and they want to reduce it further, this is excellent, so that is when your CP comes, to reduce the ones or twos, you cannot really use it when there are 120 exceedances.

Interview with Sue Beningfield – EnviroServ installations, south Durban basin, Durban September 12th, 2005

- Sue Beningfield is the chairman of the Institute of Waste Management, KZN branch, and business developer manager for EnviroServ.

(Most of this interview has been lost due to physical damage in the interview recording)

I am the chairman of the Institute of Waste Management, the KZN branch, and in my company I am business developer manager for EnviroServ, from a company perspective we obviously would be interested in being part of this type of forum (GN) where we would be sharing ideas to

improve, our focus (EnviroServ) is on waste management, that is one part of what you are trying to achieve here. I also would like it to be a regional issue not necessarily just a Durban issue, why I say this is because obviously Richard's Bay has got large industry there and a big volume of waste being generated, and they often get forgotten about because they are two hours away or whatever reasons, it would be nice maybe start as a Durban thing but to see it as a provincial thing, and certainly DEAT would support a provincial network.

I definitely see this (GN) working and maybe it could be an umbrella body for CP, WMC, etc. You need to talk to the Chamber of Commerce as well, so you would engage with them and it will be provincial rather than Durban.

A lot of these initiatives such as the WMC are cross boundary as well, because they do textiles and there textiles in Durban as well as in Pietermaritzburg as well and there are WM implications in both and if you are doing just eThekwini organisations it will not have jurisdiction in Pietermaritzburg, I don't know, I see problems there.

1. What is the current relation between your company and government – compliance authorities in Durban?

I think we have a very good relation, our relation with the province is with the Department of Water Affairs and the Department of Agriculture and Environmental Affairs with regards to our landfill site, we have a monitoring committee that is representative of government and the community and they see if we are complying and obviously see our permit conditions, with the Water affairs they issue our permit every two years, so we find that the relationship can be strained at a times because of the slow response and generally the local people we get along very well, and sometimes a lot of our decisions, because it is a hazardous site have to go to Pretoria, and it can take ages and sometimes our papers get lost and that can be very frustrating. Our relation with local municipalities is great; there are not many compliance issues.

2. What is your relation with local communities?

It is very dependent on the operations in some places we have more or less relation with communities.

Interview with Mark de Souza – FFS installations, south Durban, September 13th, 2005

- Mark de Souza is the branch manager of FFS

Where you are talking about a GN, FFS is already working in a fragmented network; it is not controlled, it is informal, for instance 400 000 tons of lubricating oil are sold in SA everyday, but only 80 000 tons are collected, around 200 000 tons will be burnt in the engines of the cars, but 200 000 should be collected out of which only 80 000 tons are collected, there is a huge amount of work that should be done. Companies such as FFS and the Rose foundation, which is recovery oil company to save the environment, which is run by all the oil majors, their mandate is to ensure that as much lubricated oil is collected as possible and that it is recycled in an environmentally acceptable manner.

1. What is your relation with government - compliance authorities?

We are an ISO 14000 company. We work with the government in all sorts of initiatives, not only to improve the performance of the environment department, which I must say that in SA they are lacking in training, in experience, and they are still learning the way to meet international best practice. In SA they still have a long way to go, for example if you want to build a plant and need an EIA in Australia it takes 6 months to get an answer, in SA will take 2 years to get an answer, there is still a major problem with the government departments having the ability and the skilled personal to carry after very complex EIAs, they are getting there, but working with industry is improving, but

slowly. We have meetings once a year with the Department of Water Affairs and Forestry to discuss our impact on the environment and what we have been doing to lessen the impacts we have. We also have a meeting with the DEAT to talk about the same issues. It is an informal relation we have at this stage.

FFS Refineries, we have the FFS Young Scientists once a year, 500 schools in KZN participate, we sponsor it, we support schools, we support Proton, an organisation that looks after underprivileged and disadvantaged children in KZN, FFS provides equipment and pays for teachers, their salaries for 3 schools in KZN, we participate in the Keep Durban Beautiful Association, the South Durban Basin Air Pollution Forum, we work with the community, we work with the Local Hostable Community Alliance against pollution, in a broader sense we have commitments to several universities and Technikons in SA, where we do in house training, we take chemical and mechanical engineering students and they do training in our plants around the country, there may be 50 or more students in training now, we also support students who would like to go into chemical engineering, we take them into our operations during the school holidays and show them what is going on and what is involved n a chemical engineering career, we also do a lot of corporate donations.

We have very good relations with the community, we have not experienced problems with the community, not FFS because what we are doing is reducing the impact of pollution, we are one of the good guys.

2. How has pollution increased or decreased in Durban in the last, let's say 10 years?

We support around 180 collectors, who go around collecting waste oil in the city, let me give you an example, taxis, the taxis in SA are a problem, they have what they called 'curb side' mechanics, so wherever they park they have mechanics who service the vehicle and when they drain the oil from the engines, it goes just drain it straight into the drain, which ends up in the harbour, in the sea and the rivers. So we have put collections bins for the oil and we pay them for that oil, so they get some money.

Durban city has had a major improvement in the environment in the last few years, I think for an effort of FFS and the fantastic Durban city management and the environmental department, which is fantastic.

3. How important is Green Marketing in Durban, / for your company?

It is very important for us. We have to do business with companies in a global world, and they expect us to have an Environmental standard, it is very, very important, we participate with all type of environmental NGOs to improve the whole operations in SA, it is lacking here, there is still a long way to go, we are not like in Europe, it is a long way to go, there is a lot of work to do, part of building the country is building right environmental standards.

In our area here, the south Durban basin is a very strong community awareness of the environment, they fight industry, and they fight the government to implement environmental legislation.

4. What are the most pressing issues your company is facing now?

Continuous improvement, we need to create better and cleaner technology, we need better technology, the overseas companies charge a huge amount of money for technology, so we try to develop our own technology as good as we can. The most pressing issue is technology.

5. What is your opinion in regards of public – private partnerships and voluntary agreements?

Government – FFS is lacking, there should be more participation, I think FFS needs to make more lobbying in government to tell them about some of our problems and try t o get through some legislation, for instance, if you put 5 litters oil in a car you should be able to prove to someone you dispose them properly, it should be cradle to grave approach. We are lobbying the government for this, but we need more.

6. Do you consider that there is necessity of an organisation such as GN in Durban?

Yes, definitely, it would definitely help.

7. What can motivate industry to form part of the Green Network?

I think one of the things, is obviously a GN would help our business, if a whole set of industries were networked together, for instance there was a website and all were linked to it, and you wanted to make exchange of recycled products, you could notify the industries, we are looking for this product or you would offer your product, and of course the interchange of ideas and communication of all of us to improve the system, I think a lot of companies operate in isolation, they have their own problems and they never share with anybody else, but everybody generally has the same problems, so it would really help.

8. What specific services do you foresee GN offering?

It would be to give us a stronger base to talk to government about our problems, because we would not be acting alone, we would not be acting as individuals, and we would be acting as a group, which would have a much stronger emphasis and a more powerful voice to government, to provincial and national government.

9. Who do you see as the main driver of a possible GN implementation?

A participation of all, it cannot be just run by one, the government has to have a major input into it, and they must have a certain amount of support, otherwise it will not get off the ground, it needs a lot of industrial participation, I am sure that in DK is run by the EPA

10. You see this as a local or regional network?

Definitely wider, it should be a KZN network, it would be provincial

11. What should the network focus on its initial stage; OHS, improved environmental performance, CSR or a combination of two or the three of these options?

It is a huge task to look at all of them and give them the same emphasis, but they are all important, I would say star up with the environment and then go to OHS and the social, both are very important, small industry need to build OHS policy. Corporate governance very important of course, specially in SA, you just have to read our papers to see how many of our politicians are involved in fraud and corruption, this filters to industry and society. I would say all 3 are important.

12. Originally GN is a P-P partnership, should other stakeholders form part of the organisation?

SA is a very open transparent society, there is no way a GN can operate without civil society not being there it, civil society will demand to be there, it will have to be the 3 of them otherwise it will not work.

13. How realistic is the creation of a GN in the short future in Durban?

I think we are there, we can start a GN anytime, all the industries, my industry, specially the waste industry, I think it just needs effort from industry, a lot of effort from government to get it together, but industry informally already talk to each other, on various environmental issues.

14. Have you been involved with the NCPC?

Yes,, this plant participated in a very successful CP initiative last year, were we worked pretty closed with the CSIR, we worked to reduce water and saving steam, this operation saves us approximately R 1.8 million a year. It was very successful.

The quickest way to reduce pollution is to have more pollution inspectors, the main problem is implementation of the laws, only because there are not enough pollution inspectors, small industries are hiding, the support from the local municipality is lacking, only due to the fact that there is not enough money and training, skills, there are not enough people for them to go around.

15. Are there any other relevant stakeholders to be taken into consideration?

Talk to the people in the Rose Foundation, I will give you the details. The KZN institute of Waste Management, Sue Beningfield is the secretary of the institute.

Interview with Arnesh Telukdarie – Durban Institute of Technology installations, Durban, September 13th, 2005

• Arnesh TelukDarie is the head of the Centre for Cleaner Production, Department of Chemical Engineering at the Durban Institute of Technology (DIT).

1. What is the current relation between government – compliance authorities and industry in Durban?

Regulators and industry have a good working relationship. Interestingly enough Durban metro has an excellent approach as a regulator they basically facilitate the achievement of their regulations, which is a very good approach, they also enforce monitoring charges, so if you are a bad customer you pay a lot for monitoring, whereas if you are a good customer your monitoring charges will go down and you can invest in other things. It is some kind of co regulation; it is an excellent approach by Metro.

2. What is the current relation between industry and civil society in Durban?

Unfortunately there has not been too many society based organisations that are objective, and fight smaller industry, they don't see the pollution and that is basically is taken by Metro, there has not been major issues I am aware of.

3. How important is Green Marketing in South Africa?

In terms of the marketing of a company ISO carries a lot f weight, some of our companies are trying to reach the European market and if they don't conform to international standards, they have problem marketing. Further to that, staff at the company sees the changes, they see when company is investing in them, you know, they have face masks, they are not exposed to the heat or fumes they were before, it improves the productivity and credibility of the company. Often the bigger companies, the upstream companies like Toyota are now demanding environmental assessments in the smaller companies, you need to be cleaner, you need to show waste minimisation.

4. How important is CSR in South Africa?

Not really, most of the companies are very small (Durban), the smaller players don't really do much, they don't do major community outreach programs.

5. How good or bad are industry compliance levels?

I know about textile industry and metal finishing industry, before the CP project it was pretty bad, but after the project is a lot better, if they don't comply they have a plan on how to comply, on metal finishing compliance is not a big issue. In the textile industry Metro is taking the approach that if you don't provide CP assessment you will not get your permit in 2007, they are not complying to the standards now, but they have to provide a plan on how they will comply in the next few years.

6. Do you consider that there is necessity of an organisation such as GN in Durban?

Yes, very necessary. One of the key areas that I see for improvement in SA is information sharing, this has to be based on trust and this is not happening. The success of the project in the metal finishing industry has been partially because of the trust and the ability to share information among its members. It can be very beneficial.

7. What should the network focus on its initial stage? OHS, improved environmental performance, CSR or a combination of two or the three of these options?

The role players are everyone, the employers at the company, the community, the people who are in charge of the company and if you don't have them on board, I think you should include them all.

8. What can motivate industry to form part of the Green Network?

Incentives in the form of things such as reduced tariff charges, that might be the kind of incentive you know, Metro can provide an annual review of the waste streams the company, that kind of information can motivate industry to be part of the network.

9. Who do you see as the main driver of a possible GN implementation?

It should be by someone who is very knowledgeable in the area, not a bureaucrat, so I would not like a government person there, an ideal candidate would be someone with the technical know-how to put the network together and sustaining it, so, it mustn't be a person that sees it as a paper collection and dissemination exercise, a person that facilitate exchange of knowledge and transfer of knowledge and that kind of things may be ideal, someone who understands the operations, it must be an efficient thing, not something created for the sake of being created.

10. Who should provide the funding for the GN and what kind of funding system would be the most appropriate for the GN?

It would be ideal to see industry taking ownership of the network, see the benefit of it and be part of it, ideally it should come from the companies, but at the beginning it should come from the government.

11. Should the network be directed to big, small companies or both?

Ideally it should encompass everyone, because a holistic network would not be complete without the big guys, the bigger plays.

The big companies are afraid of sharing information and put it the wrong hands, companies in Durban south are very conservative with their information, and my opinion is that the big guys may think that they know a lot, but they can also share this knowledge with the smaller guys. In terms of CP and waste stream, a waste product can be processed into another product by a smaller company and taken away from them for free. We cannot say how someone is going to fit into this network, I see small and big guys together.

12. What specific services do you foresee GN offering?

The main service would be information sharing, you know there are many companies that are producers / users of certain chemicals that they don't know much about, also people have problems certain by-products, waste products, can they be used somewhere else? We made a lot of work with the metal finishing industry and phosphates and we found that potentially the phosphates could be used as fertilisers, this network would be basically sharing information, can we share, there is potential for sharing information, but also more importantly is that the network assist companies with a potential new product they want to develop, the network would have overseas links, listen you want to make a certain product, what are they doing better in Europe, this would be important.

13. Would you see DIT as participant of the GN?

We would definitely like to be, we would like to contribute to the network more than anything else, obviously we feed students into the industry that the network would support, it is partial development of students, it is a win-win situation, where we can get our students out to industry and companies gain students with some knowledge and we develop a research base where we develop new ideas.

14. How realistic is it to create this network in Durban?

If you ask me how realistic is to create this network in SA, I would say that Durban is the best chance you've got, Durban has gone the furthest in terms of implementing effluent discharge limits, pollution limits, etc. in SA Durban is the best chance. It is also that needs to be approached in the right light, if you do it properly you have a huge change of succeeding, Metro is now trying to regulate companies more strictly, with co regulation in mind, companies that are looking for ways of improving themselves, there is a very good chance of success in Durban, I think we are almost ready for something like this (GN), it is something that companies are looking for, but the approach is important.

Interview with Councillor B D Prinsloo – Democratic Alliance Party installations – City Hall, Durban, September 14th, 2005

- Councillor B D Prinsloo – is a councillor for the Democratic Alliance Party in the south Durban basin area

1. What is the current relation between industry – government and civil society in Durban?

You have to understand that I can give you my answers based on a very local level aspect.

I think the relationship because the legislation that has been put in place, like the Air Quality Management is reluctance from some of the industries to comply because of the major cost effect which is going to impact on the shareholders. I don't find that in the workshops held by industry in the south Durban basin area there is a big opportunity for the residents who are impacted by pollution issues to talk and who don't belong to any of those associations, and those particular organisations tend to politicise a lot when they report back, as you saw on that meeting. I can see people talking on those meetings other than those from those organisations, and that is the job of a councillor as far as I am concerned.

2. Would you say that organisations such as SDCEA are representative of the south Durban communities?

Not all of them, I would like to see broader representation.

3. Would you say pollution has increased or decreased in the last 10 years?

I think it has increased, because production and demand have increased, and also we have more traffic, if you have a look at the topography and geography of the area traffic is run through the residential areas.

4. How effective has been NGO / local communities' pressure to improve the environmental performance of industry in Durban?

I think it has, as a result we have better legislation, what I see that is not in place is any enforcement or monitoring, except for what we put now, the air quality monitoring system, which still does not capture all the areas.

You cannot close down refineries, the petrochemical industry in Durban feed the whole of Southern Africa, it produces 80 percent of the GDP of the region, I am not sure of the figures, but it is enormous, and what do you do, Engen has found that they have 64 exceedances, the arrogance is that they wrote a check for R 100 000 and they said give it to your favourite charity, now that sort of attitude is not acceptable, they are calling the shots and we at the local government should be, and it is only recently that politicians have fined them, because of the pressure from the community, the fines are laughable, R1000, it is lunch money, they spend more in coffee in one day. Fines should be punitive, they should be far more stricter and they should be applied every time there is an exceedance. It is because of this cooperation, who owns the businesses?, who gives money to the ruling party?, it is not only in SA, it is in all the world.

5. What kind of resources does the government have for monitoring industry?

Generally speaking this whole municipality is operating with 50 % of its capacity, and that is police, housing and specially the enforcement staff, you know, I think we got 2 inspectors for the whole municipality and environmental health probably we got 3 or 4. Have you met with Ray Hooblal? He is an environmental inspector for the municipality.

6. What is your opinion in regards of public – private partnerships and voluntary agreements?

When we get to the stage that industry does not have 64 exceedances in 3 months when they are trying and making an effort to comply with the standards that we set and they start achieving that, and being more open and transparent there will be room for a network which will improve the relationship, but while they are not compliant and they are crying about so much money they will need to spend to be compliant, I cannot see any kind of cooperation and sharing is possible at the moment.

7. Originally GN is a P-P partnership, should other stakeholders form part of the organisation?

I think it could work in this country if it was universities, industry and civil society, not politicians. This would be the basis of a lobby group, the information that you could get from these parties, research from university, input from industry and NGOs, people like SDCEA, they could actually form a strong component to lobby for certain things and that would be the time you involve politicians, you don't involve them in networks where they try to please industry and people.

8. But precisely industry and communities are confronting each other.

It all comes down to money; it is how much money they (industry) are prepared to stop polluting.

9. How can you begin a cooperation approach rather than confrontation?

You need a lobby group to be able to enforce the punitive fines for exceedances, what needs to happen is that it should be worst for the to pay the fines than invest the money in infrastructure. Government is doing what industry wants them to do and if government is slow in acting it is because of the political interference.

Interview with Di Dold – WESSA Installations, Durban, September 15th, 2005.

- Di Dold is KZN Wildlife and Environmental Society of South Africa's (WESSA) environmental coordinator. She was previously the national WESSA's coordinator.

Industry is in big confusion, because we got the national CP, the eThekwini CP thing and then we have the GN, and everybody is totally confused, they need to somehow been joined, and also the Chris Buckley's WMC.

1. What is the current relation between government – compliance authorities and industry in Durban?

Industry to a certain extent to the moment is calling the shots, we finally have the air quality act, but we don't have regulations. Industry calls the shots to the extent that in the past the government came to industry and asked 'what can you comply with' and then they would write the permit accordingly. Is bad for industry too, some industry would actually like the government to tell them you have to do this, this and this, and then they would know what they are doing, but there is no level in the playfields, they are over levelled and government does not realise that you got to level the playfield and that everybody has to comply to the standards. The Air Quality Act will, to a certain extent bring that into force. We got fantastic Acts in this country, but no compliance and no enforcement. eThekwini is doing a very good job against a difficult situation, they still have a long way to go, but they are trying to implement CP, specially in terms of water pollution and air. Talk to Sandra Redlinghys, she is doing a very good job. We got really good officials, the politicians are the problem.

2. What is the current relation between industry and civil society in Durban?

That is full of problems; the communities got such a bad deal from such a long time that they actually don't believe anything that industry tells them. Even when industry tells them, 'we are trying to be clean' they are looking for where is industry lying to them. I will give you an example; I am also at Sappi, which is a very good pulp company. We have what we call an advisory forum, and Sappi is now trying to expand, half the people there say 'what you are saying is not true', it is not objective, it's becoming an emotional thing, they are not asking why, give me the reasons, give me proof, they just say NO, they are not even listening to any justification, they just reject the decisions, they are closing the door, they are not making objective decisions and that worries me. You have the right to criticise but you must be able to justify why you are criticising.

SDCEA, Groundwork and Earth life Africa are fighting only big industries and that is wrong because they are a soft target, I would think that the cumulative impact in the air quality is probably caused in big part by small industry combined, and nobody is targeting them, the big ones have a lot of problems, and they know it, but they have been targeted all the time and the little ones are just doing what they want, and that is really dangerous.

3. How effective has been NGO / local communities' pressure to improve the environmental performance of industry in Durban?

I think in Durban south SDCEA has been very effective, simply because they shout a lot, to me now they have to very careful not to be seen as lunatics, as not objective, they should find solutions to the problems, not only the problems, you actually have to be part of the solution now.

4. How important is Green Marketing in South Africa?

They seem not to be too worried, certainly industry does, Engen and Sapref do when they report, but generally speaking they don't give a damn. In the annual reports is just like half a page, because they hadn't had to, but now with the Air Quality Act and we also got Green Scorpions, so hopefully that could will bring more environmentally responsibility.

Right now industry don't see the savings, I am all in favour of GN if get qualified people and go to industry and tell them, 'listen, if you do it like this way you can save', like FFS, they saved a fortune, all the people that have worked with eThekwini have saved a fortune, I think they don't know so they don't trust, you need qualified people, it cannot be anybody, if GN can actually organise that qualified people go to industry and help them to clean up and save money at the same time, they will not have a problem.

5. How important is CSR in South Africa?

I wouldn't say very important, they think there is good corporate responsibility; the NGOs don't perceive that.
Very, very small portion of the population is environmentally aware, I think that the children that are coming up now, under the age of 16 are very much more environmentally aware than their parents; we do a lot of education. The rural people are very much aware of their environment, because they rely on it for their support, but the urbanised people are not, as long as they have cars and material things they are ok. The population from 25 to retirement are only concerned with material things, they have a very selfish attitude. They don't care about anything that does not affect them. They don't want to know.

6. Do you consider that there is necessity of an organisation such as GN in Durban?

Yes, very definitely.

7. What can motivate industry to form part of the Green Network?

When eThekwini called a meeting for industry, I think one industry turned up but all the NGOs were there. It needs a major marketing campaign; industry is confused with what is going up out there, they see CP, GN, all of these things. If you have a GN you have to get all the various role-players together and secondly you have to make a proper marketing campaign, a one on one campaign, you have to have at least one permanent, qualified person, who has an industrial background, go to all the companies one to one and say, this is what we are doing, we got all the role-players on board, we are here to help you. You cannot do it through correspondence; our industries work that way, you need to build that relationship.

8. Who do you see leading this network; industry, government, or civil society?

I think it has to be a combination, it cannot work if all the players are not on board, and I think it should not be lead by government because the communities will say 'oh, god' and industry will not be accepted either, I think it has to be like a tripartite state, where you have to get the 3 together.

9. Originally GN is a P-P partnership, should other stakeholders form part of the organisation?

The community here must part of it on the understanding that they are trying to find solutions to the problems, not only finding problems.

You have to draw some kind of charter for it, these are our objectives, if you are prepared to sign into them you are welcome aboard, we want o find solutions not a case of knocking each other.

10. And how do you see the funding for this network?

I think it should come from industry and governors, communities and NGOs don't have the money.

11. You see this as a local or regional network?

I would think regional because you see a bigger picture, otherwise people would see just Durban south, and that is rubbish.

12. What should the network focus on its initial stage; OHS, improved environmental performance, CSR or a combination of two or the three of these options?

OHS pretty much got there, it pretty much got tied down, that is not the problem, this should come as a secondary thing, your main thing is environmental impact on the receiving environment, air, water, ground, and social responsibility, it has to come into it, what impact they are having outside the gate.

I think big companies in Durban are missing the point of GN, a GN is about public relations and community involvement, big companies understand CP, I think CP would apply mostly to smaller companies, as opposed to big companies, they know what is wrong, their problem is

how much money they are prepared to put into it while still showing a profit to their shareholders. They will not do things until the government tells them to do it. That is why they are in business for. That is not their fault; I would say it is the fault of the government for being so weak.

13. Who do you see beginning this network?

I would say someone like Judy Bell; she has a very good industrial background, Liz Anderson, Chris Buckley if he was there full time. Judy Bell would be great, another one would be Judy Robinson, she teaches CP, and she is based in Durban as well.

14. How realistic is the creation of a GN in the short future in Durban?

It should have happened yesterday, it's urgent, it is really needed. You need a proper approach to industry as a whole.

Industry is trying on their own way, I was told off the record the other day by industry; 'if the government does not tell us what to do, why should we do it?' So the first thing is actually to get the government implement the legislation, once you got that, the officials in the industry can motivate the board to get cleaner. Industry, especially big industry knows what needs to be done, but they need the push to be able to go to the board to get the funding to do it.

Richard's Bay and Mpageni got major problems, probably even bigger than Durban south, New Castle is a nightmare, Pietermaritzburg is becoming a nightmare, the air is like a soup, Durban is not the only place. You can talk to Sandy Caminmga, she runs the Clean Air group there, Tony carnie, the environmental journalist should have her contact, and you should talk to him as well, he's got such a handle in environmental issues in this area, and he is very objective.

What happens here it normally rolls out to the rest of the country, and what happens in Jo'burg seems to stay in Jo'burg. A GN should happen in KZN, because the Durban people will not feel that they are been targeted again, the major reaction in industry in Durban is to ask why you are not looking at Richard's Bay, New Castle, it is a psychological thing, it needs to be a regional thing, and certainly not a south Durban thing because if not SDCEA will totally derail it. They go to public meetings and they actually just try to derail the process, it is pathetic. The Durban Chamber of Commerce has an environmental committee and there is nothing that stops SDCEA from being part of the Durban Chamber of Commerce, as we are (WESSA), and we serve in that committee, but the industries won't even talk to SDCEA, even if they have a lot of knowledge, and they have got a lot of knowledge, that knowledge is lost and nobody is winning there. You are not going to get everything your own way, you have to set a common goal and work toward that goal.

15. And what about Groundwork?

Their research work in impeccable, they really do good research work, they certainly got the knowledge, but with the authorities they have a big problem. Many of the things they say are right, but it is the way the say it

16. What specific services do you foresee GN offering?

The main thing would be to get all the stakeholders together, the 3 levels of government, industry and civil society, if they can do that service, we are half way in, then the next service is to bring industry on board, to make it see the benefit, in term of public relations social responsibility and make them go for cleaner production.

Interview with Dr. Harald Witt – Development Studies Faculty, UKZN, Howard College Campus, Durban, September 29th, 2005

• Dr. Harald Witt is a professor, researcher at the Development Studies Faculty of UKZ|N, he is an environmental activist as well member of several environmental NGOs.

1. You were working for SDCEA in the past right?

No, what happened is that I was part of Earth Life Africa, they have regional branches and each of them is autonomous, and because Earth Life was a funding member of the whole structure as such they had a representative in the structure and I represented Earth Life in SDCEA for a while. I am not sure what is happening now because Earth Life struggles now in membership.

2. Who are the main NGOs working with pollution in Durban?

SDCEA, Groundwork, Earth Life Africa and to a less degree I would add WESSA, they are the dominant structures, there are some smaller organisations that would emerge, but they don't sustain themselves very well, to some degree you can argue that EcoPeace, a political party, also tries to expose and ask questions about these kind of issues as well.

3. What is the relation among these organisations?

I would say that from the environmental perspective, I think, because the different environmental groups are so small, I mean the active membership in Durban is small, so a lot of the interaction and a lot of the cooperation is around personalities, so I would know Bobby or Desmond, I would say cooperation is good, in principle there are institutional agreements to take on industry, but a lot of it is personality driven, perhaps this is a weakness because if people don't like each other cooperation would be less rather than institutions cooperating, but at the moment cooperation is good.

4. How do you see the relation between government and civil society?

I would say it is uneven now, I think it also depends on certain individuals, you identify individuals within the government that are sympathetic to your cause and you try to work with them, when working with a monolithic institution such as the government or any other I think is very difficult to maintain work, so a lot of it depends on identifying individuals to work with.

5. What about industry – government, what kind of relation do they have?

Obviously from our perspective we see that they work pretty well together because it does not seem that government is very active in constraining the excesses of industry, maybe that is unfair, but from an activist position, that is our position, my position anyway, I would see that industry and government work quite well together providing of course that, well, you need to qualify that we are talking about environmental issues, then I would take that particular position, if we are talking of other issues my view would be different.

6. What about industry – civil society?

These things are very uneven in a way, I think there are times, when we at Timberwatch we work well with industry and some other times we can't. Things are very uneven; it depends on a particular discourse, on a particular component, a practical aspect of industry.
It depends on a lot of factors at the specific moment you can find that relations are much strained, that industry and civil society are not speaking to one another, but at the same time, you would find that under certain conditions, certain context they actually talk to one another, because there is a dialog and that dialog would not exist if there was not sometimes, some kind of sense of cooperation. To answer your question I think is complex, it is complicated to get a monolithical statement that civil society hates industry it really does not get us anywhere, I would say civil society is very sceptical of industry, civil society is very cautious of interventions from industry, civil society is reluctant to take industry very well, but at the same time I think there is an acknowledgement that there should be engagement.

Have you talked to Bobby Peek?, he will tell you his feelings about industry, also someone like WESSA will be far more willing to engage, you are asking me generally about civil society, it is uneven, it depends on which industry, when, where, if there has been a recent explosion at Sapref probably you will find that there is a lot of antagonism between civil society and them, when something happens, things polarise.

7. How good or bad are industry compliance levels

I think it is difficult to answer, we are behind capacity to measure compliance, a lot of the debate about compliance would depend on what kind of industry you are looking at, depends on whether they have international links, industry that has strong links with the EU let's say will be more willing to comply with international regulation, rather than someone dealing with local market.

8. What about the bigger pollutants here in Durban?

I don't know really, it depends on the criteria government is willing to impose on industry, there is a negotiated process between government and industry on what they are seeking to do, the question of course is what government is seeking to do is efficient for civil society, again there is a triangulation. Industry has a whole set of criteria, ISO and things like this, the industry is certified, but we look at industry and say, how can they? Just physically looking at the plant you can tell that it is not compliant, at the end is maybe also about an interpretation of compliance, an interpretation of the standards and the regulation that is seeking for compliance, in terms of pollution you can set a very specific criteria down, it is easier, with compliance is more subjective in a way.

9. Would you call for tougher environmental laws?

Yeah, why should we, as a country in the south, be happy with standards that are lower than anywhere else in the world?

10. Isn't SA is supposed to have good environmental laws?

This is the difficulty in answering these kind of questions, regardless of what sphere of society you are looking at, you look at gender for example, you speak to the government about gender, you know we have some amazing policy, we have a whole variety of interventions in place, we have more women in parliament than many places in the world, yet, women are not safe in the streets, in our society, it is the same with the environment, we have a great constitution, we have great regulations and so forth, a government that is willing to listen, willing to engage, to set up platforms to discuss, but at the end of the day, many of us are quite cynical about what the final result is, you spoke to people in SDB, regardless of all the regulation people there are suffering. If I was government official I would say something different.

11. If government does not have enough capacity now, what would happen if there is more regulation?

Someone say there is no capacity but at the same time I would also say there is no political will, you know capacity and political will are often particular to the same discourse.

12. Is there necessity for something like a GN in Durban?

It is difficult for me to answer, there is a part of me that is quite suspicious, I also see that after being in the environmental scene in a while I have become quite disillusioned, especially about double speak and things like these, it is very difficult, there have always been many promises, in one hand I've always believed in engagement, I have always believed in constructive engagement, but sometimes, you get someone who is willing to do something and sometimes you get someone that say, this is wonderful, I will contact you, in fact let's schedule a meeting next week and of course it never happens. There is a part of me that thinks there is a war, it is now 2005, we have known for a long time about the toxics in our environment, we've know a long time about climate change, I

mean this things are not new, these are things have not been thrown into the media yesterday, these discourses have been here for a while, business always claims that they are in the cutting edge of technology, the degree of consideration to the environment is bad, I will support anything that gets business to interrogate themselves, to think of the way they are doing business, of course I will support these things but will I be personally involved in these things? I probably won't, because I have learned that being co-opted is basically suicide as an environmentalist. I would support anything, but it is just this discourse about ecological modernisation, it is very typical of what happens within industry, they co-opt the language, they bring in green accountants, there is no real change at the end of the day.

13. What should the network focus on its initial stage; OHS, improved environmental performance, CSR or a combination of two or the three of these options?

I am a strong believer in holism, I would not separate the one from the other, I don't think you can separate them, I would see a network like this, perhaps in an academic level you can say , these are the boundaries of OH&S, but I really believe that they are all related, in such a network you need dynamism, I also think it is important because very often it is easy to bring important play maker through particular channel, so, OH&S you can certainly bring trade unions for example, and by bringing them on board into a holistic discourse, you are able to pursue and mobilise support, I certainly would not like to see something that is fragmented, I think it is extremely difficult, unless it is a small network that can just focus on certain areas, then of course it can be specific, you need to be dynamic and open.

14. Originally GN is a P-P partnership, should other stakeholders form part of the organisation?

It depends on what the network is seeking to do, if it is an intent to restructure, rethink our society, if you are seeking to also engage industry and government within a much more, I think civil society needs to be part of it,

15. How important is CSR in South Africa?

As an activist I would say all these things are just to gain some branding, it is the nature of capitalism, I don't blame them, why should I give away my profits, you should understand it in this context.

16. What do you think of PPP?

I think they are extremely uneven, from an academic perspective they could be useful, but at the same time there is an underlined ideology, very often it is about the state that is seeking to run away from its own responsibilities, a state which has embraced neo liberalism as such and therefore it reduces taxes to corporates and so forth and therefore they are no longer able to implement certain policies or build capacity and so forth, therefore they have to look for these partnerships. You are not only giving corporates power in the economy but also in the sense of governance. In an ideal society we would have an accountable government with enough resources to build capacity and they can therefore take on corporates as partners in an equitable basis, but you are not going to tell me that the government of Rwanda can have a genuine partnership with Ford or Monsanto. It is a beautiful dream to get government and corporates taking on responsibility and being accountable for something.

17. What would you like to see to abate pollution?

From an idealist position or from a practical position, the easy answer is to rethink society as a whole, the kind of arguments that Muna Lakhani makes, he looks back and says do we really need to have this product that this industry is producing, perhaps we don't. we are fixing something that should not have existed, of course government industry are not even close to engage in this particular discourse, they are in the idea that they are there and will continue to produce.
The more practical, I honestly feel that if we have a constitution that gives us certain rights, then those rights should be seen through to the end, if the state does not take responsibility and civil society and industry do not recognise that what they are actually doing is violating our constitutional rights, then I

don't understand why certain managing directors stand up and shout about crime, when at the same time what they are doing is violating our rights.

18. Who else should I be talking to?

Talk to certain Think Tanks, HSRC they do human research, but aspects of what you talking about reflect on them as well, check their website and see who is doing research on the same issues you are working with. CSIR, the Chamber of Commerce, there are structures within industry itself, those should be key. Speak to someone like Sangogo, South African NGO Alliance, they can be found in Durban, EJNF, Chris Albertyn a former activist and now consultant, Jeremy Riddle from the Law Faculty at UKZN, Michael Kidd, or Kyd, Alan Murphy from EcoPeace (alanmurphy@absamail.co.za).

Interview with Judy Bell – Field Hills, KZN, October 4th, 2005

- Judy Bell is an environmental consultant with wide knowledge of the environment and of Durban industry

I worked for a company that takes the minerals from Richard's Bay and makes them into titanium pigments, you can use into paints, for example you have the pigment in here and you just need to apply one layer of paint, the cheap paint you need to apply several layers, you know what I mean, ok, it was a very polluting industry, it had a very big footprint and when I started there in 1994, it had a lot of air problems, there was a marine pipeline to sea, a lot of discharge problems and a lot of waste, working with them was an opportunity to put things right in a very polluting industry, where there was the will and the money for certain amount of time. This initiatives started, I think when Mandela went to Engen, he met with community there, out of it came this role of getting industry, the communities and the authorities together in one place, which was unheard of in a way. But I was doing that in SDB, but in the marine pollution side, so, we had a pipeline to the sea and there was a lot of antagonism to that pipeline from communities and authorities as well. So, what I did was to start the South Coast Marine Pipeline Forum which was the first time we got authorities, communities and industry together, so it was not only our pipeline, it was several pipelines, we had to make a lot of work to get authorities, they would not come because I was part of industry, the first process is to establish what is the data here, is it credible, are there gaps, are there duplications, or is it a lot of bullshit, we got a consultant employed who came to do that, by the first time it was putting stuff out on the table, this was not possible with the old laws and legislation, especially with the Key Point, do you know about the Key Point Plant?, it still exists, apparently now for different reasons.

The Key point Plan was set up in the apartheid days apparently to enable strategic industry to be declared and for that strategically industry to be protected, for example the oil industry was declared strategic, and they were allowed to get their raw materials from sources that were sanctioned, remember that SA was under sanctions, they did all kind of funny deals, deal with countries that you were not supposed to, etc. but it was a secret, Engen is a good example, they could keep anyone outside their installations, community, local authority, anyone! The army was there, the police was there, the operational command that was securing all of these key points, and they had access to military intelligence to protect themselves, those networks in a way were used against the community, and when that stopped they still carried on, because it was convenient, everything secret, then came the promotion of the Access to Information Act, which establishes that you cannot deny access to information to people if it is on the public record, so the South Coast Marine Pipeline Forum was the first opportunity for people to see the information that was available and they were amazed for it, there was more information available than they ever thought. Industry does a lot of work, but they keep it to themselves, this was the first time they saw information, they were able to see when industry commissioned a report to investigate something and the report came back not favourably and they asked it to be done again, until it was favourable, and a lot of consultants became questioned, were is your independence? As a consultant you can influence the results.

We got the IMSA, Institute of Mediation of South Africa to assist us to facilitate the process, because there were people who said there is no way we are going to allow a pipeline to the sea, it is not allowed, it is contrary to my beliefs, they (IMSA) had to find a way for people to understand that development comes with certain sacrifice, and they had to decide if that sacrifice was acceptable or not, you know the whole balance debate between environment and development, people started to get the understanding that there was more to the debate than just saying no, they need to reason their answers and form alliances. We had the first SIA, social impact assessment by Di Scott, have you seen her at the university? You must speak to her, she is the Geography Department. That was the first one, we made the rules as we went along, but it worked. When we came out of the process there was still one person in the process who said no to marine pipelines, I think is the most vehement environmental activist I have ever seen. A lot of blame was put in the authorities, because by the first time they saw the permit, what permit? The permit said we were allowed to do this, do what?!, we are allowed to pollute under a certain framework, but why are they allowed to do that?, the authorities by the first time were being questioned. This was the first time I saw democracy being tested on environmental issues, it was wonderful, it was hard work, but it changed the whole landscape. Why you can't use the same approach and put it in the SDB process?

Industry had also to learn about democracy, especially the refineries found it very difficult, they thought, 'we can do what we like and nobody is allowed to question us'.

1. What about the claim that industry benefited from black communities?

I think they consider black people as labour, let's put the factory beside labour, I don't think they even thought about pollution. The problem is that communities were allowed to grow around the refineries, even now, people are allowed to live next to thanks and things like these, there should be exclusions, the city should enforce them, I have seen furnaces blow and land in people's gardens.

There is somewhere else where I have seen the concept you are talking about, in the area here they got a lot of people together for tourism, anything from inland Pietermaritzburg up to … area they take it and create maps, and you can go on a Saturday and Sunday and say I want to buy a t-shirt, you look at the directory, you see the stores, where you can buy what you needed, the concept was, instead of each person trying to get a slice of the cake and make the slice smaller, everyone get together to grow the cake, and that is what I see this GN is doing. SA industries don't work together to grow the cake, all of them try to divide the existing cake, I think this comes from the apartheid era, you work in secrecy, you worked with your hands close to your cheeks, you never share, it requires a mindset change to change the thinking.

People just want, bigger, better, faster, me, me, me, me! These kind of concepts are not coming through SA anymore, originally they did, you know the concept of by the community, for the community, through the community, the individual is only there because of the community.

2. Who are the main environmental improvement players in Durban?

I think the refineries are doing a lot of work, they are working a lot too late, because nobody trusts them anymore, Sapref has made a big change, in the past they made a lot of publicity, for everything they did, but they kept on having accidents, they kept on having releases, whether they were to the air or to the sea, ground, etc. things were going wrong, but they just concentrated in their image, not on fixing things, now they have very few incidents, something must be going right there, but are not getting the credit because they are not telling people about it, maybe they are, maybe they are not, but there is a lot of mistrust because of the incidents and lies in the past. Unless you make a campaign to involve the community, engage the community, don't just write off people, you can't work with Desmond because he has his own agenda, you can't work with Bobby because he has his own agenda, so what? Everybody has his own agenda, everybody is on it for something, that is the human nature, but work with people, don't just discard them, now people are just trying to work without SDCEA, that is dangerous, it comes back and bites you.

3. What is the current relation between government – compliance authorities and industry in Durban?

You get a lot of good officials at the start and then they get poached, industry takes them away, and the people who get behind are the people who aren't mobile because they aren't good, so you get these bureaucratic little small minds that just look at little issues when they cannot see the bigger picture, what are the big issues, I saw that your stack was black last night, you know, when something goes wrong prosecute it and be seen prosecuting it, but when small thing go wrong don't ignore them, work with those, they are not prosecuting in the big issues, they are prosecuting in the small issues and that is worrying me.

The low level people in the government are very badly motivated, and paid, I went to Pietermaritzburg municipality, you must see where they work, it was dirty, it was filthy, revolting; how can you motivate other people to clean up when you live in a pig farm. I think central government must look at these issues. It is a downward spiral, you get less and less people working, so the shit people remain and they get advantage of the system. Central government should do something about it.

4. What about industry and civil society in Durban?

Industry has a natural tendency to do the least possible they can get away with, take the case of the leaks in the pipelines in south Durban, you know the ones in Tara road, no one was prosecuted, how can they get away with it, so, what is going to stop me next time, why should I spend all that money in replacing pipelines if nobody is going to come after me.

5. Would you say that there is a lot of tensions between industry and civil society in Durban?

I think it is getting better, I think a lot of fundamental improvements have been made, south Durban is a lot better than what it used to be. When I worked at Engen in 1992, 93, they were putting on 72 tons of SO2, and then it was Sapref and Engen, Saiccor Sappi as well, in terms of SO2 there have been incredible reductions and when SO2 comes down a lot of other stuff also comes down, those gains are not accepted as gains because they should not have been there in the first place. Improvement is coming all the time, when you are in a journey and environmental issues are a journey, you have to stop and look backwards to see how far you have come, and that is why we have this networks to keep statistics and see how far we have come, in terms of SO2 big reductions, in terms of visible pollution none, it is still bad. The community has done a lot of work to make industry do something better, having the multinational companies improve, and pushing the process, as long as the communities keep on pushing for eco-standards we will be going in the right direction, but where the community has gone wrong is not to allow industry to be able to say when they have improved and shot them in the knees, you know what I am saying, there is antagonism all the time, it becomes personal. Even Greenpeace has gone into participative process; you need that kind of approach, not pointing fingers. That is where networking would work.

6. How good or bad are industry compliance levels?

It's improved, the authorities watch certain industries and not the others, I tell you that, when I was at xxx, the permit for air pollution said, and I wrote it that is why, we where installing equipment that would reduce the sulphur oxide levels by 70 percent or so and the authorities put 'aim, 1 ton a day', so they did not write permits properly, so how do you comply with a permit that is not written properly, you can't aim! I think that is improving, the permits are now legal documents and not written by any moron in an office with no clue, with grammar spelling errors.

7. What is your opinion of PPP?

I think they work as long as you got committed individuals; it seems that companies work when individuals stand up, it does not work when companies say it is right or wrong.
There is something to be in for them, if I join, what will I get in return, that's gotta be the first thing, the second thing has to be legislative compliance cannot be negotiable, so here is the

limit; a voluntary agreement is always above it. You cannot join if you don't comply with the law. When we started with the reporting compliance to the public participating forum, that was 10 years ago, standing up in public and month after month reporting that you haven't complied was the most embarrassing and humiliating process I have ever been through, when I insisted that my boss came with me and report because I was tired of taking the blame he stood up and said, we haven't complied with the permit because…, everybody look at him and said, well? and things started to happen. Many times in a company the environmental person would be an officer and not the manager, and the people who go and report don't have the ability or the authority to have any kind of say in the organisation, it is until the boss comes and actually sees what is like and that is why I think Engen is changing.

From the Pipeline Marine Forum I mentioned came the permits for all the marine pipelines discharges, new ways of monitoring, standards, when in the past there was nothing, this fell away, but it was positive still.

I think that what has failed is that community organisations have refused to be part of some of the processes, for whatever reason, you know, a lot of people want to be independent, but I think things don't work if you don't become involved.

As a consultant I have been to many companies and there are so many companies that are so far behind when I say they are 20 years behind Engen you will understand how far behind they are, they have just begun their journey for safety, we have to have procedures, we have to look after contractors, you know, that kind of thing, if you have a forum like that (GN), it is a forum where these kind of guys learn that there are other ways of doing things and they learn without having to learn by themselves, they can steal from other people, I believe in plagiarism when it comes to environment, health and safety.

8. What can motivate industry to form part of the Green Network?

That you can learn from each other, that you share, if Engen for example has an incident involving a pipe and shares that incident with everybody else, somebody from BP that comes through the network sees that a guy died because of this reason and we have the same system, people can take that learning and put it into their system and that is what the network should be doing, that is the benefit.

9. What specific services do you foresee GN offering?

It must be generic issues, environmental issues that are in the interest of everyone, whether is global warming, ozone depletion, asbestos, landfill, those common issues, furnaces, boilers, that kind of thing, and get people work on those, for example, energy, heat, people wanting steam, how do they do it, each is putting a boiler, noooo! Don't put a boiler, what you need to do is work together, look at all the steam coming from Engen, Mondi and Sapref, get together and harness that energy, share it, someone with lateral thinking to be able to make it, symbiotic networks to reduce south Durban reliance in polluting processes, somebody like the refineries, they got gas and just flare it, why can't you use that gas and put it to create steam and get rid of all of those stupid boilers, you know out of the box solutions, people would not have to spend a lot of money to find solutions to the problems and they would be able to save money, and getting together and finding ways that one person can use somebody else's waste, this city got this alkaline waste and spends a lot of money neutralising it, somebody else got basic waste, let's put it together and maybe find someone else to use it.

10. What strategies do you suggest to begin the network?

If people can find ways to reduce energy costs, the Canadians came with this, how they call it, Global Leadership Group who was offering free energy audits, and industry wasn't taking it, why? No obligation, because the global trend is less and less people do more and more work in less and less time, a lot of people don' even have the time to allow other people to come in for a free energy audit, they are so focus on their products that they cannot their head up. Authorities need to be involved; you are going to reduce your consumption of fossil fuels by 80 %, and reduce particles by 20 %, so now people have to get together and work towards that goal, I have a budget at the moment

that allows me to spend x amount of money, if you give me a free energy audit I would not have to do a lot of work to reduce my spend, which is wonderful, that is why these things don't work, and I saw it in my own company, they would not take it.

11. What should the network focus on its initial stage; OHS, improved environmental performance, CSR or a combination of two or the three of these options?

What I would like is to see them together, I am an environmental consultant who works now on OH&S, the need for health and safety is just so huge, I am not trained, but I have exposure to it, I cannot even begin to solve the company's environmental problems if I don't work with OH&S first, if you don't start inside you cannot do anything outside. So, I think it is easier to start with OH&S and environment and provided those opportunities, the labour legislation is so low, industry is still killing people, Mondi had a contractor die two months ago, I think you get more attention from companies if you start with OH&S, the environments is still seen as an extravagance. I would like to see a network of social responsibility, because I believe that if you combine your effort and money you can do a lot of good, when I was at Huntsman Tioxide social responsibility was streets ahead of any company I had seen before, they had voluntary programs to build schools, they built 250 classrooms in 15 years, in one little company can do that if you put all of Durban's social responsibility together you can do so much. For me social responsibility is putting together for the community, but companies use it for branding points, having the check hand over in the newspaper, it's charity not development.

12. Originally GN is a P-P partnership, should other stakeholders form part of the organisation?

If it includes civil society it gets slow, but if it excludes civil society it will start and the stop, you choose. You have to be make it in a way civil society can participate, which is not easy, because they are doing it for free, in their own time, they haven't got the same capacity, unless what you do is you employ a person from civil society, a representative, that person gets paid and he has to report back to the community.

Civil society has to be part of the network otherwise it will stop, if it is not accepted by the community it will stop, it probably works with authorities and industry, but society will stop it eventually because they will not accept any outcome, so, what is the point? You have to start again. It just closes the process, and then you have to find a way to make it work, and one way is to have representatives that are paid for their time and their expenses, they are not going to get paid much, so that they can participate and make it easy for them to go to establish forums where they can take ideas from people to the process.

13. Do you see it as regional or local network?

Local, it does not work any bigger than that, regional is just too big, at least local you got the structures that already exist, regional just would not work.

14. Aimed at small companies or big companies?

Both, because remember that big companies learn and can share their knowledge on their systems and processes, but the small companies can teach big companies in cost effective solutions, they do quicker, better faster.

15. Who should provide the funding for the GN and what kind of funding system would be the most appropriate for the GN?

Civil society should never pay, I think industry should lead, just as they did with the south Durban air Quality and industry should fund part of the way and government should fund the other part of the way, so only when you have participative funding that you get people part of the solution, if people don't pay for it they don't participate on it, only if it is a joint thing it will work.

There are industry networks already such as 'Responsible Care', the reasons why it works, firstable it was a lobby group to comment on legislation, so you have one voice of industry, the second one it was that it held workshops were people were thought how this legislation would work, for example when the new transport legislation came they held a lot of workshops to show exactly how you as industry were going to be affected by this legislation, it works very well, you also got access to information coming out from the bureau, responsible care topics, that is a very good network, it is voluntary, but the problem is that people are able to say they are part of Responsible Care even if they don't care, as long as you pay a fee, but that is changing, they got third party verification and you will be either a member or a Responsible Care signature or whatever. So, even that has changed because of public pressure.

16. Do you believe is realistic to create this network in Durban?

Yes, I do, but include the existing networks, people in industry think, should I put my money in Responsible Care, in ISO 14000, but all of these cost money.

Companies spend a lot of money on EIAs, they are talking about getting accredited EIA people, maybe this network can have these contractors underneath them, so if you need work you have these accredited people who are part of the network, for example in south Durban where they don't know what participation means, 25 meetings as opposed to one public meeting where people sign and off you go, but is a process, to me public participation is a process, is about letting people coming, allowing them to participate, it is not only about a public meeting and writing down, if people understand that process because they are part of a bigger network, then you raise the standard.

I'd like to see Durban become more innovative with the permits, why can't permits be public record? Just like the Air Quality, a click and see the information, maybe a network that encourages this, IT people developing websites, you have to be transparent and work to enable transparency.

17. Are there any other relevant stakeholders to be taken into consideration?

Who have you talked to in government? Talk to Debra Roberts, Jessica Rich who works for her, in industry, have you spoken to Catherine Maloa from Sapref, she is the environmental manager, she is lovely, she works for Dixon Lowe, talk to Lorraine Di Scott, she is from the University of KZN, Joey Singm from the Umbogintwini Industrial Complex, Ian Naidoo from Natal Portland Cement (NPC) and Durban Chamber of Commerce and Laurraine from the Chemical and Allied Industries' Association (CAIA). scottd@ukzn.ac.za, Ian.Naidoo@npc-eagle.co.za or try Ian.Naidoo@za.cimpor.com, caia@iafrica.com (Laurraine), joey.s@twini.co.za

Interview with Sandra Redelinghuys– eThekwini Water Services, Durban, October 5th, 2005

- Sandra Redelinghuys is the head of the Water and Sanitation Pollution Control Group

1. What is the current relation industry – regulators?

The basis of the regulation is really through the permits, what we call trade effluent permits, which look at three things by enlarge, the quality of trade effluent and the acceptance of trade effluent from all companies, although there are some that we may actually refuse, into the council sewage, the permit also looks at storm water control, emergency incidents, specially the new permits, with the old ones we used to do it a little bit more through the bylaws, but the new permits encapsulate storm water dilution and the prevention of incidents as well as the handling of emergency incidents should they happen and it also incorporates the payment for the service of treating the industrial effluent. That is the basis, obviously we also do things such as education, we educate industry on new issues via the management level, inspector level, we deal with the Durban Chamber of Commerce, we take part in forums, it is interaction over a wide variety of action measures, but the basis is the contractual agreement.

What you will find in SA because of the previous regime, it was very much command and control. That is certainly changing and we are looking at many innovative ways, CP, win-win situations, Hammersdale is an example where we are trying to get examples of industry that has done well, publicise them to encourage others, in Hammersdale there is also a financial incentive that we are adding, we are looking at a marketing strategy in terms of looking at a better sustainability for the city, you know, 10 years ago we had command and control, now specially the Danish projects on CP helped changed our mindsets, when looking at sustainability there are other options, we call it hybrid pollution control techniques.

2. What is the current relation industry – civil society?

It depends, probably in general mistrust, or apathy for that matter, if it is not mistrust, people just don't care, in some areas of the city not so much on water pollution control, probably more on air pollution there is a deep mistrust for various reasons of things that happened in the past, emergency incidents that took place, it tends to be very specific, civil society structures are very different, for instance the ones in the SDB focus on industrial pollution, air pollution, it does vary in the city, but it ranges from apathy, I don't care what is happening to some deep distrust, I must also add that industry has realised that this issue of good neighbouring is actually important for their sustainability so, there have been also many cases where industry has done lots of positive things, either on environment or social responsibility which has improved the situation over the years.

3. Has pollution in Durban has increased or decreased on the last 10 years?

I will talk about water pollution. That is my area. I would not say it has increased, what I would say is that with the new policy of looking strictly at your receiving environment measuring that versus your source control, there is more science that goes into it, and also about limits. The constitution that came out in 1996 looking at administrative justice giving reasons for every decision that an official on the government makes, your National Environmental Management Act, all of these principles that also must look at every decision that you make have made the issue much more open, I think the knowledge about pollution is bigger, our own initiatives, people knowledge to their right to a clean environment and therefore being prepared to take an action for and really fight for it has become more common, all of these initiatives have certainly brought the pollution issues, even if you look at some of the groundwater pollution issues which were really hidden, literally, in the past, are now coming, things like 60, 70 years old which were dump in the 1940's and 50's are coming to life. I don't think the pollution is worst, I think the knowledge of pollution is much better and therefore it seems to actually grow and it seems that there are more issues on the paper.

4. How good or bad are industry compliance levels?

I cannot give you an exact figure; we busy trying now to look at what we call 'State of the Environment Reporting' specially in industrial effluent compliance, it is not a figure that you can easily say, 80 %, that is the reason an straight average does not give you the true picture in terms of how serious the situation is, all I can say is that there is a concerted effort to make industry move towards compliance, especially if you look at heavy metals, textile industry, which is a concern to us, some industries have come to the table and make improvements, however we find that there is still a tendency when we take the pressure off for industry to relax into the old ways, not all, some companies with EMS like ISO have other pressures on them which sustain them, even if we pull back, even if we let's say put our efforts in other field, we certainly have seen in the metal finishing industry that the receiving environment when we start to walk away from the CP project from DK, that we put our efforts, not completely withdrew it, but put a lot of efforts elsewhere, that on the receiving environment, the metal levels started to climb up again, so we are back to extreme auditing, so there is non compliance, there is no doubt about that, but industries are getting more and more aware that there are problems. However we have a problem with those ones who don't want to comply, but by enlarge 80 % of your industry who want to comply, who want to be honest, you find out that the compliance has improved, but the non compliant, well the laws really, let's say that the fines are not high enough, so you look at permit withdrawals, which are really a drastic measure, which put people out of work and legally is a lengthy process.

5. Why are the fines to non compliant industries so small?

The fines are not determined by us, the fines are determined by the Chief Magistrate of Durban, actually in terms of the Admission of Guilt Fines, which is what we work the most with, other than the most serious things, such as the permit withdrawal, the magistrate of Durban view is that if people are making serious environmental crimes, we should take them to court, the problem with that is that our cases never seem to be a priority in courts, and it is years we haven't got any. Not to say that there is now a move to get municipal courts where we will have better public prosecutors, when I say better I am talking about being more knowledgeable about the subjects of pollution and industrial effluent because that is a specific municipal function and also the magistrates will be more sensitised and hence we are hoping to get those fines to more realistic levels, I am specifically talking about the Admission of Guilt Fine.

6. Can you talk about Metro's approach to regulate companies?

The permit is our basis, is like a contractual agreement between us and the company, followed by the bylaws, but that is the legal side, obviously we are a regulator authority, we are trying very hard to find these win-win situations, the CP, the BATs, setting standards, explaining to people why there is a standard, why 300 milligrams as opposed to 500, communicating the bigger picture as opposed to just putting a limit that you have to comply with. I would not call it educational, I would call it informational, so that people see themselves why they have to comply as opposed to saying the authority set this limit and I have to keep within it.

7. You have CP in your bylaws right?

Well, it's in the bylaws with respect to relaxation from standards, but it is now in the new permit, the new contractual agreement, there is a section of CP, that industry must strive towards, we actually implemented it by saying that they must bring external consultants, that now through the Danish projects there are people in Durban with that expertise, because we are certainly not CP experts, we are generalists, so we say bring us a CP expert and we want his name and his professional signature at the bottom, this is what you must do to do best practice in CP in your type of industry and then we look at the 5 year plan on how they will implement that.

8. Are there other municipalities that have incorporated CP or you are the ones leading this effort?

I don't know of any, I know Cape Town was involved, my counterpart in Cape Town was involved in some of the CP initiatives, however these new permits we have developed with the Norwegians we are hoping to make disseminate to other municipalities in the water and sanitation side. I would not say that you can use one permit from one municipality to another, but certainly the principles that are embodied there is a lot to learn from, other local authorities are expressing a great deal of interest, even a Kenyan delegation last week, we want to finalise the project first, we got the permits, but the course materials are being written up.

9. How do you enforce compliance?

Ok, in severe cases, and we don't do this often, maybe only once a year, we will withdraw the permit, which effectively closes the company, it is not a decision that we take lightly, there has to be some severe damage to the receiving environment, which can be proved, we give a lot of AOGFs, a lot of notices, if a notice is served and the time given is let's say 14 days, and our inspector goes back and it hasn't being done, then we call in the polluters pay principle and and all of the costs of that inspector to go to the company are recovered in the monthly bill, so it is in their interest to get the issue.

10. Do you have enough resources to work properly?

Obviously there are always financial constraints in local authorities, the trick comes in prioritising in the right issues and spending your resources where you make the most impact, and there will always be something where you can make more. In some ways we are fortunate at Water and sanitation eThekwini that we have enough staff to do the bulk amount of job, maybe some of the smallest things get neglected and maybe some of the staff is a little bit overworked, but I think by large we are managing and coping.

11. Do you target big and small industries differently?

Yes we do, specifically the all sorts of permits, in the new permit we are giving now it's for the large or what we call priority industries, a priority industry can be two things, priority chemicals, things such as arsenic and mercury or it could be things such as the textile industry which is causing us problems, so it's an internal prioritisation, nothing to do with legal prioritisation and then the big industry, such as Engen, Sapref, Mondi, etc. The idea is ultimately give the smaller people a much lower version of the permit, less onerous, also in terms of our requirements unless the company is a priority in terms of what is putting now, we know that cash flow is a problem for small industry, not that it is not also for bigger industries. Education is a bigger role in the smaller industry than in the larger ones because the larger ones have got environmental personnel.

12. What is your opinion of PPP?

We haven't officially signed any PPP, but for instance, let me give you an example, Engen, well, let's not call it Engen, let's call it a big industry, they spent several million of Rands to do some pollution abatement, not sooner than they have done that, we checked out if they had done sufficient training of their personnel, they still had some emergency incidents, in that case I went personally after having fined them to do a presentation to all their floor staff and we actually we are currently drawing personal pledge certificates between individual staff members and eThekwini Municipality that they will take utmost care of their environment, that is a kind of PPP, something beyond the normal enforcement rules, we have also entered into agreements with places such as WESA, in a water and sanitation initiative, we also have public interaction with other municipalities in Africa, I mentioned the Kenyan delegation, we have good ties with the city of Windhoek in Namibia, we are forming networks now, we are trying to set up an industrial effluent forum for southern Africa, which is really a public – public network, to learn from each other and also to learn from international colleagues, for instance with Denmark and Norway.

13. Is there necessity for a GN in Durban?

I think we are already nearly forming something like that in CP, with the NCPC, we are meeting with them next week, it is probably not the same, because it is looking specifically at CP as opposed to the bigger environmental scene.

What you will find in terms of funding of municipalities is we are cash constrained, you have to find more ingenious ways than what is currently in Europe, the concept is good, but I think that the funding may be very different than in Europe, which I think is a richer society in general, here we still live with the legacy of apartheid and I see that due to other necessities environment is not always the fist priority.

14. How do you see the funding for a GN?

What I would see from a municipal point of view, we tend to do funding in kind, in other words, we would provide sweat equity, we would commit somebody part time to help, to assist with the implementation, maybe if there is an empty building standing around, you know, through restructure we could give that away, but in terms of any personnel that needs to be employed, that should go from funding from industry.

15. What can motivate industry to from part of the network?

It is two fold, some industry has come to the realisation that it is in their best interest to form part of these things to form partnerships, they see the benefit, other industries, you will have to have a, let's call it education drive, but with enforcement, a regulatory force, so you need to have the regulatory authorities in the partnerships, otherwise in SA you still have the idea of "catch me if you can"

16. What should the network focus on its initial stage; OHS, improved environmental performance, CSR or a combination of two or the three of these options?

I think at the beginning, social responsibility is something people see as nice to have, they are coming to realise that environment and OH&S are very strong now, I would say, the CSR is something you have once you have sold the concept you bring it in, it is my personal view from what I see in the SA industry

17. What kind of services would you like the network to offer?

I probably would like to go on the model of the CP centre, you know, having availability of expertise on the field, unbiased listing of people who can provide certain services, providing the infrastructure, computer databases, that kind of thing, marketing of waste exchange, if you got waste that you cannot get rid of because we would not accept it, or we tell you that is the kind of waste that you should be producing anymore, or use it a raw material somewhere, thirdly I would say education, seminars, getting people there and someone has to look at the funding, administrative issues.

18. What kind of strategies should be put to move forward something like this?

I think to begin something of this kind of nature, you need to get the authorities together first, because they have a finger in the pipe everywhere and they probably know best what is happening in the ground, there is no harm also involving people from the DCC, you know industry representation, and also your civil society organisations, because some of them have got a lot of knowledge in these topics and it is in their best interest, but in terms of starting this, you need to get buying from us first, your middle people, then you can help create the mechanism, because the authorities are busy people, if you can get it off the ground then it can carry itself to a degree.

19. Would you buy in?

Certainly, we look at hybrid pollution control techniques and anything that would ensure the sustainability of the city, both financially and environmentally, we would give it a bash.

20. Originally GN is a P-P partnership, should other stakeholders form part of the organisation?

I can't tell you what role they must play, but I can tell you that if you exclude civil society totally, they would be a level of mistrust and that is the last thing we need, even if it just somebody in an advisory committee or you know sharing or inviting them to some information sharing sessions, but they need to be aware and they need to know the benefits it can bring to them and probably feel they have some form of influence to help in the outcome.

21. Do you see it as regional or local network?

I am going to answer you with the eThekwini hat on, look, we cannot operate as an island, we are obviously founded by the national government, but, I would say that in terms of what you want to implement give it to local government, keep it local, keep it small enough to contain, maybe even start it as a pilot project basis, like Hammersdale, you will need success stories why they should join another initiative.

22. Are there any other relevant stakeholders to be taken into consideration?

Speak to Anthony Botha, at the DCC, he is the environmental guy, permanent staff, Ian Naidoo also, but Ian may give you an industry perspective and Anthony may assist you to get things

off the ground, in government you need to speak to the three local arms, which is environment, Debra Roberts, you have Siva Chetty, and myself, national government, you need to speak to Lin Gravvet Blondin or Pat Reddy, DWAF, they are the local people, you probably need to someone like Timothy Fashuen, from the provincial department, and in a place like DEAT, if you get to Pretoria, that would be a good idea. Talk to the municipality business support unit people. Let's hope this initiative is something that assists the city to get better.
As I said, we look at hybrid pollution control techniques, anything that has the chance of improving the city you will have our support, obviously if it seems that it is going nowhere and it is not well coordinated, etc. then ultimately we have a lot of priorities and we don't see delivery, we may lose our interest.

Conversation with Muna Lakhanni – Glenwood, Durban, October 6th, 2005

The reason I work on environment is to provide clean air, clear water, sanitation, clean energy, sustainable housing, all the issues you mentioned are environmental problems (unemployment, HIVS, poverty). How am I going to feed someone with crap food, I should be feeding the poorest of the poor with highly nutritious food, they need it more than me. If we have a non toxic food environment, a non toxic air environment and a non toxic water environment those are the best investments we can make in people. Jobs is a theory and is based in the theory you can be happy with money… HIVS is an immune issue, we have 100 thousand chemicals we are using, most not tested for toxicity and just a few tested for cross toxicity, and the vast majority of them are immune harming chemicals, so we should be fighting the source of the problem …

You can't solve a problem with the mindset that created it, I also say, you can't solve a problem without knowing the space, so, I have my literature with some ideas of how things what happen, I don't know what will work on a certain place, until I get there…

If a innovative idea, such as zero waste does not fly it is many times ignorance, they don't know different ways, sometimes they are trying to catch up with the work that they are not looking, I see most solutions than him / her, I focus on solutions that are sustainable, not in production problems or machines breaking down, other reason is because they are incompetent, they don't know how, they are happy in their jobs, they don't care, the third reason is corruption, Sapref know that they can reduce the SO2 pollution by 70 % within 6 month, a factory in Netherlands is doing that, they are not doing it because they want more money, that is corruption, they want society to subsidise it.

If you look at issues of OH&S is worker's safety and relates to community, the community implication is there for business, they will get likely to get less sues and problems and in most companies you can show financial benefits…

We had a case in the WMC in Hammersdale, we went with management and told them, CP increases your profit, keeps your workers safe and it will reduce your liability, so management said, yes, we like it, but how do we convince labour, they don't like anything extra, so we went with the unions and we said, listen, this is about workers' safety and community health, so you must support us with zero waste, o yes, we like it, but do you think management will like it?, and that's how we did it.

Interview with Catherine Maloa and Nelson Mbatha– SAPREF Refinery, south Durban basin, Durban, October 7th, 2005

- Catherine Maloa is SAPREF's Environmental Manager
- Nelson Mbatha is an environmental technician

1. What is the current relation between SAPREF – and government regulators?

(Catherine) I think at the moment is more of a regulator and we just need to comply, a regulator relation where they set the standard and we comply, and secondly I see the relationship as a relation where we try to seek together some improvement areas, at the moment we are going through permitting process and I think that together we are trying to find some improvement areas, it is not only them coming to us and say 'do like this', it is more how, together we can work towards improving the general environment in the area, so there is more of a participatory relationship more than just 'we will set the standard and you will comply'. It's changing its shape, I think the role that the MPP has played, I think it also enhances that relationship, I think the MPP provides meaningful data, that we can use to manage and improve our performance, they provide the ambient data and we basically use that data to improve our performance. At this stage it's a very participatory kind of relationship, we are trying to move towards improving, get closer in our understanding, getting closer in our need to improve the environment.

(Nelson) This big project under the MPP that has started the setting up of the Air Quality Management system, industry has been very active, we have been some of the founders for this project, because once we have a system in place it is going to benefit everyone, using the data from the system we can understand and prioritise the issues.

2. What is your current with civil society?

(Catherine) I think at the moment civil society, we come from a history, a history where industry and civil society were kind of enemies in a sense, industry was operating in a very secretive, very enclosed environment, isolated and did not involve communities, and that history is trying to advice the future and we see a future where we as SAPREF are going to be, or are currently good neighbours wit our communities, we have a policy where we strive to be good neighbours, we would like to get communities involved in our business, we would like to make sure that they understand our business, that they are part of our business in a sense, we have a policy about employing communities around us and we have a policy to involve them in how me do business and how we shape the future in a sense, I think we are moving quite drastically from the old history, very secretive, where we do our own little thing and they just work here and we are moving to an area where they have a critical part in our day to day business, they play a role in driving improvement in the forums we have, we have a forum that we call CLF, Community Liaison Forum, where in that forum SAPREF is a member of the forum, there's about 35, if I am not mistaken, NGOs participating in that forum with key issues, environmental issues and social issues, so we see ourselves as a key member of the community and I think it is important to see that that relation has changed drastically from what it used to be before, we get our stakeholders involved, people like SDCEA for instance, in the past they used to say, 'you industry do this and that wrong', and now we are trying to say 'OK, SDCEA, let's get involved and see how we can improve the environmental profile in the area' I think is more participatory, we are opening our doors more and more, we invite communities in a monthly basis to come to the refineries, do tours, see the refinery, see how we do things, we advertise quite open that if they want to participate they are welcome to come. It is not there yet, but we are certainly working towards getting involved, where communities have a say in how we operate, have a say on how we affect them as a business, we have a policy that we need to employ people in the community, a policy of BEE, that influences the economic profile of this area quite strongly and I think we are moving towards that.

(Nelson) When the members of the community complain about certain issues we actually have a complains team, we have a toll free number from the refinery, in most cases those concerns they have may not be related to the refinery operations, having a toll free number will assist, if it is a SAPREF related we get the information, we it feedback to operations and they sort it out and those are the issues that are also discussed in the CLF that can hold us accountable for our performance.

3. What about SDCEA?

(Catherine) I think we certainly have gone quite a mile in getting them to be part of our stakeholders, in the past they used to be the stick and they would show us all the things that we do

wrong, and I think in the past year we have certainly seen them become more part of our business, you know they did a flaring book? We participated quite strongly in that, we gave them all sort of information that they asked for, we certainly participated quite strongly.

4. You are happy with the results of that?

(Catherine) That's another subject, we really haven't deliberated on what the results look like with the data they carry, but we are happy we participated, we are happy that we gave them the information they need, we are happy we contributed to the awareness of flaring of the area, I think that there are views that one cannot comment about, there are certain views that we cannot comment, but certainly from the awareness point of view it was a good work they did, it was a necessary project.

5. One accusation from civil society is that industry does not engage honestly

(Nelson) The CLF is not driven by SAPREF, it's driven by all the members together, I haven't seen SAPREF driving issues, I see communities driving the issues, holding us accountable for our performance, putting issues on the table so that they are addressed.

(Catherine) We have a visitor the CEO of Shell last week and he had the opportunity to meet with the CLF members, I was not part of that, but I was told that he said that they were very complementary of SAPREF, actually they said to us 'guys, we are happy to be part of this process, we are happy that you are starting to talk to us more than in the past'. We perceive very positive feedback from them, they are quite pleased that they can see the detailed information that we normally don't disclose. Before any CLF meeting communities come and they literally describe what kind of information they want to see in the meeting. We don't show them slides and tell them 'this is what we want to show you', they basically say to SAPREF 'these are the things we want answers on, these are the things we want you to continue doing' that is very different from the industrial forums.

6. Has pollution in Durban has increased or decreased on the last 10 years?

(Catherine) I think that the MPP people can answer you that, there is clear evident that it has improved, evidence that they have collected, not us, that the picture has changed, the profile is improving, I am sure Siva Chetty can tell you more on that.

7. How would you rate your compliance levels?

(Catherine) It is an interesting question. I think we comply pretty well, I am thinking broad regulation stuff; we comply pretty, pretty well. There is a permit we are waiting from the authorities now, and the key message is that we need to show, we need to put refinements in there that we can comply to, not something someone in the offices talked about that would be nice to have in the permit, the message to the authorities is 'guys, let's put into the permit things we can comply to and things that add value to the area' in general we certainly comply.

(Nelson) I think from Sapref point of view we comply

(Catherine) Let me give you an example of SO2, our SO2, for several years we had a limit that gave us a limit of 50 tons a day, and consistently for years, we have operated way below the permit, for a number of years we have operated in 35 tons a day and during that period we set ourselves an internal target of 30 tons a day, and we have operated consistently according to that internal target to the point that the authorities now come back to us and said, 'since you are operating so good, why don't just slash your SO2 target by 50 %' because they realised we are operating so well, so they cut it to 35 tons a day and I understand they plan to cut it a bit more because our performance shows a great improvement, that is just to give you an example that we comply beyond.

8. Would you say that you use BAT?

(Catherine and Nelson) Certainly.

9. Some people say that similar refineries in the Netherlands are in 12 tons a day.

There are a lot complexities in the refineries that prevent you from doing a direct comparison, you are doing 12, now I need to do 12, there are a lot of issues you need to consider before you do that direct relationship.

10. What is your opinion of PPP?

(Catherine) We are certainly in favour, I would support the quite strongly.

11. Do you think there is necessity of a structure such as GN?

(Catherine) I think certainly there is a need for that, but it is important that people who participate in that forum have a clear idea what is the end, I think there is a need for open participation, there is a need for people to really focus on what the real issues are, what are we working towards, we need to avoid hidden agendas, I think that there is a danger of people to target specific industries, specific organisations, we need to be clear on what the objectives of this organisation are, otherwise it becomes another platform for witch hunting, another platform for confrontation, which is not necessary, we need to work towards environmental improvement.

(Nelson) It should make sure it does not duplicate something that has already been done, there is a lot of development that the government is pushing, we welcome them , some of them are maybe too stringent for industry but we will accept it.

12. What should the network focus on its initial stage; OHS, improved environmental performance, CSR or a combination of two or the three of these options?

(Catherine) Civil society should be involved, they should be involved, because they are key stakeholders in this area, any setup where just government and industry go along towards improvements without the people they ultimately affect, I think civil society should be part of it, that is given, for it to be recognised as a meaningful organisation, as an organisation that will make a legitimate difference, civil society need to be part of that. I see that this forum would be important in really provide common understanding on what is happening here, for instance, I have a certain view on what the pollution levels are in this area, someone else will have a different view, I think we need common understanding on what is the environmental profile of this area and how we put our money in the right area to see the most improvement, the MPP is a big start to get there, I see this platform as critical to make sure everybody understands, what the environmental profile looks in this area and how we can improve it and not just all do SO2 projects, where do we spend our money to get the biggest gain.

13. What can motivate you to form part of the Green Network?

(Catherine) There is a need to cooperate, there is a need to work together to improve the profile of this area, for instance, government tell us ‘SO2 is an area where you need to put money on’ and we feel strongly that there are other priorities, and I think that collectively we need to focus, sitting together and see how we best change this picture. At the end of the day, we are after the same issues, why don’t work together towards the same goal and that goal is being able to exist in this area and perform in this area without negatively impact on people who live in this area and I think everybody else will share that view.

14. Who do you see funding and leading the network?

(Catherine) For legitimacy is issues I would see the authorities leading the process, because at the end of the day they are the custodians of environmental issues, they best represent community, also to encourage, because when SAPREF begins doing something they think we have our own agendas, just to meet our own needs, I think for that reason I would see the authorities as the leaders.

15. And what about funding?

(Catherine) I think if you look at the MPP, industry has seen the necessity to participate, so why not participate in the funding as well, I see it a collective kind of picture, I see a lot of benefits from this organisation.

16. What should the network focus on its initial stage; OHS, improved environmental performance, CSR or a combination of two or the three of these options?

(Catherine) I think that it would be quite difficult to separate the issues, but there is a need to focus on environmental performance in the area because that is what people are concerned about.

(Nelson) I keep on thinking of structures that are already on place, of structure that are already on place. It is very difficult to comment on something you don't have experience on.

17. What specific services do you foresee GN offering?

(Catherine) Let me think for a while here, I think for me I see the role as doing some kind of research and studies on what are the needs of the area, on what is really happening here, there's views, there's people's opinions and we need a clear academic picture on what the issues really are, I see it playing come academic role, I see this role to share ideas, almost like a networking platform, and also I see it as creating awareness, education and awareness, to industry, to communities, to everybody, there is a need for people to understand what the real issues are not just perceptions, I also see it as a platform that will influence very strongly regulation framework, and sort of guide the process, when there is a new piece of legislation I see it as a forum to share its views on what that piece of legislation will be like, an opportunity for people to comment and influence legislation. I also see it as an opportunity for communities to participate in industrial development, based that we have EIAs processes in this area, I think it would be a good opportunity for participation, and that would save huge costs and time.

(Nelson) Is one of those topics that I would like to think about it. You expect objectivity there, all role players taking part on the forum equally.

18. Should the network focus on big or small companies?

(Catherine) On everybody, I think in this area there is a weakness of just focusing on big role players and there is a danger in that, small companies get away with many things, even murder in some cases, and also that would insure to be objective and holistic as much as possible.

19. Would you see it as local or as a regional network?

(Nelson) My feeling is if you start something like this you should start it at a small scale and then expand it if you feel you can expand it.

20. Is it realistic to create something like this?

(Catherine) I think it is because there are already some examples happening, not to the scale you are talking about, but there are some examples, the MPP is a good example.

21. Do you have any relation with the NCPC?

(Catherine) No, our drive comes from Shell, as you know we are a joint adventure between Shell and BP and we tend to follow Shell worldwide initiatives.

22. Can you talk about SAPREF exceedances?

(Catherine) Generally we have improved, we have a clear improvement, we have a permit of 50 tons a day, and we operated with that permit for many, many years, now it has been reduced to 25 years. While we had 50 tons a day, there was a period of 2 and a half years where there was not even one permit exceedance, since our permit has been reduces, last year in August, from that time to now we have had less than 4 exceedances, to me that does not reflect a increase in exceedances at all. We have facts to demonstrate a big improvement.

23. Are there any other people you recommend me to talk to?

(Catherine) Did you talk to Siva?, talk to CLF members, I will mail you the details, we have a meeting next week, maybe I should invite you there, to a CLF meeting, that will help you to understand how the community feel about SAPREF.

Interview / conversation with Susan Barclay – Forest Hills, KZN, October 10th, 2005

- Susan Barclay is an environmental consultant; she was formerly in charge of the Durban CP Centre assessment study.

The last that I heard from the establishment of a CP Centre in Durban is that they had a business plan and that they were looking for funds to start creating it, they wanted it to be a place for dissemination of knowledge, they did not know where it would go, it wasn't an accreditation body, it was just information dissemination, as I said the business plan was there, they were looking for the money.

1. There were talks about GN and CP, but it was decided to pursue the CP Centre right?

I am sure Chris Buckley knows more about this, hasn't he talked to you about it? Jessica Rich was supposed to work on this, but she's been sick, Siva Chetty was supposed to, as far as I understand be responsible for the project. I know that there were meetings with stakeholders where they presented what they could contribute to the network, but I haven't heard anything since. I don't think anything has happened. Talk to Geoff Stiles, from CBLA, they were the ones who initiated the project together with the SCI from Canada; he probably would be more in the loop that I am.

2. Why they did not pursue a GN?

They had a number of discussions and I think that the feeling was that they did not want to take over what had been started by the city, they were trying to work together, they saw the GN and the CP Centre as the same thing…

… Everybody wants something like that, it is just how to get it going, talk to Geoff Stiles to see what is the status of it…

… the department of Agriculture and Environment (DEA)was looking to initiate something, we had a meeting with them about doing something last year, but since then they got restructured and nothing came out of it…

.. the NCPC is supposed to be an umbrella organisation, they try to act as a national body to keep all the information on CP, they would be the umbrella organisation and underneath them, they have various sectorial type CP Centres, such as the one that was supposed to be installed in Durban…

The NCPC has been in operation since 2000 and it has taken ages for them to actually organise and still most people don't know they exist, so that is the big problem with this, who will actually operate and maintain a GN. The biggest problem here is to get funded… my concern is that there it comes another initiative such as GN, who will operate it, market it, otherwise it will just fall apart, and I think the same initiatives are going around and industry is very confused about what is actually

happening, where they are supposed to go to, you know I don't know if adding Green Networks will be good at all…

3. Do you think that something like the GN should be established in Durban?

I think there is actually a need for it, I think businesses will go for it, especially the smaller guys are in need of information, you know, they need assistance in environmental improvement, specially the SME's I think they definitely need some kind of assistance, whether it is a CP or GN, there is a need for it, but it should be made properly, because everybody is tired of all of this talk and nothing happening.

4. What can motivate industry to form part of a GN?

I would say that for the bigger guys their motivation will come from exporting their products and from the smaller guys, it will come from external pressure, from regulators and so on, and they also try to be open to new markets and they need to improve their environmental performance for it. I have seen that the automotive industry is pressing their smaller suppliers to improve their environmental standards.

Durban regulating authorities are trying to improve companies' environmental performance but at the same time keeping them on business, not shutting everybody down, with the discharge permits for example there are a number of things that they can ask for, relaxations, etc. as long as they show that they have a plan to improve. So the regulators have been very proactive in trying to create continuous improvements. … I know that there is a lot of unhappiness about EIA's …

5. What kind of network, local or regional?

Local and expand it as it grows, but everything happens in Durban, and what about the other guys, who is going to set a GN in Ladysmith, we have people from there and other places coming to our CP seminars, because they don't have anything.

6. What should the network focus on its initial stage; OHS, improved environmental performance, CSR or a combination of two or the three of these options?

I would say probably OH&S and environmental aspects first.

7. What specific services do you foresee GN offering?

The biggest need is really information, where people can go and say, I need information on this, where can I go and make it happen, and also some sort of communication between bigger companies and smaller companies, so you have some kind of network, where they can discuss things such as waste, the biggest problem is that there is so much information out there and people don't know how to access it, they don't know where to go, a GN can help with that.

8. What kind of strategy would you suggest to move the network forward?

I think the first thing is to find out what is happening, I don't know the status of the CP Centre, find the status, speak to Geoff Stiles, since Jessica has been sick nobody knows, talk to Debra Roberts, but she is a very busy lady… also talk to Soren about what is the result of the discussions, you know between the GN and the CP, should the CP run for a couple years and become a GN kind of system after that?

9. Who should put the funding?

I think that everybody should contribute if they are going to get something out of it, you have to have some see funding at the beginning, I think industry is willing to put money, but you need to have something upfront to get you going, a membership fee, I definitely think that it needs the industry to fund a big part of it.

10. Should civil society be involved?

You need to involve community people, otherwise nothing happens, especially in the SDB, it is difficult to say, I don't know how they can be integrated.

I know that the planned CP in Durban was planned to make information accessible to people, because of the problems in the region, I think also they saw this initiative as something to involve everyone and create communication, that is what the GN wants to do as well, I don't know in terms of the actual running of it, I don't know how they can contribute.

… I don't think the GN can be run by industry, who is going to do it? Who has time for it? … I think that both industry side and civil society side were worried about politicisation of the CP…

11. Did you discuss any issues of governance for the CP?

I don't think we touched on that.

Interview / conversation with Alan Murphy – UKZN installations October 10TH, 2005

- Alan Murphy is the leader of EcoPeace, an environmental political party

Industry and government seem to cooperate quite well, usually to industry's benefit, we have EIAs. I know that in KZN only there's been one application rejected. There's been one successful action against Engen, but the amount they were fined was meaningless. In the EIA's community has not come in an equal basis, government is pretty much pro economic development and industrialisation, industry pays for consultants, so they want to please the people that are paying them, an alternative is when they want EIA's they should put the money in communal funds where the community can have a say in who the consultants are and they are paid from the fund and they don't have to report back to industry.

… The relation between community and industry is more antagonistic… A year ago the managing director of Mondi went to a public meeting in Wentworth and he was booed, that was a public relation disaster for Mondi… The people's agenda is to be healthy and have good neighbours, people need jobs, but they don't need jobs at the expense of dying… the relation industry – community has its ups and downs, but I have seen some very low points…

… The MPP is showing that pollution is decreasing, some people say that they are looking at the figures selectively, 10 minutes exceedances, monthly averages, etc, because if you just target particular areas where there are improvements, then you can show that there are improvements, there's still a lot that needs to be looked at…

Conversation with Dr. B. Seetharam – Meremed Medical Centre, Merewent south Durban, October 17th, 2005

- Dr. B. Seetharam is a medical practitioner with over 30 years of experience with patients in the south Durban basin, he is also an environmental activist.

You need to get an idea of the demographics of this area and its economic status, its proximity to the area and the major causes of pollution, if you look at the economic status, this area is one of the oldest apartheid- established residential areas for Indians and coloureds, at that time they built low cost housing to accommodate the Indians in one side and the coloured in the other side, also then the plan was to put industry beside so that the white community was buffered and they would not suffer as much as we would, this is 1956, 1960, the refinery came after this housing, the majority of the original

inhabitants on this area are now in their 60's or 70's, most of those people are now in the pensionable group and they are unemployed, so the economic status is quite low, a lot of the people as they learn that they cannot fight the system any longer, they go away, this group is the one who is most susceptible because of their long exposure to pollution, they are the ones susceptible to chronic diseases such as chronic bronchitis, TB, chest conditions, skin conditions, skin rashes, sinusitis, eye conditions and a lot of them suffer also of cancer. The diet is also not good because of the low economic status and if the diet is not good your immunity is reduced and other things come up, such as influenza causing pneumonia and death, and the involvement of HIV, not in the Indian population, but in the coloured population HIVS is almost in every household, that is the kind of population we have here, a very sick population.

You can get pollution from many sources and this affects in a different way all of your body, but right now, we don't have the mechanisms and the methods by which to test and find out what is going on in relation to benzene, sulphur dioxide, lead, what I knew when I started practice here in 1974 is that virtually everybody patient we saw with influenza had some of asthma, and usually the trigger is high pollution, we used to see a lot of patients to have acute asthmatic attacks and die from them, which we haven't seen in the last 10 years, so there has been something going on from 1950's 'til now. Because communities after all of these deaths found these soot everywhere, they got fed up, they went to the refinery and they began asking questions, they refused initially, but because of community activism, we began having agreements and they agreed to decrease their pollution. We applied pressure in the environmental department, in the municipal authorities to decrease pollution, people began complaining, to ensure that industry reduced pollution, and pollution has been reduced, but we are not still at WHO levels, they claim they are, but only in certain instances, in general they are not.

We have the problem is that we cannot show a direct cause and effect because the disease process is so multifactorial, there are so many causes that you cannot say it is only pollution, that is why industry denies everything, if you take them to court, the court will require you to probe without any doubt that air pollution is the cause of the problems, and which company it is coming from?, so you have all of these issues, if we had good judges things would be different. Therefore we tried to do studies in the area, and because of that I made the approach to the medical school, previous approaches had fallen through, I went to the dean and asked him, what community responsibility do you have? And with that approach the dean arranged for a meeting with all the stakeholders, national and local departments of Health, the Fire department, Health Inspectors, environmental organisations, all the factories, labour unions, DCC, and we had this meeting and said, we cannot carry like this any longer, this has to stop, you have to do something about it, we asked for a plan to come up and that is when they come with the MPP, and with it the medical study, which will help to find the incidence of asthma in the area and the second is to probe that pollution exacerbates asthma. The study shows that about 50 % of the children have pre-existing or some form of asthma, which is among the highest in the world. Of that 50 percent about one third was very severe, other third moderate and other third mild asthma. That was proven, now we have to prove how the various companies contribute to it, who is responsible for that pollution. So they took a school (Settlers Primary school) that is in the middle of the area, among Sapref, Engen, the airport and the sewage works, the MPP was monitoring the wind and the pollution levels while we were monitoring the lung function, what we found is that whenever there was high pollution, the lung function went worse, the higher the pollution the worse the lung function, a direct correlation. We have proved conclusively that bronchial asthma is made worse with increasing pollution and we have proved where this pollution came from, Dr. Rajeen Naidoo is responsible for the studies.

There are many problems here related to industry besides air pollution, there is noise pollution, earth pollution, sea pollution…

The government protects the companies, because this area produces about 60 to 70 % of the chemical requirements of this country, so it is strategic, it would be rather stupid of government to come and fine them, we need the will of the government to do something about this… at the end of it all, the fines need to be big, they need to be deterrents, the judges in the courts are also not sympathetic of us, we need environmental courts, like the ones they have in India.

The government should apply pressure on companies to have an emission inventory, what you are burning and what pollution is producing, also to take part on the side effects that this pollution is causing, we need the local authorities to monitor and investigate when communities complain. We need the assistance of international agencies, if they can support us, we will have more weight, we have financial constraints, we are all volunteers.

This area had had the largest number of EIA's in the last few years, you can imagine how much expansion is going on and the money spent on them, so we said that for each of this expansions, government should collect some money and put it into a community pool and that is now for the population in that area to take on issues. These are some of the things we would like to see, then communities can say we don't mind living next to you, because we can talk, you can make the profits, no problem, but we need to know that they are not destroying the environment.

… The worst medical condition I have seen from pollution is mainly bronchial asthma and death from asthma; it is severe that sometimes we have patients die, and cancers, cancer; that is the ultimate stage.

Interview with Tony Carnie – The Mercury Newspaper building, Durban, October 25th, 2005

- Tony Carnie is an environmental journalist with many years of experience in the field.

1. Who are the main players in the environmental improvement scene in Durban?

From civil society SDCEA is one of the key stakeholders, they are an umbrella organisation that has a good spread, WESSA is also active, from an environmental perspective I think those are the 2 most important, academics also have an important role, and then from government the key stakeholder is eThekwini Metro, and then there are some responsibilities in the provincial government, and national government does not seem to be very active at all related to air pollution, Water Affairs and Forestry also has a role to play, maybe I forgot a few, but these are the main ones, obviously industry is the main player, Engen, Sapref, Mondi, and off the radar is Tongaat Hulett, etc.

2. What is the current relation between industry and government in terms of environmental regulation?

I think that there are many gaps between industry and government, the emphasis has always been in self regulation, which has worked at a certain extent, but I don't think that there is enough enforcement capacity to regulate industry properly, so it has been a very loose arrangement to a certain extent.

3. What is the current relation between industry and civil society?

I think that there has been a lot of dialog in the last 10 years, the reality is that there is still a lot of suspicion from both sides, particularly from civil society a lot of distrust and resentment which has been there for several decades, because civil society has been largely excluded from many decision takings. Things are better, but I don't think they are good friends yet.

4. How good or bad are industry compliance levels?

The difficulty with compliance levels is that there are very few legal standards that they have to operate, to some extent they are largely unregulated and it is only in the last 3 years that they have started to be hold accountable to standards, it varies from industry to industry, but in general they have had 'Carte Blanche' with very little regulation, so if you are talking about improvements, improvements could be quite easy to some extent, because you start to regulate from a very low position, you start from a poor performance, in many ways industry is behind particularly compared to Europe.

5. What is your opinion in regards of public – private partnerships and voluntary agreements?

I was quite encouraged when I visited Denmark to learn how civil society, industry and government work together, I think it is healthy to have some suspicion, but at the same time it is not an antagonistic suspicion, at the end of the day you don't really advance if you are fighting all the time, there will always be tensions, at this stage I think it is quite difficult to convince civil society that industry is committed to good practices, I think that any initiative civil society has to be convinced that there is an element of regulation rather than self regulation alone. I think SDCEA is particularly more suspicious than other groups.

6. Do you consider that there is necessity of an organisation such as GN in Durban?

Yeah, I think it would be a good idea, there are some projects in the pilot scale and it makes a lot of sense, for industry there are finance and exporting incentives plus removing some of the antagonism, improving relations with civil society.

I was quite impressed by industry in DK, I don't say that it can be exactly copied here, but the heat that is generated from one industry is used to heat homes and so instead of wasting that it serves a benefit and that energy can be reused, there are a lot of opportunities.

Whoever chosen to be in the charge of the centre should have credibility, I know that is basic, but it is important here, the activities should be transparent, I am not a technical expert, so I cannot give further advice.

Engen has particular problems with the storm water disposal, they had a few incidences when there is heavy rain their effluent goes to the canal that goes to residence areas, there should be technical solutions to that.

7. Originally GN is a P-P partnership, should other stakeholders form part of the organisation?

Industry may be cautious and reluctant to have civil society, but the reality is that there are 3 parties, and maybe if it was successful civil society may eventually withdraw from the process because they would see that something is being done and they may feel that there is no need to scrutinize so closely.

Civil society does have networks in other parts of the world, with whom they consult and they have common experiences with communities in other parts of the world that face similar problems, and from that point alone I think that they have something to offer, they can provide some input.

Industry is competitive to each other and they may feel that civil society by being involved may give away confidential information, but my impression is that this is used as a mechanism to hide information, it is hard to judge.

… If civil society can be convinced that it is a genuine initiative to improve environmental performance, and not a substitute for government regulation, I think that is the main suspicion from civil society…

8. What are the EMCARS?

Environmental Corporation Agreements, in practice they were raised 3 years ago by the refinery managers, by the Refinery Managers Environmental Forum (RMEF) and the idea that was explained by Engen is that they were intended to deliver benefits over and beyond regulation, so, the refineries would comply to existing regulation and additional to that they would commit themselves to further improvements, to civil society this was a mechanism that was a substitute for regulation, I haven't seen much benefits of it myself, I don't know if it is still working, I think that there has been a lot of discussion in government about them, but on my experience I think they were not successful. If you look that Engen moved to gas, that is a good development, but the fact that they have so many exceedances, there is a problem still there.

9. What have been the most shocking environmental disasters you have seen in Durban?
There are three that I can think of, one is a tetryl (TEL) storage leak from Sapref, it is a lead additive, it is highly, highly toxic, it indicated that Sapref has been negligent in ensuring that their storage tanks were safe to contain harmful chemicals, a lot of the refinery staff and neighbouring companies were evacuated, but fortunately it was not a disaster where people died, but it indicated that there was a lack of preparedness for an emergency situation. There was another case that during 3 or 4 days there was a smell in many parts of the city and no one could identify it, and eventually about 3 days later, in the Island View area, Engen had a crude oil spill, this left questions on the infrastructure and the handling of potentially harmful materials, the other one was the leakage of petrol underground in houses in Wentworth and the Bluff, it was about one million litters, it was sent from Sapref to the Harbour, it was just detected because people began smelling petrol, they had been exposed to benzene, that is another instance of the lack of maintenance in pipelines, which indicated that there was a lot of maintenance to be done, I don't think that they were fined, the agreement was that instead of being prosecuted they would invest that money in the pipelines, for me the most disastrous situations, which is not a visible one is when people have been exposed to pollution levels that compromise their health.

Large industry seems to enjoy immunity, and I think that is one of the underlying causes of resentment, there is a sense of double standards, we are moving away of that situation with the Air Quality Act, but that would take a little bit of time, but there are standards and penalties in place now, even recently when Engen was fined for exceeding WHO standards, they were fined, I think R 50 000, and that was the first major fine for industry and it is still a very small figure, if you have a situation where everybody know what the rules are and they play by the rules, you can defuse a lot of the whole set of vague situation and the perception of industry getting away.

10. How often do you hear or know about SMMEs doing bad things?

There are cases as well, there was this boat that had a diesel spill and they were fined R 10 000, but it contrasted badly because the previous week Engen had spilled diesel and they were fined something like R 5 000, so there was a discrepancy, it was supposedly because the boat spilled it in the harbour and Engen did it in a canal… I don't know…

Interview with Stephanie Dupreez – Durban Institute of Technology installations, Durban, October 25th, 2005

- Stephanie is the current secretary of the South African Metal Finishing Association; she was involved in the DANIDA CP project for the metal finishing industry.

We don't really know anything about the NCPC, they've been going on for ages and still haven't done anything, so I think it is important to have something like this (GN), when we were running our project (CP for metal finishing industry) we didn't know what was happening with other DANIDA projects, all of us are were doing the same thing but nobody knew what each other was doing. You can actually speak to the people from NCPC and they don't even know what is happening there

1. Please tell me about your experience with the Metal Finishing Industry CP Centre.

The project is over now, it finished in February 2005, it started in 2000, basically the Danish, they knew about CP in metal finishing and they put money and expertise over here, the main part of the project was demonstration projects, where they would give money to companies to implement CP, so one of our main offers was to do 20 demonstration projects, we ended up doing 19 eventually, besides the demonstration projects we had dissemination, which included conferences, workshops, trying to get the message to people, you know, throwing money to them, we did a lot of environmental reviews in companies where we would have consultants who would go to the company for a few hours and make a quick assessment and give them recommendations, without costing a huge amount of money, basically good house keeping, if the company wanted to go further, then they would do the

environmental review, and further the feasibility and the demonstration project, there was obviously not that much money, but the companies were happy enough with that initial help.

One of the things that came from that project is the Metal Finishing Association, which I now work for, training, that was a big one, there was no training in the industry at all, so we developed training with DANIDA, specifically job training and we incorporated waste minimisation and CP, so when they went to our course, it was not only how to plate, but how to plate responsibly and do right, the project went for 4 years, and it recently finished, and now we are starting a project January next year, related to OH&S.

2. How many companies are there in the metal finishing industry?

We actually don't know, the problem with this industry is that anybody can do it, you can be a metal finisher in your garage, and not tell Metro, Metro doesn't know how many there are, besides there are companies that do plating as not a core business, just as a side issue, we estimate around 700 companies nationally and we have heard only about 350 of them, most of them are in Johannesburg, but the problem there is that it is a bigger area, we have a problem in industry where people don't comply and they are not going to say we are doing metal finishing, they want to keep a low profile.

3. What can motivate industry to form part of the Green Network?

I think just getting them involved, I know we had a big problem at the beginning of our project, to get people on board, they were just not interested, but the more they see that other people are doing it in the industry, and not that they are not going to get financial benefit out of it, but they feel that training of their staff is important, knowing what is going on in the industry is very important, so…

4. How did you begin the project?

I was not at the beginning of the project, what happened in Durban is that Metro suddenly clamped down on metal finishing industry, they set new limits and you must comply, now we have all of these guys who don't have any idea on how to lessen the effluents and all the rest of it, so they were all together and Chris Buckley run actually the first WMC in Durban, and then between the MFA and Metro they agree that they were going to comply but it would take about two years and then the Danes came along with funding and things fell in place, Cape Town and Jo'burg are still having problems, in Jo'burg they don't care, there is no push from the government.

We also started telling companies that we were doing it for the environment and companies said, 'we don't care', so we had to point out the financial savings of WM and CP and a lot more people got on board, it is a horrible thing to say but unfortunately is true. Obviously the more we offered people and the more the word got out that we were there and things were happening, more companies came.

This industry is very neglected, there wasn't anything there for them, when we started having conferences, there was one of them in Johannesburg, it was such a success because they haven't had one before.

5. What specific services would a CP Centre shall offer?

Technical information, industry specific and also about CP, because people don't know about it, we need to change to more environmentally friendly chemicals, but nobody know anything about it, everyone expects you to change, but you don't know what you are doing, so a knowledge centre, training, training is a very big thing in the country currently, it is very important for companies, it is a very low skilled profession (metal finishing), even the guys who are managers don't have a high level of education, half of them can read, half of them can't, many of them are just told how to do things, we try to empower them by teaching them how to do the work. The people we had in our courses had been plating for 10 years and they didn't know their stuff, they were doing what they were told to do, that is why I say training is important.

6. Should civil society be involved as part of the organisation?

I think it is important that they get involved, I have been to meetings with Metro and civil society, where they would protest, but they don't know what industry is trying to do to improve, it would bring understanding.

7. Based on your experience, should GN be a local or regional network?

I think probably a Durban thing, it is easy to begin in a small scale and see if it works.

8. What kind of strategy would you suggest to move forward the CP Centre?

To be as much "hands on" as possible, a lot of industry, especially informal industry like us, when they see consultants, they don't want to deal with them.
If a consultant comes and tells you on paper what the theory is, then nobody is going to believe you, but if another company or your peers tell you about it, it is more likely that you try it out.

9. Target small or big industry?

I would say both, there are many small industries that get side lined because the big companies always get the attention, while the small way is struggling and nobody is paying him any attention.

When the NCPC started out we talked to them and told them, we have done a lot of the stuff that you are going to be doing, you are welcome to have our information if you want to, and no, they wanted to reinvent the wheel, to do it their way, and I mean there is nothing new on this, they will not discover anything new. One of the guys sit in our project steering committee and honestly he did nothing, we saw him like every six months, we were hoping for some kind of link up with them, but it never happened. I think that there are a lot of political issues there, the guy who was supposed to lead it left and issues like that.

Interview with John Danks – Sea View, Durban, October 26th, 2005

- John Danks is one of founders of Saayman – Danks electro platting company and an active player in terms of the CP initiative for the metal finishing industry

Chris Buckley started WMC thorough the Water Research Commission and 21 of the electroplaters in Durban got together and started this WMC. That is how I went to DK, after I came back from DK the CP project began.

I don't know much about the CP Centre, I know that they appointed two people who were supposed to do some research but it never took off, it never happened, it was all talk and nothing ever happened, we had meetings about setting it up, Engen, myself, and other people, but nothing happened.

From 1998 to 2003 I was very involved with setting the Metal Finishing Association, and starting new WMC, and then I backed off a little bit.

We talked about having a centre were all the lessons learned were kept and passed on to new people coming on to the industry, we obviously learned a lot of things and some of them were documented, but not in a central place, there is not a central depository of this knowledge, where someone is sitting with all the bits and pieces.

One of the most important things for us in the metal finishing and chemical industry is that we all have waste, every single one of us, and we try to get rid of our waste or neutralise it, in our industry we have acids and all the other platters also have it, and we don't know what to do with it, so we use very expensive chemicals to neutralise it, get rid of it and throw it down the drain

eventually, where as these other industries are producing these other products that we don't know about, because we don't know their industries, they may have something that we can use to mix and neutralise our waste, maybe they have waste alkaline and we have waste acid, we take our waste together to neutralise, because they are using fresh chemicals and we as well, if we could get together… now we have done as much as we can, all of our sulphuric acid goes to a company that makes aluminium sulphate, they get the product for free, they just mix it with their other chemicals, and that is what is called 'industrial symbiosis', and I saw it in the Kalundborg complex, that is one the things that impressed me a lot.

In the plate industry we know what waste people got, but we don't know outside our industry, for instance, we are pretty sure nitric acid, that we produce a large volume, but we don't what to do with it, but we know that it can be used for fertiliser, when we speak to the fertiliser people the volume is too small, but if there was some central coordination to collect it, if we could put it in a central place, like the Kommune Kemmi in Denmark, then we could have a waste exchange, that to me is a very worthwhile project, but it needs to look at all the industries to see what waste they can reutilise, because we try to recycle as much as we can, but we can't recycle our nitric acid, it gets full of copper, full of aluminium, the metal is good on it, but we are still left with the acid that we cannot use again, but f we could get someone that use it for any reason that would be very good. There must be someone who is producing the product we need to neutralise our acid, but we don't know, not even what industry they belong to, it can be the clothing industry, or a company making shampoo…

There needs to be someone who is collecting data of what is being wasted and put A, B, C and D together, we don't have the resources, we know what we do, but we don't know about the rest of the industry, if there was someone who make a survey, 'what do you throw out?' so he could begin by asking what can you recycle with all the knowledge we already have, because there are things that companies throw away that can be recycled and the with what it is absolutely not possible to recycle you can then go to other industries and do the same exercise until you have a list of waste and then you can coordinate something, it is very worthwhile, I see that a CP centre, can do, it needs a lot of effort, crunching numbers, putting them in computers, and we can't make it ourselves. Besides doing that you end up with very good data of what is being thrown away down the drains, and that can help to see if it is worth to collect it, if it is viable for someone to set up a business, but you need data, someone who takes away the waste and use it, in fact he would get paid for it, if I could get rid of my nitric acid and the guy charges me R 500, and it costs me R 1000, I would be happy to pay, so he already got income, and the recover what he can recover, sell maybe the acid back to me, copper to someone else, you know… but we need data to begin something like that, I as an entrepreneur would not put money in something like that, but government can get some good data, that can be a good beginning.

1. How did you get together companies at the beginning of the CP project?

The project started off basically when Metro said we were all throwing certain quantity in Parts per Million PPM, and they reduced all the figures and they took regular samples and they sent letters saying we failed here, we failed there, we are now going to prosecute you, bla, bla, bla, everybody was getting agitated, and in 1998, I think it was, they sent a letter about a meeting, saying you will be there, it was not a voluntary thing, be there or we come to close your business, and then Chris Buckley said there was some money from the WRC, and he had seen in England a bunch of companies cleaning a river through waste minimisation, so he was prepared to run a WMC, and I joined that thing and then I went to Denmark, at the beginning it was just basically to save my business, clean my plant, clean my effluent levels, get out of trouble, eventually I saw that it was not only that, but we could save a lot of money, our water bill was R 10 000, that was 5 years ago, I think now is just like R 5 000, but my times is 5 times bigger and the prices have gone up 5 times, so if I was still using the same amount of water my bill would probably be R 50 or 60 000 a month, plus all the waste that I was throwing away, and when I came back I began to implement things and then I heard that DK was going to implement CP, but they would not deal with individuals but with us as an organisation, the only group we had was the metal finishing WMC, so we got together and we formed the MFA, I went all over the country and talked about it, we managed to get WMC all over the place and then the Danish CP project came which pulled everyone together, we did walk through, we gave companies a quick assessment of what they could do to improve, we set various things with the Danish team and as people saw

what we were doing and that they could save money and more people came on board, not everybody stayed, but the thing is that, I don't believe that there is any electroplater in this country that is not aware of waste minimisation, even though they did not get directly involved.

…Now we got offices, meetings, things are going quite well…

2. What about OH&S?

I think that you cannot separate one from the other. The government in the last 5 years has been upgrading the OH&S inspectorate, in the past there was no enforcement, but it is coming about now, we got a lot of OH&S, you can see all the binders there on the wall (pointing out). The first thing you think about when you are in a business is that you want a viable business, because if you don't make money then there is no business, so anything that threatens the business for whatever reason, you need to take care of it, no matter what, if you have health and safety knowledge then things are better, OH&S are becoming so complex that we had to employ someone to help us with it.

Now we got all the big industry, the people we supply to, they want to see that we haven't got a problem, because if you do, first able their supply will be disrupted, they will not get their goods and second they don't want to be associated with someone who has a problem, they want to say, we are green, we are responsible, they are now very concerned with what happens here now, whereas before the weren't, they come and we have to be able to walk them around and show them that we have everything in order.

Are there other issues besides industrial symbiosis you would like that a CP Centre look at?

Well, on the top of my head not really, but I think that a good thing is awareness, awareness to the public, they don't know what industry is doing to get better, general public think that all industrial have big sacks of money, and that we should not pollution at all, but sometimes pollution is unavoidable at the time, they say you cannot do that, they don't understand that maybe, yeah, there are companies that pollute a lot, but it is also the product, they want a glass, but producing this glass produces some waste, energy, water, but they want to have that glass without any pollution, they still want the product, there is a perception from the general public that we are all for money, that we don't care for the environment, there is a communication gap, I have cut my pollution by probably 80 %, but if public comes here, they don't see that, they just look at the bad things.

You raised an important issue, what role should civil society play?

It is very hard to get anything down when there are people who maybe understand the problem, but don't understand the solution, you got people who just want to shut everything down, and there are people on this side who say, we will get there, but give us a chance.

Look at the SDB, the industry was there before the people, the houses moved there, plus 80 % of the pollution is from the cars, they have done a lot of research there and 20 % is from the refineries, now you tell people that they should stop driving their car, no, no, no, the refineries should move away, so, there should be someone in between, let's be reasonable, we can do this, we can do that, someone to mediate, they don't trust us, we don't … someone to mediate what has been done, where we are going, how it can be resolved.

How would you like it to happen?

Some sort of meetings, something visual, this is the problem, some pictures, some videos, data, what is the problem, what is the solution and how it can be done, what would be everybody's contribution to it.

There are many people in civil society that are very knowledgeable in these issues…

I am not hearing that, I would like to meet them, I don't know what their ideas are, I don't have the opportunity to meeting them, and someone needs to get us together.

Interview with Anthony Botha – Durban Chamber of Commerce building, Durban, October 26th, 2005

- Anthony Botha is the environmental coordinator at the Durban Chamber of Commerce (DCC)

The environmental committee of the DCC serves as a forum for all the environmental issues that affect business as such, in the process we are currently working on the environmental sustainability policy, which we will apply in the Chamber and as a result of the Chamber having all its members affiliated to us, then they will be expected to comply with our environmental sustainability policies, what we are trying to establish is that the DCC is the forum where it comes to environment.

At the moment we are talking about our yearly DCC Environmental Congress, where all the businesses in Durban affected by environmental issues attend, in terms of CP, I don't know if you have spoken to Liz Anderson yet, I am going through all the files and see that she is a key person.

… The way it works is that everything needs to be made official at the Chamber before we can make comments on it, because we don't want to say we will say something and then not fulfil it, so we need to have official stamp on everything we do.

The Chamber can serve as the central collaboration, distribution point for all of the industries to get together, share the knowledge and do something concrete. The Chamber provides a networking solution for all its members, that is why people pay to be part of it, when it comes to the environmental committee, it has been a little scattered in the past, there hasn't been a really fluid, focused, consistent committee as such. There have been many changes and that is why many people had become misaligned…

1. How many companies are part of the Chamber?

Not everybody is affiliated to the Chamber, our general membership is any member that you can imagine, we have over 3500 members, the way it usually goes is that all the companies that have an issue will feed it to a representative, who will take those issues at a meeting where they will be addressed. At the moment the environmental committee has big membership, but not that many people attend the meetings, we have about, 50 companies in the environmental companies, the oil refineries, Mondi, Sappi, you probably know most of them.

We are pretty well connected to companies, we have a massive reach, let's say a person who wants to introduce an indigenous plant scheme, and I am actually using a factual example, someone e-mailed one of the people at Engen and he get in touch with me, and in that way I spread it to all the members.

2. What is the current relation between industry and regulating authorities?

I think legislation is tightening, over the past years there has been a need for environmental management, companies have realised the importance of the environment.

3. How good or bad are industry compliance levels?

Your main industrial complex is in the south, there have been a few problems, you know Engen having spills or Sapref, but you know, sometimes these things are unavoidable for any number of reasons, I think it is getting a lot better, people are taking things more seriously than before.

4. Do you consider that there is necessity of an organisation such as a CPC in Durban?

Yes, I think so, I am a champion for the environmental causes, it would be a good idea, I think a lot of companies would be amenable to that.

5. What specific services would a CP Centre shall offer?

Your first would be potential legislative information, a dedicated core or team that ensures that all the members are compliant to the legislation, not to say that authorities are not doing a god job, it would be the extra sort of push. Networking would be critical, when it comes to environmental awareness, SA is still getting onto the bandwagon, so awareness would be important, that is pretty much I can say for now.

6. Originally CP is a P-P partnership, should other stakeholders form part of the organisation?

As long as it is controlled, it is quite crucial that civil society is represented, it needs to be organised and controlled, yeah, it would be a good idea, especially from the environmental awareness point of view, but controlled, that would be the best way to go. … If the Chamber Environmental Committee forms something concrete, then we will push it, something like the CP, but I cannot say anything else, it would be just speculating…

7. Do you have any relation with the NCPC?

I am not entirely sure, I am going through my files, as far as I know we don't have any committee, but I am not sure. You have my address; forward any information in regards of the NCPC and the progress of your report.

Interview with Timothy Fashuen – Cedara Agricultural College, Pietermaritzburg, KZN October 27th, 2005

- Timothy Fashuen is the head of the provincial government pollution control department

One of the problems we have is the energy issue, companies have cut down in energy, use less water, they have cut down on their water usage, on their electricity, and the municipalities are not happy with it, they have responded increasing the tariffs, as soon as industries cut down on the energy and water usage, the municipalities reacted by increasing the tariffs! We are planning a meeting, a workshop between the municipality and the industry to address this issue, I must not be penalised by saving.

1. What do you know about the CP centre plans in Durban?

We talked with NCPC about not a centre per se, but they are interested in having the pollution group of UKZN, they rather talk about human bodies, a collection of people who are interested in CP, who can conduct workshops, who can conduct seminars and so on, but they did not talk about a physical building that we can call CP Centre, the University in Durban has got a Centre for Innovation, that structure can, if there is a pilot project house it, we can try CP in pilot scale, and the University can be useful for it.

2. Should Durban have a CP Centre?

Yes, we should have a centre so as to be able to coordinate our activities, where we can put all of our effort and resources together, now, I just want to say that I don't know your concept of a centre, maybe you are talking about a building where you can put things, where people can go and use it as a training centre, where industry can go and where you can demonstrate the advantages of CP, that is the physical centre, now, that would be ideal, if so we need a designated area and a structure, but I was also thinking of another approach, it also could be a collection of people from different backgrounds that get together to exchange ideas and organise talks, seminars, visits so as to spread awareness, you see, we are talking now about no physical building, but a group of people, a society, Chris Buckley and his people and other people can form a CP society, they can hold regular meetings, they can organise, they can sensitise and if there is anything that needs to be tried on, experimentation, we can then use the facilities of the university to do that, of appeal to industry to see if we can try a pilot

project in their premises, see if it works, so that body can do that, take the sugar research institute, or the Technikons, Mondi or the refineries also have facilities, if that group the CP society can do that, so they don't have a building of their own, but they are making use of facilities available, so how can Denmark be of assistance, the CP society can use of sponsorships, maybe an exchange program for a short period, but the ideal would be the combination of the two, the building and the CP society, but that would bring the issue of funding, who pays for the building, the maintenance?

3. What would you help with to push the CP Centre?

If someone like DANIDA supports it, we would support it financially as well, I would have a discussion with Chris Buckley, but we would be willing to support it, to give the complementary financial help.

4. What are the main services you would like a CP centre to offer?

What is urgent now is a comprehensive auditing of the industry, some of our perceptions are subjective, we say Mondi is dirty, Sappi is green, but we don't really know, we don't actually have data to substantiate that, we need data, we need auditing, find out, with that auditing we can see gaps… I have heard from industry too LCA, chemical substitution, we need to bring those on board.

5. How do you see civil society participating on this centre?

They have to be involved, apart from the municipality increasing tariffs; the civil society is difficult some times, when we talk about cleaner production we talk about zero waste in essence, and some of these companies want to use their waste as fuel, take the example of Mondi, Mondi use trees waste in their process to generate power or heat instead of disposing them in a landfill, they want to use it to generate energy, but civil society says it is an incinerator, and we are having problem with that now, they are using useless materials, they are getting them back, they are getting the most energy from them, but civil society don't want it now, that means that we need to create awareness among the NGOs, it is good to use waste as a source of fuel.

6. How do you interact with industry?

We oversee the activities of municipalities and industries, when it comes to CP we do it through EIAs, whenever there is development they submit their EIA, and we analyse it and identify areas where there can be CP, this waste of fuels that is going to go the landfill or to the incinerator, you must extract some materials from them, so we tell them that they should go back and improve.

7. Do you have enough people for your EIAs?

So far we are good, we are coping, we have more than 30 people for EIAs.

8. Industry complains about the amount of time it takes to get an EIA done.

It is not an uncommon complain, why does it take so long? Sometimes they don't supply information on time, they don't respond on time, we can conclude on an EIA only when we have sufficient information, the other reason is that sometimes the documentation they supply with the application is badly written because they are using cheap consultants, and by the time they get it back the time goes fast, also the public participation, let's say we have to hold 3 series of meetings, the first meeting we have a group, we introduce the subject, what we want to do and then we fix another meeting, in the next meeting you see another group, new faces again, then you have to explain again, and the next meeting you see new people again, and sometimes people come and say we were not informed, so, the public participation also delays this, because we have to listen to everybody.

9. What kind of strategy would you recommend to move forward the CP Centre?

I think that we need to approach industry and bring it together, discuss the issue.

10. Are there ways in which you as authority can put pressure on companies to force them take part of CP activities?

Yes, we are just finishing the National Waste Management Bill, it has been drafted now and there is a section in CP there, at provincial level we have the Waste and Chemical Management Bill, it has been drafted and we are going to workshop it

Interview with Ian Naidoo – Natal Portland Cement installations, October 28th, 2005

- Ian Naidoo is environmental personnel at NPC as well as at the DCC

(Many parts of this interview have been lost due to physical damage in the interview recording)

… Industry has a good relation with government, so much that sometimes the NGOs think that the government is too soft with industry, but I don't think so, I just think that NGO's want to go too far too quick, everything is progressive.

1. So industry compliance levels are god or bad?

I think they are good, we now we have standards in place… but I am talking big companies, smaller companies I don't know.

2. What kind of services should the CP Centre offer?

Technical expertise, yeah, technical information, technical knowledge, if I have a problem I should be able to approach the CP Centre and get help… for example in our industry we have a problem related to dust, so what is the best methodology to do it and who should I be seeing to have it solved, that kind of information.

3. What would be your motivation as NPC to join the CP centre?

It is going to be very difficult because our pollution us very minimal, except for the dust. If I can show my boss that by doing it this way I can return the capital investment in x years, then we would join.

4. How can the DCC help push companies to join the CP Centre?

It would be unfair for big companies to invest money in a CP Centre because they have already what they to clean their environmental performance… to me government need should be giving incentives and probably funding small companies initiatives…

… I disagree with SDCEA, yes, a GN / CP Centre may be years away, but if we don't start with it now, we will not get there, we should begin working on it so that it happens …

5. What support as DCC would you give to the creation of a CP Centre in Durban?

I cannot make official statements, but for me that would be the link to tap into smaller guys, within the Chamber we have the standing committees, the tourism, environmental committees, etc, and we also have the area committees, one area committee that I know is the Jacobs committee, for example if you go to that committee and there you can find the smaller guys, that is the support we can give, getting you to those guys.

… To me the priority focus of the CP centre should be the smaller guys…

6. Who would you like to lead this initiative?

I am tempted to say local government, gee, this is difficult, if I say local government, then it may not be neutral, it should be a Section 21 company…I think you should get the commitment of the DCC first and move it from there …

*** Ian is fond of a CP centre happening in Durban and he would certainly be willing to help push it forward.

Interview with Pat Foure – UKZN, Durban, October 31st, 2005.

- Pat Foure is the director of the Clothing and Textile Environmental Linkage Centre (CTELC)

There were 3 CP projects that went 2000 – 2003, here there are some materials from them (showing materials) the textile focused on the two major polluting activities, which are cotton growing and textile manufacture, they were generally very successful and had good results, when the projects finished in 2003, it was decided that it could be good to continue the project in the textile industry, mostly to distribute knowledge down the pipeline, to retailers and designers, etc. to have the information in one centre, so we started the CTELC in 2003, we had a competition among schools, Technikons a design competition that raised a lot of awareness.

Textile clothing industry is having problems here, Chinese imports, we are struggling, so it is difficult to get into CP, this is a life and death issue, so reducing costs is very important. We have created a lot of information through the project, for example this manual that is intended to bring industry and regulators together…(showing manuals and describing their contents).

Each year we do a CP Award, but unfortunately there are only a few companies around that look at CP in a very committed way.

1. So do you think that the project is losing momentum?

I think that there is still enormous demand, even in the textile industry, which is probably ahead of most sectors in this country, if you look into the NCPC, most of their examples are from the textile industry because of this project, there are still enormous opportunities, there are many factories that have not come on board, unfortunately some of the input they need are quite technical and therefore quite expensive, that is one of the constraints.

2. How did you begin your initial strategy to get companies to buy in CP?

I think through cases studies, now we've been working closely with the NCPC, which makes more sense, when we started up they were the people who were supposed to take over the technical matters, and we would just be information and linkage, but that hasn't happened, I still think that it is still a way to go, it takes time.

The NCPC has been working with the Hammersdale project, they been working with the eThekwini Municipality, they are having meetings now. The NCPC sits at the moment between being policy, you know political and between being practical, some people are pushing them to begin practical implementation, there will be another advisory committee meeting next month to define what their activities should be, the Department of Water Affairs is also trying to push them to practical implementation, they should be the ones who facilitate experts to come in and do the job.

I am interested in knowing from the CP Centre regarding civil society participation, for me is a little bit difficult to understand, in the original proposal I was sitting with 3 hats, I lived in the SDB for the last 25 years, on the Bluff, I worked for 20 years for industry in that area and now I have been working in this project for 2 years, I could not see how you can put industry and the general public

on the same place, I saw it as a big problem, industry's point of view, even if they are responsible companies, you are not going to disclose problems with your operations.

The NCPC, at this stage in their development did not see any particular benefits for public participation, being national is quite difficult, they are still trying to decide what they should be doing, it is now strategic, although many people would like to see them more practical. At this stage it was thought to be inappropriate, dilute yourself from the main activity of the centre, because with civil society you can end up with quite a battle for a while, that was the feeling that was around, that is how I interpret it, at a later stage it may be a good idea, but they are having a meeting later in the year to see.

3. Should a CP centre target small or big industry?

Big guys generally got the resources, it is the medium and small that haven't got the resources, and it is essential to try to get resources for them, because even though they sort of know that it could help them, sometimes they can't afford it, the medium and small companies can be the most important one, but if you could get the bigger guys involved, they generally have the knowledge and resources to help the others, but sometimes they have an attitude, we know everything, there is nothing in there for us. And I think that it should be directed to all sectors, because all sectors have something in common, injuries for example, but some of the operations are very different, the principles are the same, but the actual solutions are different from sector to sector, you could go to the point of creating awareness, but you may not actually solve the problem, the details have to come from the specific sector, you need to have access to someone technical within the sector to actually solve some problems.

4. What services you would like the centre to offer?

For the general public I would like that it give information to the local community of the pollution in the area. Many companies have polluted for years in SDB… I think industry needs one place to go to, and you cannot make it too complicated for them, you need to have 'one stop' place, it is difficult whether this should be the NCPC or a local CP centre, I think it would be more effective as a local centre, working together with the NCPC, you just have to be careful how everything is set up, local is better, because you already know the people and it is easier to organise, I think it is more effective…

Interview with Quentin Hurt, Pinetown, KZN, November 1st, 2005

- Quentin Hurt is an environmental consultant, he works for Ecoserv a environmental consulting company

1. Is there necessity for a CP centre in Durban?

I think it would be advantageous, I don't think it is a necessity, there is certainly sense in collecting all the information that is available to help industry with CP activities, the WMC and CP projects such as the one in the metal finishing sector have been very successful, I think it would be advantageous, but I am not sure there is a necessity.

2. As consultants, do you have any relation with the NCPC?

No.

3. What specific services should the centre offer?

I think information is clearly the major function that it could provide and practical measures for companies to reduce waste, I also think that it can be a clearing house for data in environmental conditions, because there is no place in Durban that offers this.

4. What should be the companies that the centre should be focused primarily?

I think that the size of the companies is not as important as the sector, the reason that the metal finishing was so successful is that all of them spoke the same language, you need to get clusters of similar industries together and see if it works, and second to have interaction among the companies.

5. What would you recommend a local or regional centre?

My impression is that there are a number of companies that have been overlooked outside Durban, such as Richard Bay's, is not that they don't want to be involved, but there is no way they get involved in the discussions, I would say regional exercise would be best.

6. Should the centre involve civil society?

If we go back to its functions, if the centre is there to share information, to share data, I don't think that you can ignore civil society, because they have an interpretation of that data that is critical, the centre could provide a very useful role to interpret that data. There is a lot of distrust between civil society and industry and in many situations general public gets very emotional. The centre will not solve the problems between civil society and industry, but what it can do is to be a credible source of information, as opposed to be a political force.

7. Who should be driving this initiative?

Government role is to regulate, not to tell companies how to run their processes, so it is not a government's role; I think you need someone independent from the 3 parties to chair this centre.

8. What are industry's compliance levels?

It is difficult to tell, from the air quality perspective; we don't really have clear regulations, if you ask me if companies comply, then probably not, and one of the problems is that we don't really know what the standards really are, because we don't have defined standards to compare to, many people are trying to comply, but they don't know to what standard they should comply.

9. Are there any sector that you see receive as much attention as the metal finishing, textile and pulp and paper industry?

In Durban, specifically, there is the oil sector, I think that when you talk about it, you always mention the refineries, but there are a whole bunch of other related companies involved in by-products, from bitumen to recycling of oil waste, I think that there is a lot of opportunity to make a difference, the other sector that comes to my mind is the informal sector, people who recover tires, metal, cardboard, there is a challenge there.

10. Are there any suggestions to attract smaller companies to the centre?

The Chamber of Commerce is very effective in reaching to the smaller companies, the government has also a big database of the companies, and you can start with something like that.

Telephone interview with Bobby Peek – November 1st, 2005

• Bobby Peek is an environmental activist, he is currently director of the environmental NGO Groundwork

- There are two things I would like the network to focus on, first, you have to deal with big industry, you have to help them have less impact in our environment, second issue is energy, how can we reduce and change the energy usage in Durban, how can we begin doing things such as changing to gas, as it

has been proposed in the past, how legislation can change to reduce effectively energy consumption.
- The centre has a role to play with small industry, but big industry needs to work harder.
- Groundwork disagrees sometimes with industry and other times it works together with them, depending on the issue raised.
- Cooperation with industry does not mean that there will be no confrontation, negotiation is key, industry should be open and transparent so that the negotiations move you beyond compliance which is the objective of the network through peer pressure.
- Civil society needs to be mature, if the objective of a CP Centre is cleaner production activities it is not the forum to raise issues of flaring, or related incident complains, civil society that participates in the network should focus on the network objectives and leave the other stuff for the appropriate channels.
- Groundwork opposes public – private partnerships when these take the forms of voluntary agreements.

Interview with Gladys Naylor – Mondi installations, south Durban basin, November 1st, 2005

• Gladys Naylor is the sustainable development manager at Mondi Durban, she is also involved in environmental issues at a group basis

In terms of CP initiatives, it makes more sense to a company like Mondi to look at the problems in a industry specific way, it would not make sense to us go to a CP Durban centre to solve specific problems in our industry because we have at our disposal the experience of Europe and the other producers, which are further down in terms of CP, it would not really be a valuable resource to us, as a big company we have the resources at our disposal to solve the problem, I cannot see that it would be utilised by a company such as Mondi to a great extent, but I can see a value for the small and medium companies that have not the access to the resources that a bigger companies has.

You need to understand that the resources are stretched already in a company like this, so you have someone responsible for environmental management and that person does not have enough time to go to a forum and share our knowledge. That has to come from the centre, not from the bigger companies.

1. What kind of relation do you have with government?

I think it is good; we have good cooperation with them.

2. What about with civil society?

It is definitely not as good as we would like it to be, it has a long history of tensions and stressful relations between communities and Mondi, one of the things that is possibly a good objective of your centre is to build capacity in the community in terms of understanding industry and their effects.
Our situation has improved in the last years, but it still has a big way to go.

3. Should a CP centre include civil society?

It just depends on what your objectives are, if your objectives are to promote CP within industry then I don't know what would be the role of civil society, so it depends, if your objectives are to engage and build capacity in your stakeholders, then civil society should participate.

4. What kind of role do you see civil society taking in the CP centre?

I don't really know, other than in transparency and being open in participation, I don't know what specific role they can play.

I just think that in terms of credibility it would be very difficult for a centre like this to offer the resources a company like Mondi needs. For smaller companies is a good idea, but for Mondi there is such a huge expertise required that it would be difficult for a centre like this to have credibility, but there may be some areas where we could cooperate, like waste, I don't want to say no, it is not a good idea, I just think there is limited use for a centre like that in terms of the big industry.

5. Would you think that there is necessity for a CP Centre?

I think that in terms of a company like Mondi it would have limited value, but in terms of smaller companies there is necessity for it.

6. What services would you like that the centre offers?

The cooperative relation with authorities, that kind of cooperative as opposed to a regulatory environment, that would be a good thing, in terms of a constructing a good relation with stakeholders, it would be worthwhile and possibly identifying possibilities for symbiosis in industrial activities.

7. What would motivate you to take part of the centre?

An improved relation with stakeholders and the possibility to work towards better understanding and probably to have a more constructive relation with authorities, it would not be as I said before on technical solutions.

8. Should it be a regional or local centre?

I would like it to be regional, but I don't really know, I am not sure what would work better.

Interview with Liz Anderson – Gateway, KZN installations November 2nd, 2005

- Liz Anderson is an environmental consultant, she is part of the Responsible Container Management Association of South Africa and former NCPC KwaZulu Natal coordinator

I worked for the NCPC in a contract basis; they were looking to support and partnering with the CP Centre that Jessica Rich was working on… I worked in several projects with the NCPC where we had very good results… We started to work with the Water and Sanitation Unit (EWS), eThekwini, to help try to build some capacity and help the companies build some capacity and assist the textile companies comply with the permits, we did CP assessments…I know that there was a little of a blockage, a mental blockage from the NCPC side, but they are now working with the EWS again.

NCPC has put a note on his website for interested consultants to register as consultants for NCPC jobs, they are basically consolidating the job from the past until the change, they were working partly by UNIDO and partly by the DTI, and that is going to change, founded totally by the DTI by January.
At the moment is a little bit of consolidating what they have done in the past, it is a little bit in the limbo, until they are taken over by the DTI in January, that is why I have not been doing anything for them at the moment, they will no longer have what they call regional coordinator, I was one of them, they are changing their focus and their structures, they are just changing constantly.

NCPC work with food, chemicals, and textiles, looking at moving into automotive and mining…
There is not as much happening with the NCPC as I would like to see, but they felt that the region should take ownership, with the change of management in Pretoria there has been a change in thinking, now the regions should take ownership, I have to follow up with Jessica Rich on what is going on, they ran out of funding and then they were allocated another amount, honestly I don't know at this point, but I can get back to you on this.

… there is a problem because none of the environmental departments talk to each other, you got Environmental Management and Planning, which is two separate ones, you have EWS, and the Health Department, and then you got Durban Solid Waste, and none of them talk to each other on these issues … they are fragmented… Jessica sat in a committee and pull all of these people to begin working together in the CP centre in the past.

What would be the services you think the centre should offer?

Firstly information, awareness training, so people know what it is all about, information on success stories…

Talk to Ndivhuko Rapreulu, he is the NCPC director to find out what is going on there

… NCPC would source projects to consultants registered in their databases, and match them to projects in South Africa and other countries in Africa…

Conversation Brian Purchase – UKZN, Durban November 3rd, 2005

- Brian Purchase worked for over 20 years in the Sugar Milling Research Institute, he is currently a professor at UKZN

The South African Sugar Association (SASA) is composed of two sections, the growers and the millers. When it comes to environmental issues they do not want SASA to represent them, there is not a unified sugar industry environment plan, but there is the SASA Environmental Committee, which develops policies and so on, within them there is the SASA Environmental Committee, and they have been responsible for developing policies in cane burning, wetlands, etc, I think that the major environmental issue is the smog from cane burn, but that is a growers issue and the millers themselves do not want to see their money being put into initiatives to help the growers, they want each sector to sort out their problems.

Within the millers you got a number of sugar companies, there are about four sugar companies in SA, there has been a changing opinion here, 5 or 6 years the managing directors of these companies said, we don't want a millers environmental committee, we will handle the environmental issues as single companies, one of the reason is that one of these companies said that they would use their environmental procedures as part of their marketing to sell sugar, as a business competitiveness strategy, but that strategy is not strong anymore.

Under the SASA there is a Sugar Research Institute, which deals with environmental issues and under the millers association there is what we call the Sugar Milling Research Institute (SMRI). Some years ago we said we need to develop the capacity for environmental auditing, policies, etc, and at that stage the millers said, no we want to develop that in house, but now it's changed. The SMRI has expertise in air and water, and they have developed policies to improve sugar industry, smoke stack cleaning, scrubbers, etc, most sugar companies have scrubbers now as results of the negotiations. The environmental problem most people know about in the sugar industry is the cane burning, virtually the mills have no complaints, they have scrubbers and smoke stacks, so that they don't produce black soot.

One of the problems from Tongaat Hulet is that they produce a lot of bagasse, the fibre after you crushed the cane, they make animal feed with this, and to do that they have a lot of bagasse stored and sometimes when there is rain it washes it to the river, this has been a problem.

Cane burning is the main problem from sugar industry in this area, there is a steady move from growers to stop burning, but there is nothing been decided yet.

You are trying to build networks and around this area there is the sugar industry and I guess that if you ultimately making recommendation someone may ask, what about the sugar industry,

have you managed to bring them into it. The sugar companies that work in Durban and its nearby areas are, Tongaat hulet, they have a refinery here in Durban, Illovo has a distillery, Union, Co Op ltd has one factory 100 km from Durban, Transvaal Sugar Co. 2 factories in the north and Ilshukela Milling, they have two factories.

I recommend that you talk to Rory Linsky, he us the chairman of the SASA Environmental Committee about your project, I can arrange a meeting with him.

Interview with Dr. Rajeen Naidoo – Nelson Mandela School of Medicine, Durban, November 3rd, 2005

- Dr. Rajeen Naidoo is the Deputy Director of the Centre for Occupational & Environmental Health at the Nelson R. Mandela School of Medicine; he is as well in charge of the MPP health studies in the SDB.

If you are trying to put some intervention and if you don't have buy in from civil society, people are not going to accept, they are not going to accept the motives behind it and they are not going to believe it is going to have a positive impact in their lives, what they will end up doing is questioning why are resources spent in that, in that sense the centre can defuse tensions, we have seen it happen here, when Engen decided to use a new pipeline for using liquid petroleum gas and that is supposed to have a major impact to reduce SO2 emissions, a significant positive impact, but community saw it with suspicion, why they are putting these new pipelines and what happens if they explode, etc, etc, so a new process that was going to have a positive impact was instead seen negatively, so for example this centre that you propose could address the issue and get stakeholders together, explain impacts and then move the process forward, so you have a centre that defuses tension.

The MPP is certainly the model that you want to take in a centre like this, community oversight, multi stakeholder oversight. These people question all sorts of things, where does the money come from, if it comes from government, why haven't we been consulted about how the money will be managed, if it comes from an international agency, who made the application, the proposal for it?

SD is very well organised, people who tackle industry in almost every issue, while if you go to a community in the north, for example the ones we work in our health study, they are not well organised, the community is not going to ask questions, I live not far from that north community, very close to a dump, and there the community is not well organised, so when there is a problem, they cannot tackle the issues.

The first health study we did involved only one school, the Settlers Primary School, and that is basically because around that time, 2001, the school experienced a number of large scale health problems, several episodes where the kids had to be transported to hospitals with respiratory problems, the community was very concerned and they approached the former dean of the medical school, who was a former resident of Merewent and he approached us and we did a study where we found very high levels of children with either possible or definite asthma, according to the literature, some of the highest in the world, we were looking at almost 52 percent.

1. How did industry react to the results?

Not a very appropriate response in lack of a better word, they tried to find errors in the report, to date I have not seen any formal report where they attack the report, but they were complaining about, what the study found is that the levels of SO2 were lower than WHO standards, yet we found high levels of asthma. We found that there was a direct correlation between lung function and levels of SO2, that is quite important, industry may say our levels are low, we are not responsible, but now you need to begin looking at norms.

2. What other health effects have you seen related to industrial pollution?

That is very difficult to assess, community complains of elevated cancer, lots of children with leukaemia, a lot of people are dying of heart disease, skin diseases, it is difficult to assess this and relate it to pollution. We do know that heart disease is more likely to be suffered with high levels of pollution, volatile compounds increase risk of cancer and blood disorders, we are not able to show that in a study in Durban, it would be very expensive to do that. Other problem is that we have very poor medical record in this country, you cannot compare what is going on in SD with other parts of the country, you cannot say that there is more cancer in SD because people are shouting about it, but in other areas they may have the same levels, but there are no records.

If someone tells you my father is diagnosed with lung cancer, you cannot probe if it is related to industrial pollution or due to smoking.

3. Have you experienced any kind of pressure from companies related to the health studies you are conducting?

We follow a very strict process here, we have been contracted by the eThekwini Municipality, we have been contracted by the MPP, we are accountable only to them, to the intergovernmental committee of the MPP and the multi stakeholder group, we report to them, if we have queries from other sources, we tell them, talk to your representatives in those structures, then through Siva Chetty it will come to us and he will report back to them, because we know the tensions that exist. We want to keep it as objective as possible.

4. Would you have wish for a more ambitious study or you are happy with the one being conducted?

We are addressing the concerns of the stakeholders, understand what is going on in SD, to start looking at something in a greater detail, one would require resources that I don't think any funding agency or government is likely to have, some of the big studies being done internationally are long and costly, and we should learn from what has been done in those studies. I am satisfied with the study and we will find very good information and will raise questions that may need further studies. This is not a unique study. There have been many studies in he world similar to it, but is certainly will be the first done in sub-Saharan Africa.

Interview with Rory Lynski – Mlhanga, KZN, November 10th, 2005

- Rory Lynski is the Chairman of the Sugar Industry Environmental Committee (Public Affairs Division)

I will tell you about the SASA. We have a relation with eThekwini Health department, related to air quality; we have also relations with the DWAF. Here in SASA we have the mandate of overgrowing the industry, the sugar industry as you know is divided by growers and millers, we have 50 000 growers, they have associations, that do research, training, general marketing, etc.
The body I work for does research, training, does marketing on the export market, cane testing on mills, general marketing of sugar, and this division, we are concerned to talking to external stakeholders, to government, to local communities, developing communities and especially the environmental support.
The millers and growers pay attention to many environmental issues, and they delegate some of those issues to us, SASA. The industry does not have compliance policy for the whole industry and the reason being is that each individual miler and grower are independent and they are responsible for their own operations.

Let me show you (showing PPT presentation) growers have policies that they give to their members, the millers have their own ISO policies,. And SASA has put a standard in place as well.

The Sugar Cane Institute takes extensive work with the growers in the filed, both commercial wise and in a joint venture with what we call small scale sectors, and we have the environmental committees that I will tell you more in a moment and we have local initiatives from independent groups. What we have seen in the last 15 to 20 years is an increasing pressure in the sugar industry on how it behaves, the industry in Natal has a big ecological footprint as you could see, we extend down the south til Mpumalanga, we have a lot of neighbouring issues, increasing water use is an issue.
Because of the issue of self regulation it was thought that industry could be the policeman, they set up LECs, Local Environmental Committees that were given the mandate of trying to deal with environmental issues on a local level on those six big areas, air, vegetation, soil, spillages, waste, things that they could deal with themselves and we would support them.

There are some areas of concern we have, mainly related to air quality - sugar cane burning, sugar cane spills on the roads, water conservation and quality, practices on farms, etc.

What has happened in the last 10 years is that there have been a lot of reorganisations, transformations, as a result of the changes in government, provincial government, because I cannot speak nationally, there has been a big loss of skills, so now the environmental committees are filling somehow that vacuum, they have been given a lot of the responsibilities that fall on the government. I will give you a copy of the memorandum of understanding between eThekwini Health and one of our committees, on how they are self regulated on air quality, so governance, and cleaner production would be in the interest of this committee.

Let me give you an example of one of our committees, this one works with water quality, air pollution, soil degradation, water efficiency, sprinkle systems and the other issues I have mentioned before. So the committees are the lower structures that are trying to promote best practices. The support from us comes in two areas, technical support in the field and liaison support. Some of the issues I would be involved would be looking at legislation ad how to comply with it, communications among the various programs, such as clearing alien vegetation, working with the municipalities to establish self regulating codes, promoting wetland conservation, we issue a series of publications that reach all the growers and millers, just to give you an idea on how Extension works. Extension covers all the areas of the sugar cane, we have 5 regions, and there is extension offices for both small and big growers, that do all the technical transfer and all the programs, this presentation is for other audience (referring to the PPT on the computer screen) but I am trying to give you an overview of the sugar industry…

Sometime ago the World Wildlife Fund (WWF) approached us, they are working in six areas internationally and one of them is agriculture, they work with what they call the thirsty crops and one of them is sugar cane, there is one sugar cane community near Pietermaritzburg that is working with them, now we are working on a memorandum of understanding with the World Wildlife Fund. For us this is important, to have an agreement with the one, the major environmental organisation, it will take still some time to complete the process but it will be done, that is the way forward.

Agricultural pollution from cane burning, I think is only around 3 percent in the bigger picture, compared to industrial pollution, but it is a big issue because it is very visible. There has been increasing incidence of cane burning opposed to green cane, now we are trying to reverse this trend, to have cane trashing instead of cane burning. The pressure in our industry from communities comes from the residents of the community, who pressure their councillors, who then pressure the Health Department which then pressures the sugar industry, SASA.

I would like this CP Centre to support industry in a broader sense, just as the work that we in SASA are doing. Perhaps you can send me some information on what you see that this CPC can offer to us, I am sure there are technologies that are used by other industries from which we can benefit.

I am giving you now a booklet with all the information of the members of SASA, names, telephones, structures, this will help you to contact them in case you need to.