Eco-communities in Denmark

A possible model for transition to a sustainable society in the economic growth oriented reality

Aalborg University

Environmental Management & Sustainability Science

Magdalena Trifonova
Erik Péter Párdi

AALBORG UNIVERSITY
STUDENT REPORT

Cover pictures:

The photo at the top left of the cover page depicts a dwelling in the eco-community of Hjortshøj. Picture was taken by the authors of this paper in 2017.

Other pictures:

People work together on the strawberry fields of Svanholm:
https://www.facebook.com/pg/Svanholmstorkollektiv/photos/

Common dining in Svanholm: https://www.facebook.com/pg/Svanholmstorkollektiv/photos/

Building process in Karise Permatopia:
https://www.facebook.com/pg/karisepermatopia/photos/

Dwelling in Fri & Fro: http://www.visitegebjerg.dk/friogfro

Preface

The current research has been developed by two master students from the Environmental Management and Sustainability Science study program at Aalborg University, under the semester theme: *"Master's thesis"*. The report was written between the 1st of February 2017 and the 1st of June 2017.

Acknowledgment

During the conduction of this thesis, we came over many barriers and challenges, and fortunately, we were able to solve these issues with the support of various people with diverse backgrounds. We greatly appreciate the continuous assistance and support of our master's thesis supervisor, Ole Busck, whose advices have been playing a crucial role in the successful completion of this current scientific paper.

Most of the utilized valuable data and information about eco-communities in Denmark and the Danish Ecovillage Network came from our interviewees, namely Freja Nygaard Rasmussen, Kennet Harpsøe, Ziggie Jensen, Christian Lausen, Niels Aagaard, Peter Larsen, Gitte Jakobsen and Michael Skands - we would like to express our gratitude to them for their significant input to our research. Furthermore, we are also immensely thankful to John Holten-Andersen for providing us a thorough vision from the perspective of degrowth, and Uffe Elbæk for his insights on the investigated problem from a decision-maker's point of view.

Last but not least, we appreciate the warm welcome of Else Mikel Jensen and Lise Reinholdt from the Co-operative Society in Hjortshøj, who gave us the opportunity to make personal observations inside their community, and allowed the firsthand experience of eco-community living.

AALBORG UNIVERSITY
STUDENT REPORT

Department of Planning
Environmental Management and
Sustainability Science
Vestre Havnepromenade 5
DK-9000 Aalborg
http://www.environmentalmanagement.aau.dk/

Title:

Eco-communities in Denmark – A possible model for transition to a sustainable society in the economic growth oriented reality

Theme:

Master's thesis

Project period:

Spring semester 2017

Authors:

Magdalena Trifonova

Erik Péter Párdi

Supervisor:

Ole Busck

Page numbers: 87

Date of completion:

June 1st, 2017

ABSTRACT:

There has been an increasing debate related to the environmental, social and economic issues deriving from the neo-liberal political economic system of the West, where monetary profit is in the core. So far, the state and the market seems to have failed in addressing these issues properly. Academic critiques have been developed, but lacking a definite practical approach, they do not provide a clear vision of the actual path for transition towards sustainability. The focus of this thesis is the lifestyle of eco-communities in Denmark, as a practical approach towards a more sustainable society, where environmental consciousness, social welfare, solidarity and democracy are fundamental. Using interviews and observations, the aim is to provide a thorough investigation about *"How can eco-communities thrive, grow and spread in the present economic growth oriented context of Denmark, and to what extent do they represent a viable model for transition to a sustainable society?"* During our critical investigation, we found out that even though the communality typical for the Danish society seems to be in favor for these eco-communities to thrive and grow, there are political, social, economic and institutional peculiarities, which challenge significantly the overall goal of sustainability in these communities, and their possibilities for spreading in the country.

Erik Péter Párdi
Study No. 20151877
ppardi15@student.aau.dk

Magdalena Trifonova
Study No. 20151874
mtrifo15@student.aau.dk

Table of contents

1. Introduction

As the ecologist Eugene F. Stoermer and the Nobel laureate Paul J. Crutzen proposed, human impact on the land, the atmosphere, the oceans and ice sheets has pushed our planet into a new epoch, which they called *'The Anthropocene'* (Gaffney & Steffen 2017). Currently, our planet Earth has to face with a diversity of environmental, social and economic crises. Ecosystem degradation, the extinction of species and climate change all stem mostly from anthropogenic sources, and they come along with the unfair distribution of resources, social injustice and wealth inequalities (Urhammer 2016). During three centuries of industrialization, a strong correlation has been established between economic growth and various forms of intensive resource use and extraction, and continuous damages to the environment (Kallis 2017).

Although the neoclassical notion of economic growth is still a prevailing discourse for many countries, governments and corporations, solutions to ease the crises and alternative ideologies are on the rise. The perspective that we have chosen during our critical investigation in this thesis is the perspective of the civil society, which has its institutional roots outside the sphere of the market and the state (Flyvbjerg 1998). The concept *'civil society'* was first used by Aristotle, and since then, a diversity of people (Adam Smith, G.W.F. Hegel, Karl Marx, Max Weber, Emile Durkheim, Jürgen Habermas etc.) have come up with various meanings of it (Fleming 2000). Our intention is to dig into civil society's role in the process of transition towards a society, which pursues a more sustainable and conscious life. In particular, this thesis concentrates on Danish eco-villages[1], which are typically small urban or rural settlements, organized by a group of people to offer alternative ways of living and resource use through their structure, activities and initiatives. Our critical investigation is focused mostly on production and consumption of resources and materials, and we are looking into the topics of housing, food provision and communality, as these are the areas, where eco-villages can offer various solutions and alternatives. The ultimate goal is to get a thorough understanding of eco-communities and their chances in surviving and spreading in a Danish environment, which is immensely oriented towards economic growth.

Therefore, the starting point of this project is a presentation of key global and relevant Danish problems, which are somehow in correlation with economic growth. After explaining the present situation, our research questions are revealed, followed by the clarification of our

[1] Throughout this paper, we are going to use the words 'eco-village' and 'eco-community' mostly as synonyms.

methodological choices and a presentation of the theoretical framework. The answers to the research questions can be found later, in ***Chapter 6***, where our findings are analyzed and discussed in detail.

2. Problem presentation

This chapter is designed to explain and introduce relevant issues related to the current economic system and its inherit flaws. In order to understand certain Danish dynamics and patterns, the presentation of the problems starts with a global overview of the consequences of economic growth. In the second part of the chapter, we concentrate on the main contemporary Denmark specific issues. A diversity of problems will be demonstrated in relation to the excessive production and consumption of materials and resources based on data in most places. The chapter finishes with a build-up section to the problem formulation and to the research questions of this thesis.

2.1. Growth and the problems deriving from it

Growth is a paradigm based on the neoclassical idea of prosperity and has been base for the world predominant economics for decades. It appears as a core of the neoliberal ideas where *'more'; 'private' and 'man-made'* are general features (Martínez-Alier et al. 2010). Today, economic growth is generally taken as a number one priority by default. Regardless of their political orientation, the parties which constitute the government are all aiming for economic growth and the only thing in which they differ from each other is the way such a growth is believed to be achieved (Lindberg 2017).

The indicator commonly used for measuring economic growth is GDP[2] or gross domestic product. Economic growth is determined by a positive change in GDP. This means that the more we buy and sell, the better for the economy, because it results in continuing growth. It is commonly accepted that the ideal growing economy is the one that grows every year by about 3% (Harvey 2014). Therefore, when the economy is no longer growing, economists, business and policymakers immediately address *'the problem'* and work together towards solution in order for the economy to *'recover'*. Such a devotion to problem solving by politicians and policymakers is very much related to the fact that contributions to or improving economic growth determines the success of the politicians participating in elections (Lindberg 2017).

The fact that economic growth provides benefits related to profit growth, employment opportunities, better communication and technological advance is undisputable (Department for International Development UK 2008). However, at the same time *"economic growth is nevertheless the greatest threat to humanity today"* (Lindberg 2017).

[2] GDP represents the monetary value of all goods and services produced in a country within a given timeframe (OECD 2002).

Between 1992 and 2010, the overall world GDP increased by 75%. In terms of GDP per capita, the increase was 40% (United Nations 2012). Nevertheless, increasing GDP results in increased environmental pollution ***(Annex I)***, resource depletion, biodiversity loss and social problems (Martínez-Alier 2012).

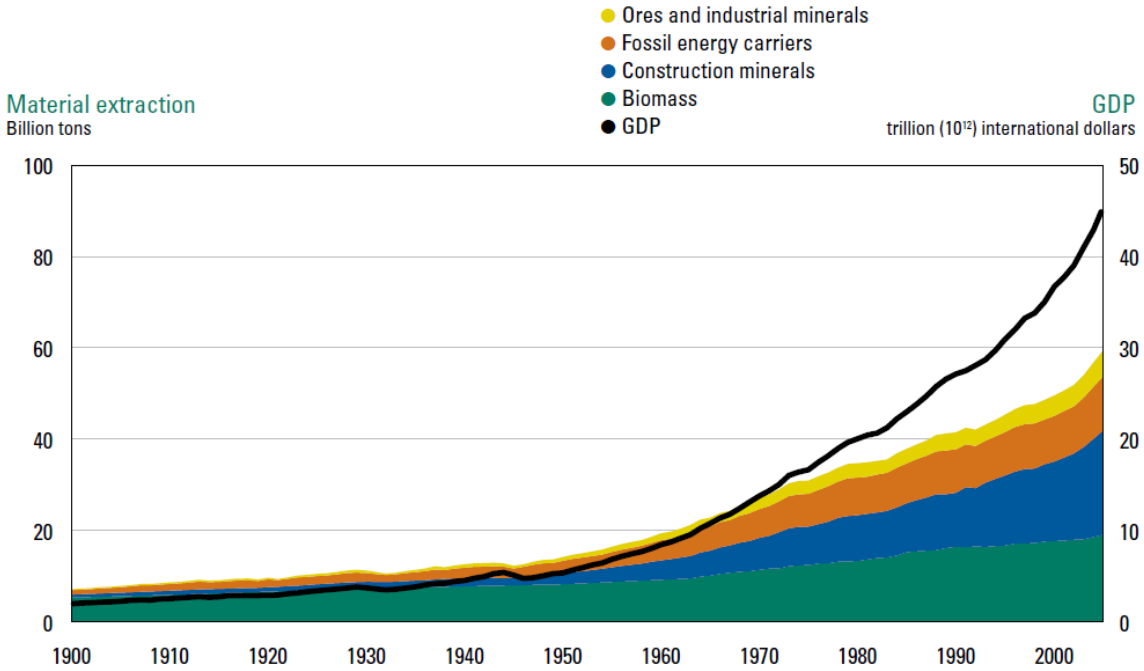


Figure 1: *Material extraction measured in billion tons between 1900-2005 (Fischer-Kowalski et al. 2011).*

On **Figure 1** we can see rising trends for extraction of different materials including industrial materials, energy, construction materials and biomass for a period of time of 105 years between 1900 and 2005. GDP is also presented on the graph for the same period of time.

The rising demand for products and services today is a result of changed social and cultural activities and values pointing towards materialism and consumerism (Brown & Vergragt 2014). Such an increase in demand leads to the utilization of natural recourses in an unsustainable manner, respectively to water, air and soil pollution, degradation of ecosystems and climate change (Demailly et al. 2013).

According to the Biodiversity Outlook 4 Report, today, natural resources are being used with a higher efficiency in order to produce goods and services. Yet, the continuous increase of total consumption levels challenges such a progress. The current consumption patterns make it difficult for ecosystems to remain within secure ecological limits (Secretariat of the Convention on Biological Diversity 2014).

"The greater the rate of production and consumption, with improper waste management, the greater the strain on ecosystems and the drainage of natural resources, leading to a scarcity of vital resources." (United Nations 2012 p.21)

A step towards tackling environmental problems was initiated 25 years ago at the Earth Summit in Rio de Janeiro. Conservation of natural resources, deforestation, control of pollution, and protection of the atmosphere were some of the main subjects of the action plan Agenda 21. Furthermore, the negotiation of the United Nations Framework Convention on Climate Change was formulated with the aim to secure greenhouse gas concentrations in the atmosphere on stable levels in order to prevent a change in the climate caused by anthropogenic sources (United Nations 1992). Yet, between 1990 and 2009, annual CO_2 emissions have raised by around 38%. The rate of this increase has been even faster after 2000 (United Nations 2012).

Environmental problems and climate change have influenced migration patterns as well. Predictions presented by the IPCC revealed that in the 21st century, changes in precipitation and temperatures have a significant impact on livelihoods (IPCC 2014). Even though there is no official definition for a movement of people as a result of environmental changes and problems, the International Organization for Migration calls them environmental migrants: *"persons or groups of persons who, predominantly for reasons of sudden or progressive change in the environment that adversely affects their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad"* (IOM 2011 p.33). Such an environmental migration could appear in different forms; it can be forced or voluntary, temporary or permanent and within or outside of a country. In this sense, such a migration should not be defined as a negative or positive phenomenon because it *"can amplify existing vulnerabilities but can also allow people to build resilience."* (IOM 2011).

On the other hand, it should be acknowledged that robust economic growth has led to major improvements of the life aspects of many poverty-stricken nations. For instance, within the last 20 years, a significant progress has been identified in human development related to health, education and access to products and services (UNDP 2010). Such a progress has been in line with the increase of income. Statistics provided within the Human Development Report from 2015 show that poverty in the developing world has decreased by around 2/3 since 1990. In 2015, 836 million people lived in extreme poverty, whereas 25 years earlier, the number of the people inside the same group was 1.9 billion (UNDP 2015). It has to be

mentioned that at the same time, the absolute income difference per capita between the most and least affluent countries has been continuously growing (United Nations 2012).

In 2010, high income countries' gross national income per capita was around 5 times higher than in case of the middle-income countries and around 30 times higher than the gross national income per capita in low-income countries. Between 1990 and 2005, the average inequality on a country level grew by 20%. Even in developed countries within the last 20 years, the gap between rich and poor has been increasing; the richest 10% obtains 9 times the income of the poorest 10% (United Nations 2012). Only in 2012, the 100 world top billionaires obtained $240 billion (Harvey 2014).

According to OXFAM, the richest 1% of the world population currently holds more wealth than the rest of the world together. **Figure 2** shows that in 2015, 62 people owned the wealth equivalent to the wealth of 3.6 billion people. Between 2010 and 2015, the richest 62 people's wealth has increased by 45% (from $542 billion, to $1.76 trillion). At the same time, the wealth of the *'bottom half'* has decreased by around $1 trillion (38%) during the same period of time (Hardoon et al. 2016).

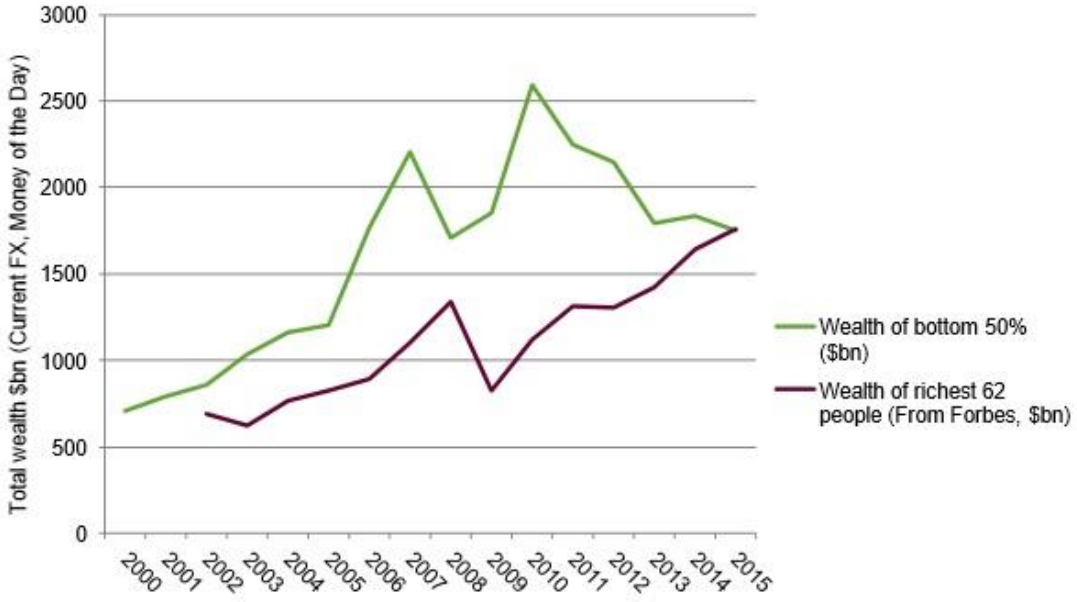


Figure 2: *Wealth inequalities between the years 2000 - 2015 (Hardoon et al. 2016).*

Such inequalities result in issues related to social tensions, even conflicts. Additionally, the continuing exploitation of natural resources challenges the actual economic improvement of the developing world (Jackson 2009).

Another issue related to the current reality based on economic growth is the modern idea that the measure of a monetary flow is a measure of wellbeing and prosperity as well. The economist Richard Easterlin, who has been working on the topic for almost 50 years now has developed the so-called Easterlin Paradox. This paradox is related to the idea that there is a point in time when there is a positive correlation between happiness of people and their income, but over time, this positive correlation breaks even if the income keeps increasing (Easterlin 1980).

Serge Latouche also acknowledges the fact that the continuous economic growth beyond a certain point does not contribute to human happiness, and according to him, it could even result in a negative correlation between both. He believes that happiness cannot be determined only by material status, but quality of life, health, happiness, relationships within the communities and families, satisfaction of work (Latouche 2009).

2.2. Responses to the drawbacks of economic growth

Common response by economists, businesses and policymakers to the negative environmental impact of economic growth is the so-called decoupling related to the concept of *'dematerialization'*. Decoupling refers to the disengagement of the connection between economic growth and environmental degradation. There are two types of decoupling. *'Relative decoupling'* is recognized when the economic growth indicator is higher than the indicator of material use, emissions etc. On the other hand, *'Absolute decoupling'* is recognized when a decrease occurs in trends of environmental degradation, regardless of the economic growth rate (Fischer-Kowalski et al. 2011).

Globally, within the period between 1980 and 2009, national economies show either relative decoupling or no decoupling of Domestic Material Consumption (DMC)[3]. There are few countries including the UK, Germany, the Netherlands and Japan that accomplished absolute decoupling for the same period. Yet, this does not automatically mean that sustainable material consumption was achieved. A possible dislocation of environmental pressure, not identified by the DMC indicator could be the reason for such a result (Giljum et al. 2014).

[3] This indicator measures the sum of all materials directly utilized by an economy in tons per year. It includes the annual raw material quantity extracted from domestic lands, plus physical imports, and physical exports are excluded (Dittrich et al. 2012).

Figure 3 represents a graph showing commonly recognized relative decoupling. However, to accomplish a decrease of environmental degradation resulting from material consumption, absolute decoupling is needed (Giljum et al. 2014).

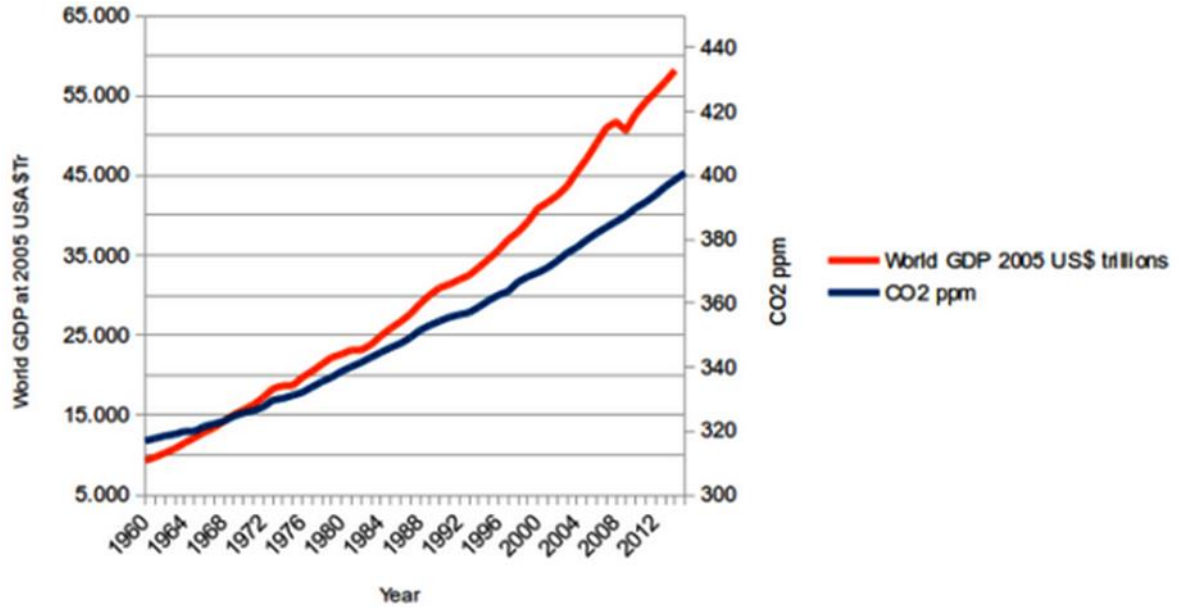


***Figure 3**: Relative decoupling between global GDP and CO_2 emissions (Burton 2016).*

The decoupling answer to the problems deriving from economic growth suggests technological solutions in order to deal with complex environmental issues. Such an approach is closely related to the concept and paradigm of *'ecological modernization'*, that is in line with the notion of environmental economics which will be explained in the theoretical framework of this project ***(Chapter 5)***. This concept refers to the idea that "*promotion of eco-efficient innovation is needed in major investment decisions, which should in turn lead to less-pollution, less-resource intensive products and more efficiently managed resources"* (Jänicke 2008 p.558).

On the other hand, as the ecological and Georgist economist Herman Daly states:

"the idea of economic growth overcoming physical limits by angelizing GDP is equivalent to overcoming physical limits to population growth by reducing the throughput intensity or metabolism of human beings" (Jackson 2009 p.130)

The ecological modernization approach stands in line with the concept of sustainable development as well. The Brundtland Report came about as a crucial document on international level to address environmental problems and to promote sustainability. Yet, the concept of sustainable development was designed to serve economic development or growth. Technology improvements, market mechanisms and management are suggested as the core

elements in order to achieve sustainability. At the same time, the need for a change in political, economic and social terms is underestimated (Kothari et al. 2015). For instance, the outcome document *"The Future We Want"* issued on the 2012 Rio +20 Summit does not identify issues like *"centralization of state power, capitalist monopolies, colonialism, racism and patriarchy"* which are roots of unsustainability, poverty and inequity. It does not address the issue of continuing growth on a finite planet neither (Kothari et al. 2015).

Furthermore, Sustainable Development Goals (SDGs) introduced in 2015, are formulated as a package that promotes sustainability and again economic growth is a part of it. At the same time, none of the SDGs aim for reducing production and consumption of the Global North (Reichel 2015).

Some argue that in general, SDGs have so far failed to contribute to equable economic growth, environmental protection and social welfare (Kothari et al. 2015). A detail often ignored by sustainable development optimists is related to the fact that all the technological improvements so far have led to income savings and respectively increasing demand. This phenomenon is called Jevons' Paradox, or rebound effect (Victor 2010). Furthermore, according to David Harvey, the power of innovation leads to unemployment and lack of job opportunities (Harvey 2014).

Considering the rebound effect, during the last 40-50 years, representatives from the academic field, grassroots organizations and even economists have been raising the attention on the need for social transformation (Schneider et al. 2010).

In the beginning of the 1970s, academics supported by the Club of Rome made an assessment in which they presented scenarios concluding that economic growth in the long run is a path towards a collapse. Instead taken as a warning and contribution to the economic and political field, their work was highly criticized by economists and politicians. However, today, the report *'Limits to Growth'* is seen as a significant work and inspiring for academics, NGOs and economists. Elaborating on the ideas set in the report, later, critiques of measuring wellbeing in GDP became topic of discussions (Urhammer 2016).

Even though such critics are not recent, after the 2008 financial crash, their popularity increased and discussions about prosperity without growth, GDP, and alternatives of growth came about. In this sense, ideas like steady-state economy or even degrowth have been gaining popularity and advocates (Urhammer 2016).

In his book *'Development dictionary',* Wolfgang Sachs shares his observations related to the globally increased initiatives towards less materialistic perception of prosperity and more focus on community, collaboration, sharing, self-sufficiency, etc. (Sachs 2010). He refers to that shift as a post-development age:

"Linking the desire for equity to economic growth has been the conceptual cornerstone of the development age. Delinking the desire for equity from economic growth and relinking it to community- and culture-based notions of well-being will be the cornerstone of the post-development age" (Sachs 2010 p.12)

2.3. Presenting the problems of Denmark

Continuing the presentation of problems mentioned in the previous sections, as the thesis investigation takes place in Denmark, this chapter narrows down the focus to this country. The main issues explained here are in connection with the themes of food production and consumption (by showing the outcomes of intensive agriculture), energy, material and resource production and consumption, and housing in particular, following the framework that eco-villages provide to us. The chapter starts with a short history of the Folk High Schools and the Danish farming cooperatives from the 19th century, because it is necessary to understand the background and the relations between these movements and the specific cultural and social patterns which can be observed nowadays.

2.3.1. A small historical review of the Danish Folk High Schools and the Cooperative Movement from the 19th century

Influenced by the contemporary events in Europe and especially his journeys to England, the philosopher, historian and politician N. F. S. Grundtvig highlighted the importance of providing better education for Danes with different socio-economic backgrounds, which builds on the inclusion instead of the exclusion of people and of the national language[4] (Broadbridge et al. 2011). Keeping these ideas in mind, from the 1840s, a network of Folk High Schools were established with the help of the peasant and farmer associations and Christen Kold (Lawson 1991). The goal was to offer a new, more practical, democratic and informal educational system. The emergence of Folk High Schools later resulted in a cultural revolution and it supported the appearance of an alternative elite (Østergaard 2000). The influence of these schools can be perceived nowadays as well: *"...the very fact of the*

[4] The common language was Latin at that time in most educational institutions (Broadbridge et al. 2011).

existence of two or three competing elites has helped agrarian and libertarian values to make inroads into the mainstream of Danish political culture, thus contributing heavily to defining 'Danishness'" (Østergaard 2000).

In the 19th and the 20th century, Denmark went through a remarkable political, constitutional and geographic change after they lost against the German Confederation in the Battle of Dybbøl in 1864. As a result, the country had to cede the control over Holstein, Lauenburg and Schleswig, which caused a massive decline of the total population and area by almost one third (Jespersen 2003). Influenced by this shocking nadir, Denmark started the national regeneration with the motto: *"Outward losses must be compensated by inward gains"* (Jespersen 2003 p.3).

In the 1880s, the main economic sector was agriculture (Kærgaard 2006), and keeping the above mentioned slogan in mind, some initiatives started from below with the peasant farmer class (just as in case of Folk High Schools) by forming cooperatives to create social and economic security (Østergaard 2000). The movement of cooperatives helped developing the agricultural sector; instead of the cultivation of plants, meat and dairy production had become first priority in farming in the early 1880s. From the formation of the first cooperative slaughterhouses and dairies until the mid-1910s, their number had gone through an enormous increase (Østergaard 2000). Besides laying the foundations of *"a Food and Farming Country"* (Danish Agriculture & Food Council 2016a p.5), the most important outcomes of the movement were fostering a homogenous and culturally coherent society, while at the same time impacting political and social life. At that time, the farmer's success and increasing power could be connected to the Danish bourgeoisie's weakness and the late industrialization of the country, which only started to accelerate in these decades, generating a regular working class in cities (Østergaard 2000).

2.3.2. Agricultural and land-use issues in Denmark

From the middle of the 20th century, agricultural mechanization and industrialization have gradually become a dominating force in the agriculture-landscape relations in Denmark. Similarly to some other Western-European countries, the modernization trends brought increased finances to the sector, which resulted in further intensification of the agricultural production and inevitably a growth in external inputs (energy, materials and resources). Another trend which started to emerge in agriculture in the 1950s - and prevailing nowadays

as well - is specializing in producing one or only a few products on a smaller number, but larger farms (Levin 2006).

The new farming methods towards mechanization, monoculture and the intensification of agricultural production were all aimed at the expansion of productivity in order to be able to compete on the global market (Andersen & Sørensen 2015). Nowadays, this focus on growth is still remarkable, even though industrial products took over the agricultural goods' leading role in the Danish economy and foreign trade decades ago (Pedersen 2006). The food cluster had a 25% share of total exports of the country in 2013, accounting for 156 billion DKK (Danish Agriculture & Food Council 2014), but this result also include products from sectors which are not directly connected to agriculture. Therefore, according to the calculations of the environmental economist Alex Dubgaard from the Department of Food and Resource Economics of the University of Copenhagen, we should count an approximate 8% share of total exports coming from the agricultural and related sectors (Fuusager 2016).

As an outcome of the intensive agricultural production, this sector has the second highest climate impact in Denmark after the category 'Energy Industry and Transport' (Andersen & Sørensen 2015). ***Figure 4*** shows a slightly different categorization and calculation of emissions, where 'Energy Industries' and 'Transport' are displayed separately, thus making 'Agriculture' the third biggest emitting source. The demonstrated results on the figure were

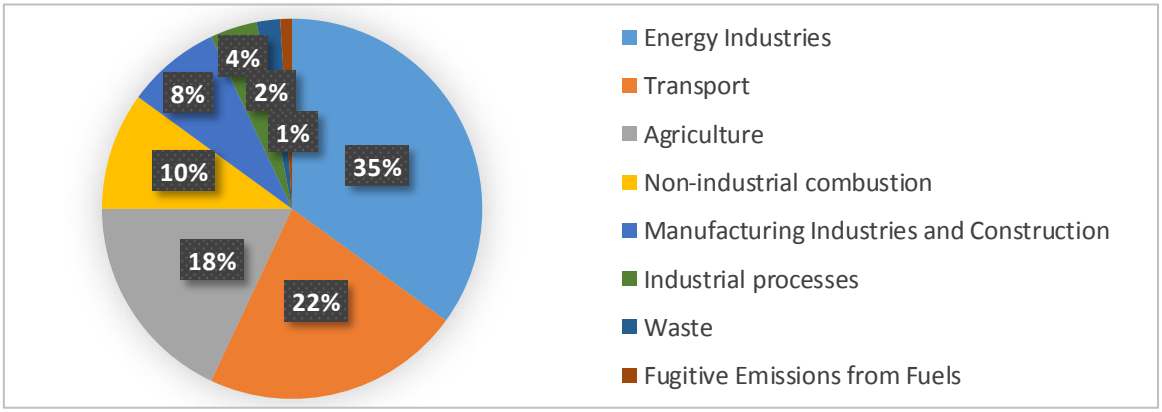


Figure 4: *GHG emissions of Denmark in 2013 by main sectors calculated in CO_2e (Own representation, based on data from Nielsen et al. 2015).*

estimated by following the IPCC 2006 guidelines (Nielsen et al. 2015).

The positive side is that including LULUCF[5], the emissions of the agricultural sector fell from 17.6 million tons of CO_2e to 13.1 million tons of CO_2e through the period of 1990-2012, yet

[5] LULUCF stands for land use, land use change and forestry and refers to emissions stemming from shifts in land use (e.g. transformation of woodlands into arable land) and treatment or maintenance of land (e.g. organic soil draining) (Schmidt & Muños 2014).

agriculture accounts for 28% of Denmark's total emissions[6] (Andersen & Sørensen 2015). The main polluting substances are carbon-dioxide (CO_2), nitrous-oxide (N_2O), methane (CH_4), and ammonia (NH_3), which all have animal agriculture as their main emitting source in the agricultural sector. Besides the fact that these chemical compounds have a contaminating effect on the soil or air (Andersen & Sørensen 2015), animal manure containing nitrate has a serious direct or indirect impact when nitrate is washed out from the soil and leaches into different forms of water (groundwater, surface water, sea water) (Dalgaard 2007).

Environmentally speaking, the biggest problems stemming from agriculture are a result of the excessive production of meat (especially pork and cattle). Having more than a 100 years history, pig production is a major element in the livestock sector of the country: every year, a huge number of approximately 30 million animals are being produced (Lorenzen & Bredsdorff 2016). Considering that the population of Denmark is only around 5.71 million (Statistics Denmark 2016), the number of pigs being produced seems incredibly high. A remarkable portion of this production is exported to EU countries (mostly Germany, Poland, UK, Italy and Sweden), while a fourth of it goes to other, non-EU countries (Danish Agriculture & Food Council 2016b). The direct and indirect consequences of transporting the goods on road and sea with the purpose of export or import are different types of environmental pollution to air, water and soil, which are often neglected in overall emission calculations of the agricultural sector. The demand for meat in general is also high inside the country, an average Dane consumes 95.2 kg of meat annually, which is the 4th biggest in Europe and twice the amount of the world average (FAO 2013).

Deep relations can be found between the immoderate level of meat production and consumption and indirect land use changes (iLUC[7]). Even if 80% of all plants and crops cultivated in Denmark are being fed to livestock, the country does not have enough arable lands to fulfill the needs of the sector (Andersen & Sørensen 2015). According to research conducted by the green think tank CONCITO and 2.0- LCA Consultants, as a solution to meet the demand created inside and outside Denmark for Danish meat products, the country needs to import around 1.5 million tons of soybean annually from croplands in South America,

[6] The official calculations (only N_2O and CH_4 emissions) conclude a 18% share of agriculture of the total emissions of Denmark, but the calculations behind the 28% share were based on a different methodology, which include N_2O, CH_4, LULUCF and CO_2 stemming from energy consumption minus CO_2 from saved energy consumption (Andersen & Sørensen 2015).

[7] Any type of productive land use rises the overall pressure on the border between human managed land and 'nature'. In this way when we talk about iLUC, land use in Denmark has an effect (deforestation, emissions as a result of agricultural intensification) in other regions of the world (Schmidt & Muños 2014).

resulting in deforestation, loss of biodiversity and the emission of 5.7 million CO_2e. To get a sense about the scales, this number corresponds to the overall fossil fuel emissions of privately owned Danish cars (Chrintz 2012). In order to satisfy the demand for Danish agricultural products, approximately 66% of Denmark's total area is cultivated. It is a general issue in the country that only a few natural areas remained untouched, because of anthropogenic activities; infrastructure and agriculture takes up 76% of land (Statistics Denmark 2016).

2.3.3. Excessive production and consumption of resources and materials

Looking into the average material consumption of Denmark, data shows one of the highest per capita consumption in Europe in 2008, 26 tons, which accounts for approximately 2.5 times the global average 10.2 tons. Minerals (mainly used for infrastructure, buildings), biomass (for nutritional and energy purposes) and fossil fuels are the main contributors to Denmark's results (Dittrich et al. 2012). Domestic material consumption numbers also show upward trends. Between 1980 and 2008, DMC had been rising from 112 million tons to 139 million tons, which is a 24% increment, and even if we break it down to per capita DMC, there is a 16% growth. In general, when material consumption rises, it goes along with the increment of fossil fuel use and GHG emissions, as well as with the increase in metal and mineral utilization for infrastructural and technological purposes (Dittrich et al. 2012).

Besides the observed patterns in material consumption, it is important to talk about the energy production and consumption, as energy industries have the largest share from GHG emissions in Denmark (***Figure 4*** on p.12), which is mainly a consequence of CO_2 emissions coming from fossil fuel (coal, natural gas, oil) combustion (Nielsen et al. 2015). That is despite the fact that renewable energy sources are gradually taking over the determining role of fossil energy carriers in energy production (Nielsen et al. 2015).

According to Statistics Denmark, an average Danish household spends a decreasing portion of their income on the category 'food, beverage and tobacco' products, and at the same time a rising share is spent on consuming other goods and services ***(Figure 5** on next page)*.

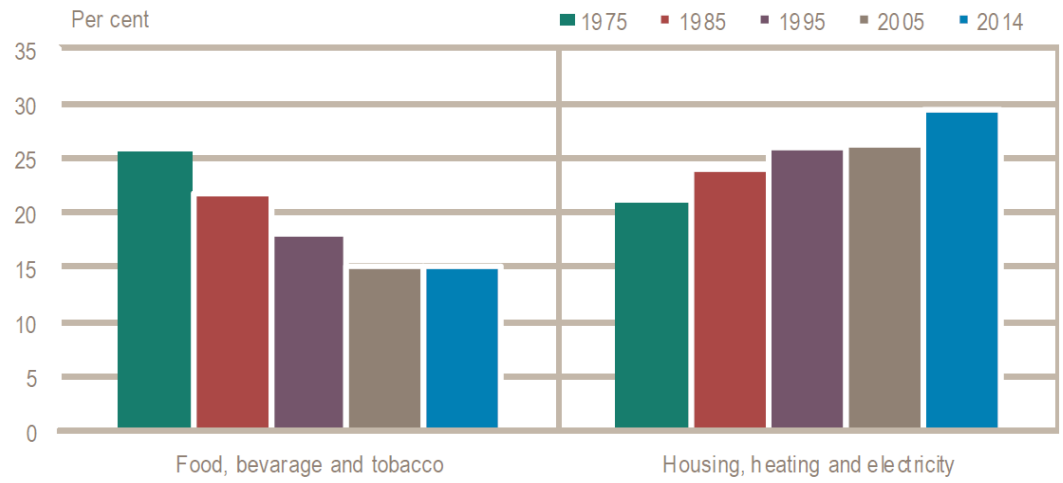


Figure 5: *Share of various consumption categories from total consumption in different years (Statistics Denmark 2016).*

As it is displayed on the figure, a larger portion of income was spent especially on the housing sector (housing, heating and electricity) between 1975 and 2014, where numbers has elevated from a 21% to almost a 30% share. Reasons behind this growth are the gradually increasing salaries, the high levels of employment and the support of a welfare state. As a consequence, there is a bigger amount of money available for e.g. more expensive housing. It is important to highlight the fact that the consumption is largely dependent on the number of persons living in a household; singles tend to spend a larger portion of their income on heating, electricity and dwellings compared to households with two adults (Statistics Denmark 2016). In spite of the constant focus on energy savings of Danish households since the 1990s, no significant decline in energy use can be perceived (Haunstrup n.d.), which is related to the fact that Denmark has the highest numbers when it comes to single person households in the European Union, accounting for 47.4% of all households (EUROSTAT 2015). While technologies have become more efficient, the energy consumption has been on the rise (22% increase since 1990) because of the growing population of Denmark, the extended heated space (m^2) of dwellings and the above mentioned undesirable growing trends about living alone[8] in a household (Haunstrup n.d.).

A striking fact about Denmark, is that this country has the 4th biggest Ecological Footprint (8.25 global ha/person) globally, and the largest one in Europe. Only Qatar (11.68 gha/person), Kuwait (9.72 gha/person) and the United Arab Emirates (8.44 gha/person) demand more global hectares per person (WWF 2012). The Ecological Footprint of an individual depends on the country of residence, the quantity of consumed services and goods,

[8] A reason behind the Danish phenomenon of living alone can be connected to the increasing number of couples who split up (e.g. divorces) as well as to changes in social and cultural norms (Haunstrup n.d.).

the used resources and the different types of wastes generated during the provision of these services and goods. In practice, this indicator sums up the area needed for infrastructure, the area which is required for producing resources that the residents of a country consume, and the forest area needed to absorb CO_2 emissions. The key land-use categories when assessing Ecological Footprint are: cropland, carbon, forest products, built-up land, fishing grounds and grazing products (Wackernagel et al. 2002). Besides the Ecological Footprint of different countries, the Living Planet Report made by WWF and the Global Footprint Network also calculated the biocapacities of them. The world average biocapacity is 1.8 gha/person, while an average Dane has up to 4.81 global hectares available. Comparing these numbers and the Ecological Footprint data, it can be clearly seen that an average Danish citizen uses 4.5 times more global hectares than the world average biocapacity, while they also use almost twice as much as their own biocapacity would allow (WWF 2012).

The exceptionally high Ecological Footprint of Danes is mainly due to the intensive land use of the country for agricultural and infrastructural purposes, the excessive energy and material consumption, and the high meat consumption levels (Røpke 2015). According to the classification of the World Bank, Denmark is in the category of 'High Income' countries, and this strong economic position and the relatively high incomes (Fantom & Serajuddin 2016) are also major contributing factors to its Ecological Footprint levels ***(Figure 6)***.

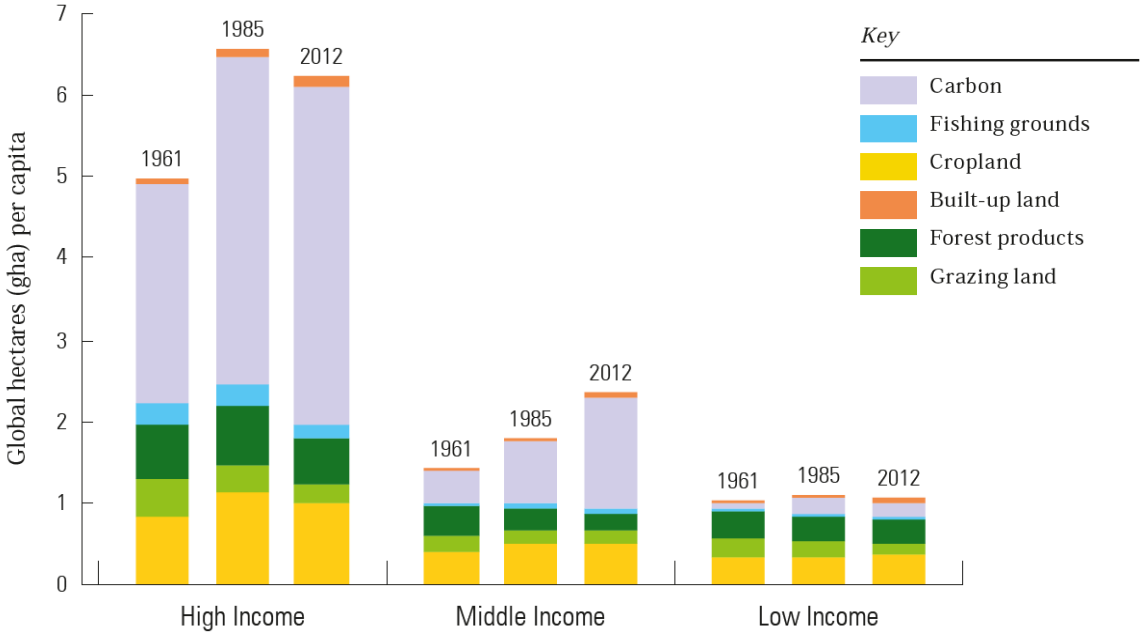


Figure 6: *Average Ecological Footprint per capita for countries grouped by their income levels in the years 1961, 1985 and 2012 (WWF 2016).*

As the figure shows, countries with higher income levels have a larger impact on the environment, while at the same time a major shift can be observed globally from agrarian towards industrialized (fossil fuel-based) economies, regardless of income levels (WWF 2016).

2.3.4. Further aspects

Taking into account the high overall level of wealth, one could think that it eventually leads to high life satisfaction and happiness rates of Denmark. But to what extent is this true? Is the Danish society in need of that much monetary assets to achieve happiness and prosperity, and does greater wealth automatically lead to increased levels of life satisfaction?

Investigating in the above mentioned topics, an issue comes up first, which has been on the rise in the recent few years; income inequality. Whilst the reported happiness[9] of Danish citizens was the second highest globally with scoring 7.5 on a 10 level scale between 2014-2016 (Helliwell et al. 2017), at the same time - according to the independent centre-left think tank Cevea - the wealthiest 1% of the Danish population owns almost one third of the total wealth of Denmark and 32 times more than an average Dane. Putting numbers on it, that means that 46 000 individuals have the control over 512 billion Danish kroner out of the total 1600 billion Danish kroner in the form of stocks, bonds and their homes (Baltzarsen & Gormsen 2014). It is true that Denmark was leading the list of OECD countries with the lowest income inequalities, having a 0.25 Gini coefficient[10] (Causa et al. 2016), but the inequality gap is continuously increasing, especially since the 2008 financial crisis. Now, the wealthiest Danes have a larger share from the total net worth compared to the late 1990s, while the least affluent have less, mainly due to their housing debts (Baltzarsen & Gormsen 2014).

Among other indicators, a nation's development levels can be characterized by the Human Development Index (HDI) (UNDP 2015). This alternative indicator was developed by the UNDP, and embodies Amartya Sen's ends (standard of living) over means (income) approach when measuring human well-being, therefore it goes further than GDP or other traditional indicators (Stanton 2007). HDI is designed to show a broader perspective by focusing on three dimensions of human development; educational attainment, life expectancy at birth and per

[9] According to the World Happiness Report 2017, among others, happiness depends on GDP per capita, life expectancy, social supports, good governance and freedom to make life decisions (Helliwell et al. 2017).

[10] The Gini coefficient is used for representing the wealth or income distribution of residents of a country. This indicator is a commonly applied measure of inequality (Causa et al. 2016).

capita gross national income. Countries are evaluated on a scale from zero to one (UNDP 2015). According to the most recent HDI rankings by the UNDP, Denmark has the 4th biggest HDI number (0.923), only Norway, Australia and Switzerland have better scores. Denmark's distinguished position is a result of the country's educational system, the fairly good results in life expectancy and the relatively high gross national income levels (UNDP 2015).

Moving further, if we take a look at country rankings by their Happy Planet Index (HPI), the affluent and developed countries of the Global North can be found somewhere in the middle of the long ladder (New Economics Foundation 2009). HPI is intended to analyze the efficiency of converting nature exploitation into human happiness and satisfaction, it is defined as: subjective life satisfaction multiplied by life expectancy at birth, divided by ecological footprint per capita (Norgård 2013). Denmark has only the 105th seat on the list out from 143, where nations from the Caribbean and Latin American regions stand for the highest average HPI scores (New Economics Foundation 2009). The reason is that even though citizens of Denmark are generally happier than any other countries', and the HDI levels are high, the well-being is achieved at the high cost of work time and environmental sacrifices. At the same time in case of Costa Rica (leads the HPI rankings) or Cuba (7th on the ladder), rich cultural heritage matches with policies dedicated to education, health and other basic necessities, and these come with a much lower ecological footprint per capita compared to industrialized nations from the Global North (Norgård 2013).

2.3.5. Build-up to problem formulation

Globally and in Denmark as well, the concept of sustainable development is aimed towards addressing global issues in relation with the environment, society and economy, therefore it would be a goal of it to find solutions for issues and problems presented so far. In 2015, together with other countries, Denmark signed the agreement about the United Nations' 17 Sustainable Development Goals, which represents a blueprint for the development of the future world until 2030, addressing a selection of different environmental, social and economic issues (United Nations 2016). On one hand, promising and positive patterns can be perceived, because this nation is already a forerunner in dealing with some problems for years; renewable energies have a significant, 56% share in the power mix (Danish Energy Agency 2016), 45% of people in Copenhagen cycle to work or school (City of Copenhagen 2014), 7% of the agricultural area is farmed organically, and a world record 8.5% of food sold in Denmark is organic food (Danish Agriculture & Food Council 2016a). On the other hand, a

huge contradiction can be observed if we take into account the excessive material and resource consumption, and the intensive land use of the country, which results in the 4th biggest ecological footprint of the planet (Røpke 2015).

Furthermore, some of the promising GHG emission numbers of Denmark can be a result of analytical methodologies. In particular, there are major deviations between emissions measured according to the national air emission inventories, and according to the air emissions accounts approach. The former is generally used to report obligations set by the Kyoto Protocol. For example, CO_2 emissions are 95% lower in case of the inventory approach, due to the massive international shipping business of Denmark and the fact that the emissions occurring outside of the country as a consequence of air and sea transport are not counted in (EUROSTAT 2016).

Referring back to *'ecological modernization'*, the discourse of *'sustainable development'* seems to have economic sustainability, along with *'smart'*, *'green'* technologies and innovations as a focal point in the path towards solving the different global issues. It does not go deep into proposing a downsizing of production and consumption, while it delays the issues of the planet's limited resources (Sachs 2010). It offers a new way of expanding the economy by greening the industries, whilst according to research, the actions to reduce the human-generated pressure on ecosystems are not sufficient enough (Latouche 2009; Schneider et al. 2010; New Economics Foundation 2009; Sachs 2010).

Taking into account the presented mostly environmental and social problems of Denmark, so far, the actions influenced by the concept of sustainable development are not efficient and the concept itself has proven to be vague, because it does not address central issues. There are already existing alternative approaches worldwide, which are independent from market or government spheres. Our paper focuses on some bottom-up alternatives coming from the civil society in particular, because they offer complementary initiatives in the current neo-liberalist system of the West, where the state has a main intention of providing stable and attractive conditions for capital, and the market actors have a main aim of continuous profit-making (Lipschutz 2005). Examples for civil society initiatives are food assemblies, free universities, development trusts, or time banking schemes. The civil society can also come up with solutions for providing alternative forms of living together, which can be seen in case of the Transition Towns movement or the Ecovillage Movement (Monbiot 2017).

Denmark was among the first European countries who started looking beyond cohousing projects and cooperative forms of people living together. In this country, the cooperative

approach of living in communes or communities is not necessarily aimed towards increasing environmental consciousness. However, we can see other cases, where the goal is the thorough reformulation of human habitats for positive ecological outcomes besides social ones, usually referred as eco-villages (Bates 2003). In 1993, the Danish Ecovillage Network - Landsforeningen for Økosamfund (LØS) was initiated, while next year, the formulation of the Global Ecovillage Network (GEN) took place in Denmark on a meeting between representatives from eight different international eco-communities and the Danish-based charitable organization, Gaia Trust (Garden 2006).

In this thesis, we chose to conduct a critical investigation about eco-villages in Denmark as we see it as a relevant topic, because of the manifold being of these settlements and the diversity of applied projects, addressing the issues of production and consumption (food, energy, water etc.), housing, communality and lifestyle. A particularity of these communities as the Gaia Trust co-founder Ross Jackson puts it: *"in spite of differences in race, religion and culture, ecovillagers share the same vision, which can be summarized as the prioritizing of community, culture and a natural environment above Money-based consumerism."* (Jackson 2004 p.3)

3. Problem formulation

Various global as well as Denmark specific problems were presented in the previous problem presentation chapter, which are in connection to a high degree with economic growth, the intensive agriculture and infrastructure, and the immoderate level of production and consumption of energy, resources and materials. Some responses to these (ecological modernization, sustainable development, green technologies etc.) have not yet resulted in the expected positive outcomes. At the same time, eco-villages offer a different way of living and an alternative approach to solving the issues by utilizing renewable energies locally and offering local food provision, together with other socially, environmentally and economically appropriate solutions in their own community. The core focus of the critical investigation in this thesis is the current state of eco-communities in Denmark, their chances in surviving, flourishing and growing in the present social, political and economic system, thus the main research question is:

"How can eco-communities thrive, grow and spread in the present economic growth oriented context of Denmark, and to what extent do they represent a viable model for transition to a sustainable society?"

We are aiming to reach our conclusions by going through their motivations, main initiatives and strategies towards sustainability and the challenges that they have to face with. To help in answering the main research question of the thesis and to allow us and the reader a thorough understanding of the investigated topic, several sub-questions were set as guidance:

- *What is the background and the motivation for establishing eco-communities in Denmark?*

- *How and to what extent are the eco-communities' main initiatives and strategies leading to environmental, social and economic sustainability?*

- *What are the economic, cultural and institutional challenges that eco-communities face in Denmark?*

4. Methodology

The methodology chapter has been written with the intention to describe the philosophical and logical approaches of our research and to provide a comprehensive overview of the utilized methods during the investigation. Here, we describe and explain the way we identified, selected and analyzed the information needed to answer our research questions. We also reflect upon the validity and reliability of our work by discussing the failures and possible drawbacks of our methodological choices and the application of the various methods in the *Methodology limitations and reflections* ***(Chapter 4.4.)*** section.

4.1. Theories of science. Critical realism

The current project is designed as an environmental- social science research adopting the philosophical approach of critical realism. Critical realism was developed in order to provide a realist position of empirical and naturalist scientific approaches. It provides a criticism based on the idea that knowledge and observations are never authentic and depend on factors such as time period and cultural specificity (Mingers 2006). In this sense, critical realism advocates *"independence of the world from our thoughts about it"* (Sayer 2000 p.10). This idea is related to the distinction which Roy Bhaskar made in 1975 between the so-called *'intransitive'* and *'transitive'* aspects of knowledge (Bhaskar 2008). Trying to put it in a simple way, this means that what we study, no matter if it is physical process or social phenomena, it represents the intransitive knowledge, whereas the discourse, including theories we use in order to understand this object of science refers to the transitive knowledge. In other words, applying different theories in order to understand the world for instance, does not change the world itself (Bhaskar 2008). In this sense, fallibility of knowledge is also a common feature of the critical realism approach. This means that any knowledge concerning the world might be wrong or ambiguous because of the complexity of the world. Thus, according to critical realists, social scientists are rather *"cast in the modest role of construing rather than 'constructing' the social world."* (Sayer 2000 p.11).

Generally, critical realism is rather suitable for social science where mainly qualitative methods are adopted (Bagley et al. 2016). According to the lecturer in sociology and communications at Brunel University, London, John Michael Roberts: *"qualitative researchers believe that social scientists need to understand those human actions and meanings that individuals and groups attach to their everyday lives, objects, and social relations so that we come to understand how they evaluate their lives through their beliefs*

and meanings" (Roberts 2014 p.4). Critical realism considers qualitative methods as more appropriate in order to address issues related to the real social life, but at the same time does not deny the benefits of using quantitative methods as well: *"Overall, then, qualitative methods are arguably more attuned to the 'messiness' and 'openness' of real social life (e.g. the overlapping social identities we all inhabit on a daily basis) which inevitably affect the outlook of respondents in their everyday lives* (Roberts 2014 p.4). However, *"realists argue it is essential to first abstract the underlying causal powers, or causal mechanisms, of an object under investigation and think conceptually about how they operate"* (Roberts 2014 p.4). Keeping that in mind, in our project we mainly employ qualitative methods for data gathering, but still, quantitative methods are adopted in order to support our arguments. After all this being said, looking into to the validity and reliability of our research, it is important to outline that with our investigation, we do not intend to come up with general conclusions but rather to provide an understanding about the role of eco-communities for promoting sustainable practices and for contributing to a transition towards a sustainable society in the specific context of Denmark. Further discussion concerning the reliability and validity of our research design and used methods is provided in the following sub-chapters.

4.2. Research design

In this section, we present our logical approach to the research problem and the blueprint for the process of data gathering, assessment and analysis. According to the reviewed literature, the research design describes and explains the overall strategy that a researcher applies in order to integrate the various components of the study in a logical and coherent way, thereby, securing the effective and thorough addressing of the research problem (De Vaus 2001).

A year ago we were introduced by our former and current supervisor Ole Busck to the degrowth movement, which ideas later on we adopted for building the theoretical framework of our second semester project. This helped us getting thorough knowledge about issues deriving from the economic growth paradigm and to acknowledge the increasing need for alternative and transition to sustainability worldwide and in Denmark.

At the initial stages of our thesis, we wanted to investigate the main topic of *'Transition towards sustainability in Denmark'*, and search answers for the main research question: *"How could a green transition based on local, sustainable production and consumption come about in Denmark, and which present initiatives lead in that direction?".*

As our investigation was focusing on green transition, we considered degrowth and institutional change theory as highly relevant. However, soon we realized that investigating into institutional change including state, market and civil society would be an overly broad topic, and such a research might be limited by timeframe. Therefore, we chose to narrow down our focus to the role of the civil society which has its institutional origins outside the circles of the state and the market (Flyvbjerg 1998). Another reason for our decision was related to the idea, which the Professor of Politics at the University of California, Ronnie D. Lipschutz represents in his work "*Power, Politics and Global Civil Society*", namely that civil society is inclined of pursuing activities, which are oriented towards alternative aims counter to continuous profit-making and the catering of attractive and stable conditions for capital (Lipschutz 2005). Our initial knowledge about degrowth, the ideas behind the movement, and our basic knowledge about eco-communities' initiatives and activities made us consider eco-communities as somewhat *'degrowth in practice'* example. Thus, keeping in mind that degrowth was developed as a criticism to the neo-classical idea of economic growth, we found it relevant to explore how such societies survive, thrive, grow and spread under current economic, political and social conditions of Denmark, mainly defined by economic growth. Additionally, we decided to investigate in their role for generating transition towards a sustainable society in Denmark. The inquiry started with literature review and a preliminary exploratory face-to-face interview with our supervisor, Ole Busck, who shared his knowledge about the theme of the thesis, and gave us some directions and suggestions about researchers and eco-communities who could be relevant to the problem under study. Although it went through slight modifications and rewordings since then, the current research question of our project was mostly formulated at that time: *"How can eco-communities thrive, grow and spread in the present economic growth oriented context of Denmark, and to what extent do they represent a viable model for transition to a sustainable society?"*

The writing process of the thesis in its current form commenced with collecting knowledge about economic growth related global and Denmark specific issues through reviewing relevant literature in order to provide a contextual framework when presenting the problems. Furthermore, literature review was used in order to find existing eco-communities in Denmark, some of which later on became a main source of qualitative data for our research. A literature review was essential for obtaining a thorough understanding of relevant theories as well. Besides degrowth and institutional change, we used ecological economics in order to provide a theoretical explanation for the need of economic alternatives to growth. We also

used political ecology to provide a theoretical explanation about the need of alternatives in institutional, cultural and social context. Looking into some of the most significant scientific works concerning ecological economics, political ecology, degrowth, the theory of institutions and institutional change allowed us to build a rather comprehensive theoretical framework, which is considered crucial for developing a valuable research (Bhattacherjee 2012).

In order to assist in answering our main research question, we set three sub-questions, which are aimed towards understanding the motivations behind forming eco-communities, the initiatives, activities and aims of these diverse constructs and their current state in Denmark, while also paying attention to the challenges that they have to face.

The logic of our investigation we consider as abductive; a logic highly embraced by critical realists (Lukka & Modell 2010). It refers to a development of *"theoretically informed explanations to new, and often surprising, empirical observations"* (Lukka & Modell 2010 p.467). Using abduction, we continuously move from empirical observations to theory and back, thus the investigation was developed based on empirical findings, but analysis and interpretations as well (Dubois & Gadde 2002).

We used both qualitative and quantitative research methods, where we gathered our data from interviews with experts, representatives of eco-communities, and a decision-maker, whereas we also conducted observations as empirical evidence and utilized second-hand qualitative and quantitative information from research, statistics and scientific papers. The analysis and discussion part is guided by qualitative information as a priority, while quantitative data was embedded or *'nested'* to support our arguments and the conclusions of this project (Creswell 2014).

4.3. Methods

4.3.1. Semi-structured interviews

According to the reviewed literature, interview is a research method for obtaining qualitative data in relation to a specific topic (Kvale & Brinkmann 2008). In the current project, semi-structured interviews have been playing a crucial role as a main source for data gathering.

We considered semi-structured interview as a preferable data gathering method, because of its personal character and the freedom it provides for follow-up questions and clarification of misunderstandings during the conversation. Furthermore, the detours, which are common for this type of interviews, often could be considered as beneficial by providing additional,

perhaps useful information (Bhattacherjee 2012). Even though we are aware of the advantages of face-to-face interviews, including the direct interaction between interviewer and interviewee (Bhattacherjee 2012), yet we mainly realized telephone ones due to the limitations explained in the *Methodology limitations and reflections* ***(Chapter 4.4.)*** section.

In all interviews the language we used was English. The questions, prepared in advance for each of the interviews, were designed in a way to address our research question and sub-questions, while adequately considering our theoretical approach and interviewees' background. The interviews were conducted between February 21st and April 12th 2017. We recorded all of the interviews and made summaries ***(Annex II, Annex III***; *see them attached in a separate digital file from the current one)* based on the tapes, with the purpose of further analysis. This analysis happened in a way, that the gathered information was separated into different groups following the line with our sub-questions to aid us in the writing process of the analysis and discussion chapter.

Face-to-face interviews

At the initial phase of our investigation, we conducted a preliminary face-to face interview with our supervisor, associate professor Ole Busck, who has been doing research in the topic and participated in various related academic and non-academic networks. The aim of this interview was to touch upon issues related to economic growth and the need of transition to sustainable society in Denmark. Eventually, the conversation turned out to be rather a discussion than a semi-structured interview. The outcome of it we used mainly as a guideline while developing our *Problem presentation* chapter.

During our investigation, another face-to-face interview was realized involving the associate professor at Aalborg University and member of NOAH's[11] Board of Directors, John Holten-Andersen. Taking into consideration NOAH's role[12] for promoting degrowth in Denmark, we found it relevant to approach John Holten-Andersen and to reveal the perspective of a researcher, environmental activist and a representative of NOAH in relation to the topic we were investigating. The main themes covered during the interview included the limitations to economic growth and the dynamics, mechanisms and factors which make this paradigm persist (positive feedbacks; ***Chapter 5.4. Institutional Theory and Institutional Change***), the

[11] NOAH is a Danish non-profit environmental NGO established in 1969, focusing on environmental protection, causes of environmental degradation and environmental awareness. A core principle of the organization is related to the equal right for consumption of resources and production of emissions among people (NOAH n.d.).

[12] The first degrowth research group in Denmark which emerged in 2007 is now part of NOAH (Modvækst n.d.).

possibilities of degrowth as an alternative and the role of eco-communities in the transition. Furthermore, we obtained his general thoughts about which actors should start a change towards a sustainable society. The interview was conducted in person as this was the will of the interviewee, and it took place at the Aalborg University Campus in Copenhagen. One interviewer conducted the interview.

Telephone interviews

Nine telephone interviews were conducted throughout this investigation. Seven of these interviews involved representatives from different Danish eco-communities ***(Table 1).***

Interviewee	***Eco-community***
Kennet Harpsøe	*Karise Permatopia*
Freja Nygaard Rasmussen	*Svanholm*
Ziggie Jensen	*Fri & Fro*
Christian Lausen	*Soleng*
Peter Larsen	*Munksøgaard*
Michael Skands	*Foreningen Frikøbing*
Gitte Jakobsen	*Tranehøj*

Table 1: *Telephone interviews conducted with representatives of eco-communities in Denmark.*

Our intention by interviewing inhabitants of eco-communities was to obtain insight about their chosen lifestyle and to let them reflect upon their experience. Furthermore, we aimed to explore initiatives and activities typical for these type of societies and to identify similarities and diversities among eco-communities in Denmark. At the same time, we stayed in line with our theoretical framework and research focus by looking into inhabitants' motivations for choosing to live in a community; possible challenges they face by living in a somewhat alternative way and their general thoughts on where should a change towards sustainable society start. Two of the interviews were conducted by two interviewers and the rest were managed by one.

Another telephone interview involved the president of the Danish Ecovillage Network (LØS), and inhabitant of the eco-community called the Co-operative Society in Hjortshøj (AiH),

Niels Aagaard. We approached Niels with the intention to explore the role of LØS for promoting and spreading the idea of eco-lifestyles and eco-communities in Denmark. We aimed to become familiar with the current projects of the network and its perspective on possible challenges. Moreover, we obtained Niels' personal opinion on where should a change towards sustainable society start. The interview was conducted by two interviewers.

Telephone interview was used to approach the leader of the Danish political party *'The Alternative'*, Uffe Elbæk as well. The aim of this interview was to involve a decision-maker's perspective within our research. Identifying The Alternative as a political party which focuses its political program on developing a strategy for a change towards sustainable society including environmental, social and economic sustainability (The Alternative n.d.), we considered it as relevant to approach them. During the interview, we covered topics related to the drawbacks of the economic growth paradigm and positive feedbacks for its persisting, the role of civil society in promoting alternatives to growth, challenges the political party faces representing an alternative vision, and overall thoughts on where should a change towards a sustainable society start.

4.3.2. Observation method. Observer-as-participant

Visit to the Co-operative Society in Hjortshøj (Andelssamfundet i Hjortshøj - AiH)

According to reviewed literature, participant observation method is eminently reasonable when a researcher adopts a descriptive approach for their investigation and/or aims to develop theoretical interpretations. Furthermore this method is considered highly appropriate when the investigated phenomenon is not commonly known and/or represents ideas which in some way differ from the prevailing ones (Bhattacherjee 2012). All this being taken into account, we considered the observation method as appropriate in order to explore the lifestyle specifications of eco-communities in Denmark from a closer perspective. However, due to limitations ***(Methodology reflections and limitations, Chapter 4.4.),*** we applied this research method to only one of the eco-communities we approached.

We visited AiH on April 12th 2017 and spent almost half a day within the community. The visit was organized in advance by e-mail correspondence between us and two of the inhabitants. Our visit commenced with a presentation delivered by Else Mikel Jensen at her house. During the presentation, we were introduced to main topics concerning infrastructural, organizational, social and environmental aspects of the lifestyle in AiH. Additionally, we addressed questions in case elaboration on topics was needed and also obtained personal

perspectives from Else as an inhabitant. Afterwards, we were accompanied by Else on a walk around the community, where we gathered better perception on the diversity of housing and living groups within the community, and discussed the activities and initiatives performed by the inhabitants. The closing part of our visit included a lunch at Lise Reinholdt's house, where we obtained her perspective as an inhabitant of AiH about the advantages and challenges of living in such a community.

Overall, we consider our visit to Hjortshøj as highly beneficial to our project, enriching our perception of eco-communities by allowing us to witness and discuss the physical structures and organizational aspects of such a society. When we refer to the trip to AiH, the citation (Hjortshøj 2017) is used, covering the presentation, discussions and a document ***(Annex III)*** containing detailed information about the community.

4.3.3. Second-hand data

Besides using the information that we collected through the various conducted interviews and the field visit, other experts', academics' and researchers' work was utilized with the aim of obtaining more qualitative and quantitative data related to the problem under study. The applied second-hand data comes from diverse sources; including scientific reports, journal articles, surveys, and critical papers from the perspective of energy- and urban planning.

Most of the quantitative information stems from a research project about the environmental impacts of three Danish eco-villages (Munksøgaard, AiH, Svanholm) conducted by a Finnish consultancy and engineering company, called Pöyry A/S. The *'CO_2 emissions in eco-societies'* project was realized in 2009, containing pollution calculations in four different areas; energy and transport, consumption of goods, waste and wastewater, and fresh water consumption. The aim of this research was to evaluate *"the annual CO_2 emission level for an average eco-citizen to compare this with the Danish average."* (Pöyry Energy Consulting 2009 p.3).

4.4. Methodology limitations and reflections

4.4.1. Reflections on research design

Overall, we identified several drawbacks and limitations concerning our research design and the specific research methods we used.

In order to improve our critical approach, we realize that more perspectives on the topic could have been involved. Approaching a decision-maker with alternative political program was undoubtedly beneficial to our investigation. However, *The Red–Green Alliance* is another party on the Danish political scene which aims for *"combining politics for social change with politics for solving the great environmental problems both on a national and an international level"* (The Red-Green Alliance n.d.). Approaching a representative from this party would have allowed us to gather even better perspective on how alternative ideas, considering transition towards sustainable society are spreading on a higher institutional level.

Furthermore, we believe that our critical investigation would have been even stronger if we had approached representatives from current mainstream governing parties which shape the general directions for the Danish society. In this sense, we also could have had an interview with a mainstream economist, which besides the critical research papers we used could have reinforced our critical overview. However, such a lack of perspectives is mainly a result of time limitations.

4.4.2. Reflections on methods

Reflecting on the flaws of the methods we used during our investigation, we identify several drawbacks as well. Limitations concerning financial resources and distance resulted in significant prevalence of telephone interviews as a research method over the face-to-face ones. This deprived us of the opportunity to interact with the interviewers and resulted in occurrence of minor technical problems, which later on challenged the data analysis process.

Another drawback we identify is related to the lack of responses from eco-communities which resulted in limitation of data. ***Table 2*** on the next page, shows that although we approached 16 communities (highlighted with light orange) from the long list containing 32 names on the website of LØS, we ended up getting responses from only eight of them (highlighted with green). Our decision to choose these 16 communities was based on our initial information about them and the availability of their contact details.

Eco-communities in Denmark			
Ananda Gaorii Ashram Community	Foreningen Frikøbing	Karise Permatopia	Tornsbjerggaard
Baungård Andelsboligforening	Fri & Fro	Land.skab	Toustrupmark
Birkegården - økosamfund på vej	Friland	Kollektivet Maos Lyst	Tranehøj
Christiania	Hallingelille	Munksøgård	Tølløse - økosamfund på vej
Den Selvforsynende Landsby	Hertha Levefællesskab	Resendal Mølle I/S	Udgården - Lading Andelsboligforening
Det Ny Samfund – Thylejren	Hesbjerg	Skelbæklund - økosamfund på vej	Økosamfundet Soleng
Dyssekilde	Himmerlandsbyen	Sorø Økosamfund - økosamfund på vej	Åbakkehuse
Fejø Permakultur og Omstillingsinitiativ	Andelssamfundet i Hjortshøj (AiH)	Svanholm	Biodynamisk landbofællesskab på vej i Ringkøbing / Skjern Kommune

Table 2: *All eco-communities in Denmark with colors indicating our choices and success. Own representation based on information from (LØS n.d.).*

Furthermore, our intention to visit more than one eco-village was challenged not only by financial and distance limitations. Even though we considered visiting two eco-communities in Denmark, which are closest in distance to us, yet we received a response only from one of them. We believe that visiting two instead of one eco-community would have slightly improved our perception of the eco-communities' lifestyle and their initiatives, thus would have been beneficial for our further discussion and our investigation in general.

5. Theoretical framework

This chapter is designed to make the applied theories and concepts intelligible, and to explain why and how we used them in our thesis. Our critical investigation was written from the viewpoint of degrowth. The movement of eco-villages is a notable manifestation of degrowth strategies, they often intersect and have synergies with each other (Demaria et al. 2013), which makes the concept of degrowth applicable and particularly relevant to this paper. Although degrowth cannot be considered as a scientific theory, the espousers of its ideas promote decentralized, participatory and small-scale alternatives outside of the current system and present institutions, just as eco-villages do (Demaria et al. 2013).

Considering the fact, that the idea of an alternative to growth emerged long before the degrowth movement appeared, we found it important to introduce the initial academic fields, that addressed issues deriving from the economic growth paradigm and which have been a main inspiration for degrowth supporters. By presenting both ecological economics and political ecology, we aim to provide a coherent background for understanding the current need for alternatives to growth, and therefore to help the reader to understand why eco-villages' lifestyle in the context of Denmark are a relevant topic to investigate. Ecological economics and political ecology were mainly used for these highlighted purposes, therefore, we did not utilize them thoroughly in the analysis and discussion part of this project.

Delving deeply into the degrowth literature, it became clear that in order to achieve the desired positive outcomes and to reach and maintain a lifestyle, which is more sustainable and less consumerist, thorough institutional and cultural changes are needed (Cosme et al. 2017). Therefore, this chapter contains an overview of the institutional theory, as well as a clarification of the theory of institutional change, presenting the different types of institutions and the potential ways to alter them.

5.1. Ecological Economics

The last few decades of the 20th century were determined by an increased concern of scientists and the public related to environmental and economic sustainability. Numerous environmental problems were subject of discussions (Czech 2009). Yet, within ecology, human impact on ecosystems was not a main subject of interest and within Environmental and Resource Economics (ERE), the environmental system was investigated simply as a support system for the economy (Costanza 1989). In other words, the economy was seen as a self-

sufficient system and the environment was expressed as an economic subsystem (Shmelev 2012).

The drawbacks of this perception were firstly recognized by Nicholas Georgescu-Roegen in his work *'The Entropy Law and the Economic Process'* (1971). He outlined that the prevailing mainstream economic approaches since the end of 19th century - such as neoclassical economics and Marxism - had not taken into account the important role of natural resources within the economy. He addressed these drawbacks for the first time as a theory, representing the idea that all resources provided by the Earth will be drained at some point in the future, as a result of overexploitation within the economy. Furthermore, he touches upon the idea of the carrying capacity of the Earth or the capacity of the planet to sustain the increasing population and consumption patterns. As a consequence, he also argues that the economy and respectively the human population as a whole are also fated to collapse (Georgescu-Roegen 1971).

As a response to his pessimistic vision, technological optimism kept coming in play with a belief that energy and resource limits could be solved by technological improvements. By stating that humans are part of nature, not detached from it, technological pessimists challenge the technological optimists' argument that humans are able to control their environment to a high degree, thus achieving more efficient production by technological progress (Costanza 1989).

With his work, Nicholas Georgescu-Roegen has become one of the most prominent figures of ecological economics. Today, ecological economics is considered as a response to the neoclassical economic approach by addressing the interaction between ecosystems and economic systems. Yet, ecological economics goes beyond the ideas represented by ERE and ecology combined. It is a scientific field developed in order to raise the attention on the biophysical aspects of this interaction not only by addressing environmental problems (Spash 2015), but by creating solutions for them as well (van den Bergh 2001). In this sense, ecological economics is considered as critical towards ERE, but at the same time aims to develop alternatives to neoclassical socio-economic approaches in general (van den Bergh 2001).

The image ***(Figure 7** on next page)* illustrating the relationship between environment, human society and economy drawn by René Passet in 1979, has been commonly used as a symbol for ecological economics (Martínez-Alier & Muradian 2015).

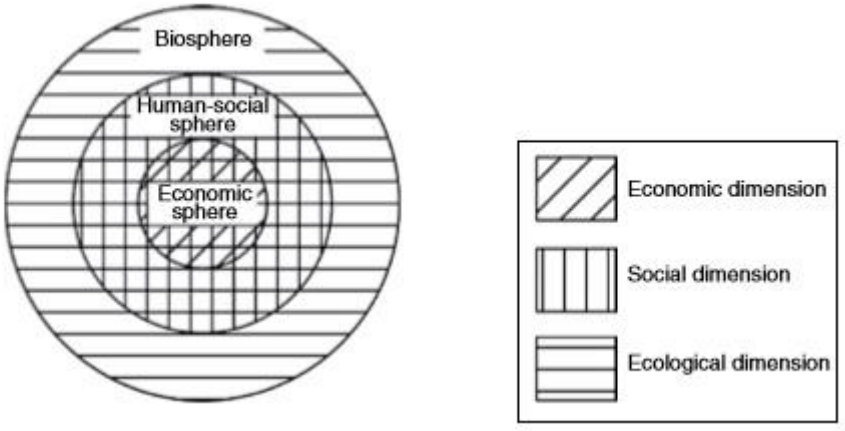


***Figure 7**: Visual illustration of the connectivity between the ecological, social and economic dimensions (Martínez-Alier & Muradian 2015).*

Another author, who must be acknowledged when speaking about ecological economics, is Herman Daly. In 1960, as a follower of Nicholas Georgescu-Roegen, he proposed the concept of steady-state economy related to minimizing the use of material and energy in the economy (Czech 2009). Today, H. Daly is considered as the economist who attracted the attention on issues related to economic growth, which played a significant role for the further formulation of the scientific field of ecological economics (van den Bergh 2001). In line with the issue of limits of growth, H. Daly illuminates the problematic use of GDP as a social indicator as well. Ecological economists argue, that unlike the neoclassical belief, poverty cannot be solved by solely depending on economic growth. Furthermore, mainstream economic paradigms based on the idea of continuing and unlimited economic growth are in contradiction with the idea of intergenerational and intra-generational sustainability (Czech 2009). Therefore, Herman Daly and Goodland in *"Universal environmental sustainability and the principle of integrity"* proposed that *'development'* is related to a change of the social and economic system whereas *'growth'* refers to the increase of the production within the economy, which was already argued by Georgescu-Roegen to be unsustainable. Thus, *'Sustainable development'* is a term accepted by most ecological economists, but *'sustainable growth'* is simply considered impossible and unacceptable within the field (Martínez-Alier 2001). Herman Daly's Steady-State Economics (1977) was one of the first scientific works to provide an alternative to the neoclassical vision for environmental and economic sustainability (Czech 2009).

During the 80s, the ecologist AnnMari Jansson and the economist Joan Martínez-Alier had a significant influence on the field of ecological economics. They were organizing and attending meetings devoted to discussions on the possibility for developing an economic

theory and economic practice which takes into account the environment (Czech 2009). Later, in 1988, Robert Costanza and Herman Daly established the International Society for Ecological Economics (ISEE). In 1989, the first academic journal was issued, called Ecological Economics. In 1990, ISEE organised the first world conference on ecological economics which took place in Washington DC. In a book issued after the conference, ecological economics was defined as *'the science and management of sustainability'* (Martínez-Alier 2001).

Although since Georgescu-Roegen's work, the Earth's carrying capacity was acknowledged, it was mainly related to the population growth argument (Malthus) and up until the 80s, the environmental research was mainly focused on issues related to production. In 1992, at the Rio de Janeiro Earth Summit, a debate between the North and South on the topic changed the direction of the environmental research. While the North was arguing that the main reason for environmental degradation was related to the continuing population growth in the countries of the South, representatives from the South pointed out the increased consumption levels in the North as the main cause (Røpke 2005). This resulted in formulating a responsibility within the framework of the Agenda 21 for the affluent countries to focus on achieving sustainable consumption and production. This was the first time when consumption issues were addressed, and the power of the individual citizen to contribute to sustainability was discussed. Yet, the solution to the consumption issues was recognized within the ecological modernization approach, which was introduced earlier in ***(Chapter 2.2.)***. Citizen's actions towards sustainability were framed by the idea of buying green products awarded with *'eco-labels'*. Therefore, the focus was mainly on improving the communication means in order to inform the consumer better about the green and more sustainable products and services, whereas the level of consumption was not addressed at all (Røpke 2005). Ecological economics addresses the population growth as a factor for environmental degradation, but also the production and consumption of materials and services (Martínez-Alier & Muradian 2015). Being an interdisciplinary field, it is not a simple task to outline the different research topics on consumption within ecological economics, but in the *"Internet Encyclopaedia of Ecological Economics"* Inge Røpke represents five of the most relevant ones within the field. These include: *(i) Conceptualization of consumption; (ii) Environmental impacts of consumption; (iii) Factors resulting in growing consumption; (iv) Consumption and quality of life and (v) Changing consumption patterns* (Røpke 2005)

Overall, ecological economics is an interdisciplinary field which integrates topics from other economic, social and natural scientific fields like economics, ecology, thermodynamics, and ethics in order to underpin the biophysical aspects of the environment - economy relationship (Shmelev 2012). It seeks to investigate in a variety of topics including looking into new indicators for economic sustainability; economy without growth; weak and strong sustainability; ecological aspects of carrying capacity and resilience; consumption; instruments for environmental policies etc. (Martínez-Alier 2001).

5.2. Political Ecology

As we already discussed in the previous sub-chapter, ecological economics was developed in order to express the need for an alternative, less resource-intensive economy, which takes into consideration the natural boundaries and the finite being of resources. Using thermodynamics in order to explain economic activities, ecological economics focuses on the effects of the prevailing production and consumption patterns on the environment. Ecological economics explain the relationship between economy and natural capital and by doing so, it challenges the anthropocentric worldview. Yet, the world today experiences a reality called *'global giantism'* by R. Michael M'Gonigle, which is quite far from the ideas promoted in the 1970's by scholars like Daly (M'Gonigle 1999).

According to M'Gonigle, today, ecological economics has a more technical focus looking for new consumption models instead of focusing on the institutional change of the market (M'Gonigle 1999). The normative approach within political ecology is in line with ecological economics, referring to the idea that *"there are more sustainable ways of doing things"* with less resource-exploitation (Robbins 2012 p.20). Therefore, the role of political ecology is to provide the institutional, social and cultural understanding of the ideas promoted by ecological economics (M'Gonigle 1999). It aims to communicate this vision to policymakers in order to achieve better environmental governance. Furthermore, political ecology could be used in order to obtain better understanding of decisions taken by communities regarding their natural environment within specific political, economic and social conditions. The effect on the environment as a result of unequal social relations is also a subject of political ecology (Bauler 2013).

The term political ecology was used for the first time in the 1970s, mainly by journalists and academics in order to refer to the fact that *"the environment had become a highly politicized*

object" (Neumann 2005 p.32). Later, a variety of definitions of political ecology were developed.

Bryant and Bailey suggest that environmental change and conditions should be seen as results of political processes. In order to explain the practical approach of political ecology better, Bryant and Bailey defined three main assumptions: (i) there is unequal distribution of costs and benefits of environmental change; (ii) following from the first assumption, social and economic inequalities are reinforced or diminished; (iii) as a result of the first two assumptions, there is a reshaping of power between actors (Robbins 2012).

One of the definitions which we find relevant to our investigation was articulated by Blaikie and Brookfield, according to which political ecology: *"combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources and also within classes and groups within society itself"* (Robbins 2012 p.15)

Furthermore, according to Watts (2000), political ecology aims "*to understand the complex relations between nature and society through a careful analysis of what one might call the forms of access and control over resources and their implications for environmental health and sustainable livelihoods"* (Robbins 2012 p.16)

Stott and Sullivan (2000) stated, that political ecology *"identified the political circumstances that forced people into activities which caused environmental degradation in the absence of alternative possibilities… involved the query and reframing of accepted environmental narratives, particularly those directed via international environment and development discourses"* (Robbins 2012 p.16)

5.3. Degrowth

Degrowth, the main focus of which is the economy, was thoroughly influenced by the scientific field of ecological economics, built on the fundaments of the scholars mentioned before, not least H. Daly and his thoughts on steady-state economics, with an essential goal to confront neoclassical, including Keynesian economics, and attacking the concept of *'green growth'*, which is considered as an oxymoron in the view of degrowth supporters (Demaria et al. 2013). Looking back into the *Second Law of Thermodynamics* and the work of Georgescu-Roegen, a steady-state economy is only sustainable, if there are "*mildly fluctuating levels in population and consumption of energy and materials"* (Martínez-Alier & Muradian 2015 p.7). Therefore, he believes that in more affluent societies, degrowth in the use of natural

resources within the economy is needed. Georgescu-Roegen's work was highly influential and inspiring for the materialization of the concept of degrowth, especially because of the book collecting a number of his articles: *'Demain la Décroissance'* (Martínez-Alier & Muradian 2015).

Degrowth criticizes the neoclassical idea of economic growth driven prosperity, achieved through liberalization, privatization, globalization and industrialization (Martínez-Alier et al. 2010). According to the environmental scientist, ecological economist and political ecologist Giorgos Kallis, who is a central person in the European Degrowth scientific network: "*Degrowth is a frontal attack on the ideology of economic growth. Some call it a critique: a slogan or a 'missile word'"* (Kallis 2015). As it was already presented and explained in the Problem presentation ***(Chapter 2)*** part, numerous social, environmental and economic problems are in correlation with the reigning growth paradigm, which dominates decision-making, politics, institutions, and the academia as well (Latouche 2009). Economic growth is an important part of ecological modernization, and it is deeply embedded into the discourse of sustainable development, therefore the concept of degrowth challenges these as well (Schneider et al. 2010).

There is a diversity of different understandings of degrowth. One of the most acknowledged degrowth researchers, the industrial ecologist François Schneider defined the concept as: *"…an equitable downscaling of production and consumption that increases human well-being and enhances ecological conditions at the local and global level, in the short and long term. The adjective sustainable does not mean that degrowth should be sustained indefinitely (which would be absurd) but rather that the process of transition/transformation and the end-state should be sustainable in the sense of being environmentally and socially beneficial. The paradigmatic proposition of degrowth is therefore that human progress without economic growth is possible."* (Schneider et al. 2010 p.512) Another interpretation of degrowth comes from the Francophone political scientist, economist and philosopher Serge Latouche: *"'De-growth' is a political slogan with theoretical implications"* (Latouche 2009 p.7) which, in his opinion, is not the same as negative growth, because: *"That expression is an absurd oxymoron, but it is a clear indication of the extent to which we are dominated by the imaginary of growth."* (Latouche 2009 p.8).

A great variety of cultural backgrounds and scientific fields can be found among people who write about degrowth, and stand out for its ideas[13]. In a nutshell, they imagine a future, wherein societies around the world live within their ecological boundaries, creating localized economies where the resources will be distributed in a way which is more equal (Kallis 2017). It is important to emphasize that degrowth does not mean involuntary economic degrowth (e.g. economic recession or depression) (Asara et al. 2015), but a voluntary shrinkage, offering a smooth, *"prosperous way down",* through a range of environmental, social and economic institutions and policies, arranged to improve human welfare and equity while production and consumption decreases. To make this happen, the cultural imagination also needs to be changed and material accumulation should not be in the center (Kallis 2017). The primary focus in a degrowth society is on sufficiency instead of efficiency, and the core principles are voluntary simplicity, sharing, conviviality[14] and solidarity (Kallis 2017; Martínez-Alier et al. 2010; Sachs 1999 p.39). Liegey et al. also signify the importance of the stimulation of creativity and the essential role of the individual, spiritual and political freedom (Liegey et al. 2013). In practice, degrowth represents a diversity of social (work-sharing, communal living, autonomy), environmental (energy, water, resources, waste, agro-ecology) and economic (freedom of debt, local currencies, reciprocity, basic income and maximum wage[15]) alternatives (Cattaneo et al. 2012).

The word *'degrowth'* results from literally translating the French expression for reduction; *'Décroissance'*. While *Décroissance* was presented firstly in a number of various French publications by André Amar (1973), André Gorz (1977) and Nicholas Georgescu-Roegen (1979) as a reaction to the *'Limits to Growth'* report by Meadows et al. (1972), some principal ideas behind degrowth have been around in philosophical debates for hundreds of years (Demaria et al. 2013).

Furthermore, in the 20th century, various publications were questioning and criticizing the idea that infinite growth is possible on our planet (including *'Small is Beautiful'* by Ernst Friedrich Schumacher, Nicholas-Georgescu Roegen's books, and writings of Wolfgang Sachs), where resources and materials can be found in a finite amount. However, degrowth

[13] These people include mainly activists, teachers, researchers, economists, politicians and members of the society.

[14] The term means meaningful social intercourse, and it indicates the importance of the quality of social relations and social cohesion (Adloff 2016).

[15] Maximum wage - which is often called maximum income or wage ceiling - is a prescribed limitation telling how much an individual can earn.

was ‘revived’ in the early 2000s as a social movement led by activists from the French town of Lyon, where direct actions took place against advertising and mega-infrastructures, and people were protesting for food cooperatives and car-free cities. Later, when the first Degrowth Conference took place in Paris in 2008, it started to infiltrate into civil society discussions and academic research (Kallis 2015).

Talking about the main sources of degrowth, we can identify different philosophical currents influencing the concept. One source is *ecology*, and the perception of ecosystems as valuable in themselves, not only as infinite suppliers of environmental resources (Schneider et al. 2010). Another significant philosophical flow is the *praise of anti-utilitarianism and the critiques of the development idea*, which stems from anthropology. Significant authors of this degrowth source are Serge Latouche, Arturo Escobar, Ivan Illich, Wolfgang Sachs and Bernard Charbonneau. Criticizing the utility-maximizing behavior of the *‘homo economicus’* is also part of this stream, Karl Polányi and Marshall Sahlins are the main references here (Demaria et al. 2013).

The third philosophical source of degrowth is *well-being* and the *meaning of life* concept, where the common mantras of earning more, working more and buying more are challenged, and the need for living a more meaningful life is emphasized. Easterlin’s work and the *‘Easterlin paradox’* are remarkable references here (Demaria et al. 2013). *Industrial ecology* and *ecological economics* are also degrowth sources. As it was mentioned earlier, ecological economists mostly follow Georgescu-Roegen’s thoughts, who is responsible for introducing the term *‘bioeconomics’*, whereas his work on thermodynamics and his book *‘The Entropy Law and the Economic Process’* had been a great influence as well for degrowth supporters (Cattaneo et al. 2012). The last two philosophical currents are the quest for deeper *democracy* including the need for thorough institutional changes - which are highlighted by Jacques Ellul, Ivan Illich and Cornelius Castoriadis -, and *justice* (social, environmental, economic justice, equality etc.) (Demaria et al. 2013).

5.4. Institutional theory and institutional change

Degrowth, and other forms of sustainable transitions always involve institutional changes, but before exploring the various ways in which these changes can happen, we need to understand what institutions are, why and how are they created and maintained, and what kind of outcomes they generate (Ostrom 2005). There is a huge diversity in conceptualizing and defining institutions, but we only mention the ones we find relevant to the investigation of this

thesis. From a political economist point of view, Elinor Ostrom interpreted them as: *"...prescriptions that humans use to organize all forms of repetitive and structured interactions including those within families, neighborhoods, markets, firms, sports leagues, churches, private associations, and governments at all scales. Individuals interacting within rule-structured situations face choices regarding the actions and strategies they take, leading to consequences for themselves and for others"* (Ostrom 2005 p.3). According to the American sociologist Richard W. Scott's understanding: *"Institutions are multifaceted, durable social structures, made up of symbolic elements, social activities, and material resources."* (Scott 2001 p.49)

The two quotes above induce that institutions are part of the society's everyday life, they have a major influence on human decisions and actions, while they also bring stability and meaning to social conduct. The main role of institutions is to provide authoritative guidance by supporting, enabling, controlling, or constraining social behavior, and to signal how people should interact with each other in a community (Vatn 2009). Even though there are several interpretations of these social structures, reviewed sources agree that institutions are composed of some main constituting elements; the regulative pillar, the normative pillar and the cultural-cognitive pillar (Scott 2001; Vatn 2009; Løkke 2016; Ramírez-Monsalve 2016).

The regulative pillar has laws, rules and sanctions as indicators, telling how people *must* behave by using coercive mechanisms. The central ingredients are expedience, fear and force here. In most of the cases, rulers attempt to create a belief among people about the legitimacy of their regime, which means that powerful actors can impose their volition on others. The regulative and the normative pillars of institutions can be mutually supplementing (Scott 2001).

Values, norms and roles together build the normative pillar, which shows how we *ought to* behave, based on our moral perceptions and social obligations (Løkke 2016). Norms *"...specify how things should be done; they define legitimate means to pursue valued ends."* (Scott 2001 p.55) Hence, normative systems define specific aims or objectives (e.g. consuming less, localizing production, winning a game etc.), and at the same time, they also assign pertinent ways to achieve them, paying attention on values as well. The third constructs in the normative pillar are roles, which can be understood as prescriptions or normative expectations about how one supposed to behave according to his/her social position (Scott 2001). While normative systems are usually perceived as limiting forces on social behavior,

they also: *"...empower and enable social action. They confer rights as well as responsibilities, privileges as well as duties, licenses as well as mandates."* (Scott 2001 p.55)

The last pillar of institutions is the cultural-cognitive one, which indicates our usual social behavior. The emphasis is on the subjective level of an individual here, and on the understanding of the surrounding area (Scott 2005). This resonates with the cognitive anthropologist, Roy Goodwin D'Andrade's thoughts: *"In the cognitive paradigm, what a creature does is, in large part, a function of the creature's internal representation of its environment"* (D'Andrade 1984 p.88).

Institutions are relatively change resistant, because of a concept noted in the relevant literature as *'path dependency'*, sustaining and reinforcing existing institutions throughout time. In that way, these social structures permeate from one generation to another, maintaining the circle of their regeneration and management (Ebbinghaus 2005; Campbell 2007; Mahoney & Thelen 2010). When staying on the same path for a long-term period, increasing returns or positive feedbacks occur, further strengthening the actor's dependence on the chosen path, and eventually leading to the possibility of being locked-in to just one single solution, ignoring other - often more beneficial - alternatives (Weber de Morais et al. 2015; Streeck & Thelen 2005). The positive feedbacks are in connection with some crucial factors; the invested efforts and time of an individual in learning how to act within a certain set of rules, the influence of other people's actual or expected behavior (peer pressure), and the social processes in politics (Ramírez-Monsalve 2016). Overall, path dependency implies that present events are largely dependent on preceding events (Campbell 2007).

Although institutions are generally enduring, if special conditions occur, they can be subjects to several forms of change processes (Streeck & Thelen 2005). Institutional change can happen in two main distinct ways ***(Figure 8)***; there can be either an external power which

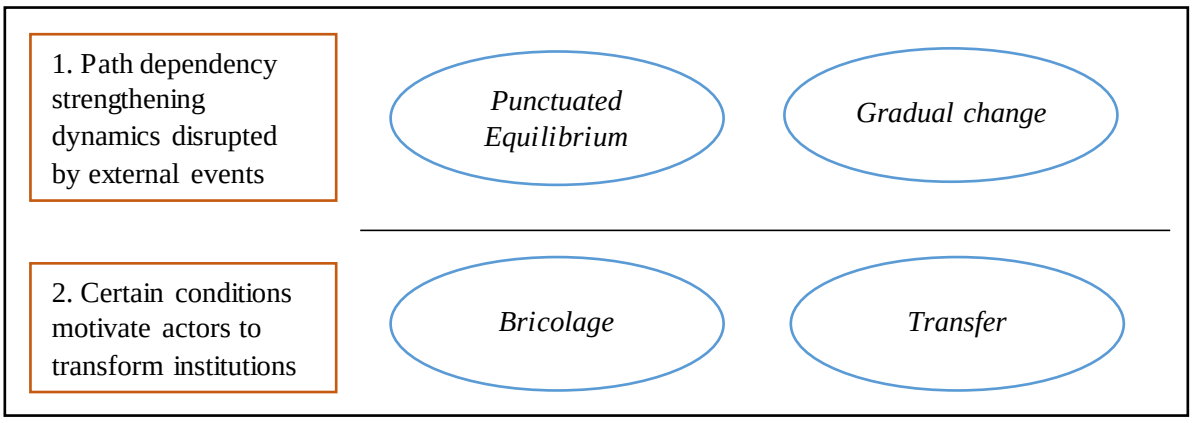


Figure 8: *Classification of the different forms of institutional changes (Own representation 2017).*

disrupts the path dependency reinforcing mechanisms, or actors inside the institutions also have the opportunity to make a decision about changing them intentionally, driven by various possible motivations (Ramírez-Monsalve 2016).

One type of change caused by external events is called abrupt change or *'punctuated equilibrium'*, and most of the times it is a consequence of major exogenous crises or shocks which trigger a fundamental change. Some examples of shocks are wars, energy crises, economic crises, or environmental disasters (Campbell 2007). The other set of changes as a result of externalities are incremental, in which case transformations or alterations happen in a gradual pace (Ramírez-Monsalve 2016). These are much less sudden than abrupt changes, but the consequences on social, political or market behavior can be equally influential. Examples include the shaping of Marine Protected Areas or the history of the British House of Lords, that displays how an undemocratic assembly of powerful landowners can turn into a more democratic institution (Mahoney & Thelen 2010).

Sometimes as an outcome of power imbalances among actors or deficiencies in compliance, actors within the institutions try to alter the institutional settings themselves (Ramírez-Monsalve 2016). The two potential ways to do this is either by a recombination or reorganization of existing institutional practices and principles in innovative manners (bricolage), or by translating ideas from somewhere else and merging new elements into existing institutions (transfer). Bricolage can be applied in many different fields (environmental management and planning, social entrepreneurship, sustainable businesses etc.), while a specific example for transfer is the translation of the American corporate formula in order to support the reconstruction of post-war Europe (Campbell 2007).

Focusing on sustainable transformation processes, it is important to mention that they deal with complex and dynamic multi-dimensional systems; they involve a diversity of system levels including local, regional, national and international, whereas they can be initiated by the state-market-civil society triangle. Several actors, practices and institutions should contribute in facilitating a transition to societies who live simpler by using less resources and materials, and have more in common (Asara et al. 2015). In particular, when we examine institutional changes from a degrowth or transition point of view, these processes are crucial transformations, which should include: "…*both policy-institutional changes within the current system - such as drastic changes to financial institutions, resource and pollution caps and sanctuaries, infrastructure moratoria, eco-taxes, work-sharing and reduced working hours, basic income and social security guaranteed for all - as well as ideas for creating new*

spaces outside of the system, such as eco-villages and co-housing, cooperative production and consumption, various systems of sharing, or community issued and regulated currencies, barter and non-money market exchanges." (Kallis 2017 p.12)

While the quote above from Giorgos Kallis mostly indicates the important role of the state by implementing *'non-reformist reforms',* and the civil society by constituting new initiatives outside of the current system, the role of the market can be equally important as the other two spheres. According to degrowth literature, the economy is not an independent system which is only commanded by the principles of supply and demand, and the neo-liberal idea of a *'free market'* is persistently constructed through enforcement and state intervention (Kallis 2017). Therefore, markets are deeply embedded into the institutional and historical reality of market capitalism (Klitgaard & Krall 2012). That implies that even though there are existing businesses and companies who work towards sustainability outside of the dominant framework of the market, the major motivation remained the same, namely the pursuit of high financial returns (Likavčan & Scholz-Wäckerle 2017). Here, we can conclude that: *"What we really confront is a problem of institutional change"* (Klitgaard & Krall 2012 p.248). That is one main reason why degrowth stands for generating thorough and radical institutional changes, where it is crucial to focus on the types of the changes needed as well (Klitgaard & Krall 2012).

6. Analysis and discussion

The current chapter contains our critical analysis of the gathered information together with a thorough discussion, where we utilized the chosen theoretical concepts and discourses. In the upcoming, we follow the structural logic of our sub-questions starting with a general overview of the situation of eco-communities in Denmark and the fundamental organizations who work together with them and supports them in developing and flourishing. Furthermore, the chapter includes the main motivations behind forming these communities, and an analysis and discussion based on their initiatives towards social, environmental and economic sustainability. The various challenges that eco-villages face in Denmark and the critiques towards these alternatively organized forms of living have been taken into account as well. As a closing part, we evaluate the opportunities of Danish eco-communities to thrive, develop and spread under the current circumstances created by the economic system, and discuss, to what extent are they able to represent a viable model for transition to a sustainable society.

6.1. A general overview of eco-communities in Denmark

As we revealed in the problem presentation chapter, social structures around the globe are mainly influenced by normative perceptions, based on the neo-classical idea of perpetual economic growth, which has resulted in various environmental, social and economic issues. So far, the adoption of inaccurate and ineffective approaches for tackling these problems has impeded a successful accomplishment of sustainability. However, eco-villages provide an alternative to such mainstream understanding by following a different normative path for a sustainable lifestyle. In order to understand the different institutional drivers for motivating the development of such communities, firstly, we should look into what these settlements actually are.

The story of the term *'eco-village'* goes back into the early 70s, when the alternative lifestyle journal *Mother Earth News* invented it in order to describe an area in North Carolina with an experimental farm on it, where a novel, alternative way of building, organic gardens, and renewable energy systems were developed (Bates 2003). Meanwhile, the term *'ökodorf'* appeared in Germany, when near the farming town of Gorleben, a political resistance started against nuclear waste disposal by facilitating an ecologically based village. Even though the camp was dismantled by the police later, the concept remained in use and eco-village experiments took place in West and East Germany (Bates 2003).

From the beginning of the 1990s, a major growth can be identified in the number of communities calling themselves eco-villages, which is partly a result of the *'Ecovillages and Sustainable Communities'* conference held in Findhorn community in Scotland (Jackson 2004).

Today, one of the most commonly used and widely recognized definition of eco-villages is formulated by Robert Gilman; a researcher with significant contribution to the topic of eco-villages and sustainability in general. According to him, eco-village is: *"a human-scale, full-featured settlement, in which human activities are harmlessly integrated into the natural world, in a way that is supportive of healthy human development and can be successfully continued into the indefinite future"* (Gilman 1991 p.10). Another common understanding of eco-village is based on the holistic permaculture idea promoted by the environmental designer David Holmgren. According to him, eco-villages follow three core ethical principles including: i) recognizing man as part of Earth not apart from it; ii) looking after each other, support each other and build strong communality; iii) adopting responsible consumption and production patterns based on fair share and considering the finite planet resources (Holmgren 2012).

Overall, an eco-village could be seen as a social structure which practices can lead towards sustainability by promoting ecological, economic, social and cultural consciousness. Yet, eco-village could be a traditional rural, a newly existing urban settlement, or a neighbourhood. Numerous eco-villages are formed as result of intentional integration of people with common values, purposes or visions such as environmentalism, spirituality, communality etc. (Jackson 2004). However, the motivations for forming an eco-village often defers geographically as a result of socio-economic, political and environmental peculiarities. According to Niels Aagaard from LØS for instance, it is extremely challenging to develop an eco-community in China because of political circumstances, and it is more likely to be destroyed by authorities. In Africa, developing eco-villages are mainly seen as a solution for communities whose settlements were destroyed as a result of the excessive exploitation of natural resources, the denial of access to resources and climate change. At the same time, in Greece, economic circumstances induce people to live alternatively (Aagaard 2017). Generally, different peculiarities could be identified between eco-villages from the Global North and eco-villages from the Global South ***(Table 3** on next page)***.

Global North	➢ Intentional communities with lifestyles mainly based on the ideas of environmentalism and communality ➢ Smaller than traditional villages ➢ Self-governance ➢ Used as research, educational, demonstrational and training centres ➢ Adopt scaling down strategies in order to reduce their ecological footprint ➢ Develop connection between social and environmental values
Global South	➢ Mostly traditional indigenous settlements developed in order to stop environmental degradation; to underpin local economies; to defend and preserve traditional cultures ➢ Necessity of scaling up in order to meet basic needs ➢ Social system based on solidarity ➢ Low footprint

Table 3: *Particularities of eco-villages from the Global North and eco-villages from the Global South (Veciana 2016).*

Investigating eco-villages from a country representative of the Global North, we identified relevant match between this simple generalization and our results. However, the motivations for forming those communities and their initiatives can be highly diverse even though Danish eco-villages have some similarities (Busck 2017; Aagaard 2017).

Denmark was among the first European nations digging into the possibilities of communal living (Aagaard 2017). Such unique organizational behavior, with cultural and historical roots (***Chapter 2.3.1.*** *A small historical review of the Danish Folk High Schools and the Cooperative Movement from the 19th century*), has undoubtedly influenced the cognitive perception about lifestyles among Danes and had an effect on the development of the eco-village concept in Denmark.

The history of eco-villages in Denmark can be traced back to cohousing projects and various alternative forms of living together in cooperation with each other with the main aim of generating positive social and environmental effects as well (Aagaard 2017). In 1987, the charitable association based in Denmark called Gaia Trust was founded. The intention of the founders, Ross and Hildur Jackson was to promote sustainable transition and spirituality through initiatives based on the holistic understanding of the world (Jackson 1998).

In 1993, Danish Ecovillage Network (LØS) was formed as an initiative taken by Gaia Trust (Jackson 1998). Since then, LØS has been influencing significantly the life, activities, initiatives and development of Danish eco-communities (Larsen 2017; Aagaard 2017; Jakobsen 2017; Hjortshøj 2017) as our findings will also reveal later throughout the current chapter. LØS came into being, addressing the needs of eco-communities that wanted to create a union in the form of an open platform, which gathers, strengthens and represents them, while at the same time supports them in spreading and growing. The initial idea of LØS was also to guide the members of eco-communities in how to solve their internal and external conflicts, and to show them how to facilitate and manage their own communities efficiently by putting an emphasis on social cohesion and relationships. LØS sees eco-villages as living laboratories for a more sustainable and just future, both on a Danish and international level (Aagaard 2017).

The core conviction of LØS is that we need to settle ourselves more sustainably (ecologically, socially and spiritually) (Andersen et al. 2015). To reach the desired future, the organization set up a new strategy in 2013 by developing six crucial focus areas (Aagaard 2017), which as we will discuss later have a significant role for spreading the ideas and visions adopted by eco-villages. Furthermore, this strategy seems to resonate with some ideas of degrowth as well (addressing the questions of production and consumption, education, living together in communities and cooperating with each other).

Nowadays, Denmark has the most eco-villages compared to the population of the country from all industrialized countries (Hansen 2009; Aagaard 2017); there are approximately 32 eco-communities in Denmark according to the website of LØS, although other sources show more and the leader of the organization also mentions an average number of 55 during the interview (Aagaard 2017). The differences can be a result of the various ways we can define an eco-community or eco-village.

The role of Denmark can be said to be very significant and influential for the development of the Global Ecovillage Network (GEN) as well, having the idea evolved from the cohousing practices. GEN was initiated on a meeting held by the Danish charitable organization Gaia Trust with the inclusion of representatives of different international eco-communities (Garden 2006). Nowadays, depending on the definition, GEN has approximately 15 000 members around the world; this organization connects and supports these communal projects globally (Aagaard 2017).

Looking into the eco-villages we approached during our investigation, we identified a variety of motivations for developing those communities and for joining them. We had the chance to speak with a variety of inhabitants in terms of age, occupation, social status and interests.

Even though today, all of the communities we explored could be considered as eco-communities, based on the definitions presented earlier, yet not all of them were designed as sustainable settlements from the beginning of their appearance. Svanholm is an example of such a community whose original idea was simply to promote organic farming as an alternative mode for agriculture. Today, Svanholm is not only a pioneer in organic farming in Denmark, but also an example of a community which has developed into having core concerns and values such as environmental consciousness, income sharing, communality and self-governance (Rasmussen 2017). This gradual evolution is common for eco-villages, although it always takes time for people with different ideas and values to realize the necessity of integrating new views and aspects in their life (Jackson 2004).

Whilst all of the eco-communities we approached promote some kind of environmental consciousness, they differ by the manner they adopted in order to address their environmental concern. Some of them, such as Karise Permatopia, consider technological solutions as crucial for promoting sustainability. It is developed as a sustainability by design project rather than emerging communality initiative. Self-sufficiency, recycling, low living costs, renewable energy and systematic approach based on the permaculture concept are the core aspects employed for achieving sustainability within this project. According to the co-founder of this eco-village, Kennet Harpsøe, individuals cannot be sustainable, but systems can, so this belief motivated him to develop Karise Permatopia (Harpsøe 2017). On the other hand, the rest of the communities we were investigating seem to not only reduce their environmental impact by implementing renewables for instance, but also by changing their consumption patterns. Even though this might be considered by some as more sustainable approach, Kennet argues that being part of a sustainable system naturally results in less consumption (Harpsøe 2017). However, quite a few of the individuals we approached during our investigation referred to communality, sharing, better interaction with nature, participating in eco-building, environmental initiatives etc. as their main motivations for choosing to live in eco-villages. Few of them even considered as their main motivation a desire to escape from the fast reality, to slow down; to avoid the stress which cities generate; to improve the quality of their time by spending more of it with families or by participating in activities they enjoy; less materialism and more spirituality and art. Freja Rasmussen even revealed that her disappointment caused

by the lack of effective political actions for addressing sustainability provoked her to choose an alternative lifestyle, where sustainability was taken seriously even though on a micro-scale (Rasmussen 2017).

As we mentioned earlier, a lot of these motives seem closely related to the ideas embedded in the degrowth discourse. Yet, none of the inhabitants we approached was actually inspired by this political, environmental and social movement. Taking this into account, it seems that the connection between the degrowth movement and eco-villages is vague. A recent book published by Friends of the Earth, called '*Life after growth: Visions of society in a time of transition'* was developed as a follow up to a previously issued book called '*De-growth: Transition to the future'*, in order to provide a positive vision for transition with a concrete practical approach. As John Holten-Andersen suggested during our conversation, a critique of the growth paradigm such as degrowth is important, yet not enough. Therefore, practical solutions are needed and eco-villages represent such practical example (Holten-Andersen 2017). Even though there is an obvious link between the degrowth discourse, and the initiatives and ideas of eco-villages, yet the relationship between scholars and the eco-village movement could improve.

6.2. An analysis and discussion of the initiatives of Danish eco-communities

This chapter has been divided into sub-sections based on our findings about the environmental (heating, electricity and water usage, , agriculture and food, building, etc.), social (communality, living together, sense of community, relationship with neighbors and society in general, social cohesion, decision-making, jobs) and economic initiatives of Danish eco-communities. We highlight the most important findings and peculiarities in connection with the themes of material and resource production and consumption, and we go deep into the details, only where it is necessary. With the inclusion of critical voices and challenges of these communities, the goal is to provide a thorough evaluation and to answer the question: *'how and to what extent these initiatives are leading to sustainability'*.

6.2.1. Environmental aspects

Energy, heat and water production and consumption

Our findings show, that all of the eco-villages that we approached have some kind of initiatives, which result in environmental or other kinds of benefits. The signs of technological optimism can be found in the most technologically based community that we approached,

Karise Permatopia. The village is not complete yet, inhabitants are going to move in from August-September 2017, but they have already designed a heating and electricity system based on renewable energy sources using a geothermal pump for geothermal energy and a wind turbine for wind energy. According to their website, this supply system gives Karise Permatopia almost 100% self-sufficiency and an electricity and heating system which emits significantly less CO_2 compared to conventional ones (Karise Permatopia 2016).

The utilization of renewable energies seems to appear in almost every examined case of this research, with the goals of increased self-sufficiency and reducing emissions coming from the burning of various fossil fuels. Munksøgaard eco-community developed a central heating system running primarily on wood pellets[16] providing domestic heating and hot water for inhabitants. In case of the common houses of this settlement, the heating system is supplemented with solar collectors planted on the roofs, supplying hot water, while the electricity is produced by solar cells (Hansen 2009; Larsen 2017).

Other examples for implementing complex electricity and heating systems based on renewable energies incorporate AiH, and Svanholm. The central heating of houses in AiH has been solved with a wood pellet fueled boiler, which is supported with an additional woodchip boiler producing both electricity and heat, and wood-burning stoves in some houses. The power of solar energy has been utilized with solar collectors and solar panels, whereas there is an emphasis on solar architecture as well; most houses were built on the principles of passive solar building design (Hjortshøj 2017).

The representative of the Svanholm eco-community declared, that in rough numbers, the village is 100% self-sufficient with electricity and heating, the former being produced by 2 wind turbines and the latter coming mainly from solar panels and a central boiler fueled with woodchip (Rasmussen 2017). While in case of the other examined eco-villages, the origins of the wooden material used for heating are unclear, residents of Svanholm have their own forest land, providing them with woodchip for burning (Rasmussen 2017). The obvious environmental benefit of this locally appropriate solution is the lack of transportation of wood, resulting in GHG savings.

Even though studies show, that heating with wood pellets is one of the most environmentally efficient processes compared to using other biomass products (e.g. woodchip) or fossil fuels for heating purposes (Sultana & Kumar 2012), it also has certain drawbacks. Burning wood

[16] Wood pellets are biofuels made from biomass or compressed organic matter, such as forestry residues and waste (Sultana & Kumar 2012).

pellets (and biomass in general) also result in environmental pollution, especially in case of outdated appliances (Clean Heat 2016). The pellets need special precautions in connection with logistics, while storing them could be difficult, taking into account the fact that it has to be kept dry to protect its quality (Nunes et al. 2014). Furthermore, certain issues can occur when using wood-burning stoves as a supplementary heat provider. Nowadays, we can perceive a renaissance of utilizing wood as fuel, mainly because this material has been considered as a significant contributor to the transition to renewable energies. Unfortunately, the fact is that perfect wood combustion is not possible and wood burning results in smoke, containing substances which are hazardous for our health and the environment. Soot and black carbon, particulate matter (PM), nitrogen oxides (NO_x) and carbon monoxide (CO) are the most notable ones (Clean Heat 2016). At the end of the current chapter, quantitative environmental advantages of the applied initiatives of Munksøgaard, AiH and Svanholm will be presented, when we discuss the results of a study conducted by the environmental consultancy firm Pöyry A/S.

Although all eco-communities under study implemented or considered the implementation of renewable energy systems to increase their own self-sufficiency and autonomy, in some cases, certain challenges occurred. The building plan in Soleng contained solar energy providers as well, but since the construction of the village is in an initial phase, they simply cannot afford these solutions financially yet (Lausen 2017). Another community's challenges include conflicts with the church and confrontations with the local municipality because of the possible interference of the planned wind turbine in the local landscape (Jensen 2017).

The question of water provision, wastewater treatment and water savings for environmental purposes are also addressed by the eco-communities, albeit on different levels. In Karise Permatopia, drinking water is provided by the local Karise based corporation, Karise Vandværk co-owned by 1085 people, whereas the remaining water consumption comes from rainwater collection (Karise Permatopia 2016). The collection of rainwater for washing clothes in common laundry rooms and watering the gardens appear in Munksøgaard and AiH, while residents of Tranehøj also utilize this natural source of water (Hjortshøj 2017; Jakobsen 2017; Hansen 2009).

When it comes to wastewater handling, all of the examined communities address this topic. While some of them implemented water saving and separation toilets, biological sand filters and other technologies, others solve the issue through the implementation of *'willow-based treatment plants' (pilerensningsanlæg)*, which works on a closed-cycle principle, where the

nutrients from the sewage are absorbed by the willow plantation. After the trees are being harvested, the material is either used for composting and fertilizing the soil in the agricultural lands, or for heating purposes as a type of biofuel (Harpsøe 2017; Jensen 2017; Hjortshøj 2017; Skands 2017). According to the results of an experimental study conducted by *'Association d'initiatives Locales pour l'Énergie et l'Environnement'* (AILE), called Wilwater Project, these willow-based treatment plants are especially efficient for wastewater treatment in case of small settlements (under 500 inhabitants) (AILE 2007), fitting perfectly to the needs of eco-communities. If biomass from willow trees harvested every 2-3 years is used for substituting fossil fuels for heating, it results in saving an average of 3500-4500 liters of fossil fuels per hectare per year (AILE 2007). As we identified, the most common goal of eco-communities with this solution is to reduce solid and liquid waste, and lower the environmental impact through reuse, following the closed-cycle principle. Another, seemingly marginal benefit is the financial one, as it saves money for the residents of a community, since they avoid paying some environmental taxes for wastewater handling (Jensen 2017).

Collecting and recycling waste also appear in many of the eco-communities, by composting organic and garden waste or collecting garbage selectively. However, we did not go further with the subject of waste, since it is not part of our investigation.

Buildings

Various examples were identified during our investigation in case of the building processes and materials used in the examined villages. Some of the communities simply buy old farm buildings, stables or warehouses, which they later refurbish to family homes, common houses and other facilities, and improve the insulation or make the heating more efficient with the main aim of environmental and economic benefits. An interesting case here is the example of Tranehøj, which completely differs from the other examined communities. Tranehøj is a small community with 4-6 families, owning a farm together with four buildings on it. Two buildings are for living, but none of the residents have their own houses, instead, they occupy a *'living space'*, which consists of a differing number of rooms, small kitchenette and a living room. Only two residents have their own bathroom, all other inhabitants share these facilities, besides having a common dining room, offices, TV room, banquet hall, spaces for workshops, laundry room, and rooms for storing vegetables and waste (Tranehøj n.d.; Jakobsen 2017). This approach to living together presented by Tranehøj is especially interesting if we take into account one of the common critiques towards eco-communities and eco-village living in

general, namely the disadvantage of decentralization, spatial organization and the question of land use (Næss 2001; Xue 2014). These critical voices from the cited experts in urban planning will be included in the end of the next section ***(Chapter 6.3)***, together with the issues related to energy systems, and transportation in connection with the travel distances between villages and cities.

Other eco-communities, who do not start with ready-made houses, buy a piece of land and hire (a) construction firm(s) to build their facilities using environmentally friendly non-toxic natural building materials, sometimes even paying attention to the insulation and paints as well, having the objectives of energy-efficiency, energy-savings and sustainability in their minds (Skands 2017; Lausen 2017; Hjortshøj 2017; Munksøgaard n.d.). In case of buildings, again, the question of sustainability appears on different levels. In the community of AiH, there is a great emphasis on the building materials and processes. Here, materials can even differ between the seven co-housing groups; they use compressed soil bricks, rammed clay and wood, and alternatives to rockwool as insulation, such as granulated recycled paper or flax. These materials are easily recyclable, reusable and biodegradable. With the reason of building more environmentally consciously, they utilize clay as local material, while they also have their local construction firm, called *Økotech* (Hjortshøj 2017), which reduces the burdens posed on the environment by transportation and the costs of logistics as well. It is important to mention that the idea of using materials from the surrounding area can be identified in case of other examined communities as well.

The idea of *'re-localization'* or *'localism'* appear in many degrowth and post-growth sources, highlighting its significance and importance on the road for us, humans, to achieve a viable future (Schumacher 1973; Kallis 2017; Latouche 2009; Sachs 2010; Raskin et al. 2002). Another important aspect is craftsmanship and the do it yourself approach. These are also emphasized in the literature on degrowth, denoting that: *"The more we relate with our own hands (and heads) to natural resources, their scarcity and their vulnerability, the more we free ourselves from the market and from consumerism"* (Busck 2016).

In line with these ideas, we found examples for settlements who establish their buildings by themselves utilizing local materials, such as clay, shells, straw, reeds, woodchips and eelgrass (Holm et al. 2008). The community of Fri & Fro is specialized on constructing, they have a principle of *'low-economy'*[17] and a positive list of building materials which inhabitants can

[17] Besides addressing the topics of loans and social activities, they apply this principle for influencing people to build their own houses from locally sourced organic materials (Jensen 2017).

use. This list excludes tar paper, rockwool, concrete and some other materials which are considered as harmful for the environment or human health, while residents also took into account the recyclability and reusability factors of building materials (Jensen 2017). This eco-community put a lot of efforts into setting up their community and constructing the facilities, roads and public utilities, which ultimately led to conflicts. At this point they decided to change their rules, and make the building process voluntary, without deadlines (Jensen 2017).

Challenges in connection with buildings in the settlements include high monetary costs, struggles of getting loans from banks for houses which are intended to be built from organic materials, and legal regulations regarding building materials and stability of buildings.

Food production and consumption

Based on our findings, the topic of food production and consumption is certainly one of the areas in which eco-communities could improve in different ways. Again, we can identify the ecological modernism or technological optimism approach especially in the case of Karise Permatopia, but they are trying to use modern technologies and technology transfer (*Agrokruh* project from Slovakia[18]) with the aim of greater self-sufficiency (Harpsøe 2017). This settlement follows the principles of Permaculture, meaning that their agricultural systems are modelled from ecosystems with the goal of making the agriculture organic and more sustainable (Holmgren 2012). Therefore, they harvest their willow trees from the willow-based treatment plant and use the wooden residues for composting and fertilizing the soil in the agricultural areas, which results in a resource and nutrient cycle similar to natural ones (Harpsøe 2017). Nowadays, Karise Permatopia is still on an early stage of development, but the community's aim is to become largely self-sufficient with vegetables, fruits and meat (Karise Permatopia 2016). The same intention can be found in case of Soleng, where permaculture is also a determining principle. This community's development is on an initial stage as well, they have the equal allocation of resources and sustainability in the core, therefore, they strive for supplying themselves with vegetables, eggs and a small amount of meat in the near future (Lausen 2017).

In terms of sustainable agriculture, the most advanced existing eco-community from the examined ones is Svanholm. As it was mentioned earlier in ***(Chapter 6.1)***, this village was a pioneer in developing a more sustainable lifestyle, where organic farming plays a significant

[18] Agrokruh is an automated system suited especially for sustainable small-scale vegetable production, substituting heavy machinery and the use of tractors on the fields (Lešinský n.d.).

role. The inhabitants of Svanholm produce fruits and vegetables for themselves, have a forest area providing them with forest goods, while they also maintain livestock production, such as cattle and sheep. Besides supplying their own community with organic food products, the agriculture here also has the capacity to produce for selling a small share of the products outside Svanholm (Rasmussen 2017). Our respondent expressed her opinions about their food system, which works on a participatory basis: *"it is quite necessary for the eco-village to be organized in that way, because it means that we are all owners of the agriculture and the production that takes place at Svanholm. We all have a word to say, when we make our budget and do our priorities in the production, we are all the part of it."* (Rasmussen 2017).

Almost all of the remaining eco-communities under study address the question of food provision and consumption, although on different scales because of various reasons. Tranehøj is able to provide vegetables for its residents for one half of the year, having a large organic kitchen garden. Besides their plantations, they also keep sheep, hens and geese. As a supplement, vegetable and meat supply comes from local organic farmers (Jakobsen 2017). In AiH, they have a farming group, who takes care of their biodynamic farmland and provides basic vegetables, meat (chicken, cattle, goat) and eggs. The animal products are open for consumption for every inhabitant who wants to buy, but vegetables are only available for people who participate in the farming activities. Having a higher population than average eco-communities, all this food is still not enough to fulfill the needs of AiH, therefore they supply themselves with organic food coming from local supermarkets (Hjortshøj 2017).

In case of Munksøgaard and Frikøbing, the examples show that there is a desire of being self-sufficient with food, but it only happens on a small-scale, meaning that only some residents produce their own vegetables covering just part of their consumption. The lack of local food production can be connected to challenges with the available free time of people besides their job, and the ownership of lands (Skands 2017; Larsen 2017). Furthermore, we identified specific issues regarding the regulated zoning system (rural and urban zone), which determines how a certain area can be used for different purposes (agriculture, residential units etc.), limiting the possibilities to extend the agricultural lands. Finally, one of the communities simply decided not to have an agricultural area, because they are focusing on other aspects of living together (Jensen 2017).

Results of a comprehensive study about the environmental impact of eco-villages

In 2009, the consultancy and engineering firm Pöyry A/S conducted an overall research about the environmental impacts of three Danish eco-villages; Munksøgaard, AiH and the Svanholm Collective[19]. The methodology of this report was based on calculating only domestic CO_2 emissions with a web-calculator tool, which was established by the Danish Ministry of Climate and Energy. Pöyry also took part in designing the calculator and its background data. In case of the average results, data was calculated with regard to the population size of each society (Pöyry Energy Consulting 2009). ***Table 4*** reveals the summarized outcomes of this study, where the results are in tons of CO_2 per year.

	Heat	Electricity	Transport	Goods	Water	Total
Danish average	1.59	0.95	2.02	1.49	0.17	***6.22***
Munksøgaard	0	0.81	0.55	1.16	0.09	2.61
AiH	0	0.72	0.52	1.07	0.10	2.41
Svanholm	0	0.00	0.71	0.87	0.26	1.84
Eco-village average (weighted)	0	0.60	0.70	1.06	0.15	***2.51***

Table 4: *CO_2 emissions in selected eco-villages (Pöyry Energy Consulting 2009)*

According to the Pöyry research, quantitative data shows that an average Danish citizen emits around 6.22 tons of CO_2 per year - when it comes to the mentioned issue areas - which is 60% more than the emissions of an average eco-village resident (Hansen 2009; Nissen 2014). The remarkable difference is mainly a result of the villages' local production and consumption of renewable energies for heating and electricity purposes, organic goods consumption and local farming activities providing food for inhabitants, and transportation patterns (Pöyry Energy Consulting 2009). The fact is that members of eco-communities often substitute having their own cars with establishing and using the services of a car-sharing or car-pooling scheme, whereas they also travel by public transport (Rasmussen 2017; Hjortshøj 2017; Larsen 2017). The reason why heating-related emissions are zero in the table is because all studied communities utilize systems based on biomass products which are commonly considered as CO_2 neutral. However, such a result might be questionable, as except for Svanholm, we are

[19] Taking into account the limitations and uncertainties of this study, we only used it as an indicator to show that there is a difference in CO_2 emissions related to heating, electricity, transport, goods and water consumption between the three eco-villages participating in the research and average Danish citizens.

not aware what the initial source of the biomass used by these eco-communities is[20]. Svanholm is 100% self-sufficient when it comes to electricity provision, therefore the related emission is zero here. Despite the fact, that the farming practices in Svanholm require a significant amount of water, on average, the three eco-communities emit 12% less CO_2 in connection with water consumption (Hansen 2009). Keeping in mind that this assessment was conducted 8 years ago and since then the use of renewables and sustainable building practices have generally increased in Denmark, today, the difference between average consumption of mainstream society and eco-villages might not be that sharp.

6.2.2. Social aspects

As we already revealed in the previous sub chapter, the eco-villages we explored adopted visions and strategies and developed initiatives aiming to decrease production and consumption in order to reduce their environmental impact. However, as we are looking into their contribution to a transition towards sustainability, it is important to analyze social aspects as well. We will look into the practical initiatives adopted by the investigated eco-communities for increasing human welfare and equity. Furthermore, we will delve into how their cognitive sense of communality resulted in developing a normative understanding for a sustainable lifestyle where materialism is not central.

We already discussed the cultural and historical roots of the strong Danish sense of communality. Such cognitive perception could easily explain the normative approach adopted by the eco-villages we investigated in this current project. Exploring their initiatives, values and beliefs, we recognized core social degrowth principles which scholars like Giorgos Kallis, Joan Martinez-Alier and Wolfgang Sachs talk about in their work (Kallis 2017; Martínez-Alier et al. 2010; Sachs 1999). These principles of communality or conviviality, sharing, simplicity and solidarity can be found in most of the eco-villages we investigated.

Communality is one of the main features of eco-communities in Denmark which is also acknowledged by Niels Aagaard during our conversation. He shared that a main approach (apart from the environmental one) which all eco-villages, members of LØS have adopted is their focus on communality (Aagaard 2017). Such sense of communality is strengthened by

[20] It is commonly accepted that pellet manufacturers use tree branches and other waste wood, thus providing carbon-neutral energy sources. However, critical investigations made mainly by environmentalists and scientists reveal that those industries frequently harvest hardwood trees instead of utilizing forest residues. In this case it takes longer time for the trees to regrow and might result in carbon emissions (Drouin 2015).

using common facilities, participating in common activities, common ownership, common decision-making, and for some even by developing a *'common purse'*.

However, many of the inhabitants we interviewed underlined that participating in common activities, for instance dining together is usually a voluntary act. Svanholm's inhabitants clearly state that: "*We have a common purse, common meetings and a common kitchen, but no common dogma. We also have apartments and privacy"* (Hansen 2009 p.7). During our conversation, Freja Rasmussen, who is a resident at Svanholm, also stressed upon the fact that their community is not dogmatic in any way and it is not developed on spiritual or religious fundaments (Rasmussen 2017). Peter Larsen from Munksøgaard acknowledged a tendency of people having prejudice about common dining for instance. According to him, people instantly refer back to the 70's and the hippie movements, so it is important to outline that eco-villagers in Munksøgaard have their private houses and they are not obligated to participate in any common activity (Larsen 2017). Inhabitants from AiH also state: *"We have an aim for a balance between personal freedom and the needs of feeling to live in a community"* (Hjortshøj 2017).

Most of the eco-villages we investigated also contribute to human welfare and equity by promoting social inclusion which results in stronger sense of communality and solidarity. The inhabitants of the eco-communities we investigated represent a vast variety of people in terms of age, social groups, occupations, interests and skills. In Fri & Fro for instance, there are residents with different occupations from the service sector including policemen, teachers, therapists etc. (Jensen 2017). At AiH, people live with many different backgrounds and occupations as well, such as school and kindergarten teachers, engineers, biologists, carpenters, social workers, and also representatives from the art branch (Hjortshøj 2017). Such variety of people is appreciated and strongly valued within communities like this. Christian Lausen, currently involved in developing Soleng, already experienced the advantages of diverse skills and knowledge within a community. One of the residents of Soleng, being a carpenter, contributed by providing the wooden material they used during developing Soleng. Another inhabitant who is an entrepreneur and very knowledgeable about wastewater and power infrastructure has been contributing as well to the development of the village (Lausen 2017). In Munksøgaard, the diversity of people resulted in 100% self-management. Painting their houses, mowing the lawns, maintaining their roads, wastewater and heating system themselves, they do not only reduce their living costs, but enhance their sense of communality (Munksøgaard n.d.).

During our investigation, we found out that eco-villages are not only diverse in terms of occupations, but also in terms of age. A car-free environment and closeness to nature allows kids to play safely and to interact more with the environment. In Svanholm, there is even kindergarten for the youngest children (Rasmussen 2017). At the same time, eco-villages are also suitable for older people, as there is always someone around to offer help in case it is needed. AiH is a great example of an eco-community with a strong sense of inclusion as people with disabilities are also welcome to live there. A collaborative project with the local municipality contributed to providing 16 houses available within the community for people with special needs (Hjortshøj 2017).

The intention of some eco-villages to enhance their sense of community and inclusion results in providing various ownership opportunities as well. In Munksøgaard for instance, there are 5 groups of housings: three of these groups are for rent, one is cooperatively owned and the third group is privately owned. One of the rental groups is for young inhabitants and one is for elders (Hansen 2009). In AiH, there are also inhabitants who own their houses and people who rent houses (Hjortshøj 2017). Furthermore, there are apartments that are available for people in need, such as unemployed or representatives of other marginalized groups, whose rent is covered partly by the municipality. According to Munksøgaard's residents, such a variety of ownership provides an opportunity for people with low, medium and high income to be part of the community (Hansen 2009).

However, even though there are numerous advantages which a diverse eco-community provides, sometimes exactly the variety of people with different backgrounds generates confrontations. Thus, in order to maintain solidarity, a constant communication and discussion among inhabitants is crucial (Jensen 2017).

In this sense, a thorough investigation to the decision-making process of eco-communities is important. Even though this process varies between different eco-settlements, yet we identified a strong intention among inhabitants to apply a political freedom approach which is strictly in line with the degrowth discourse (Liegey et al. 2013).

In Svanholm, inhabitants make their decisions based on consensus. This means that in order to approve a proposal, every individual from the community must agree on it. In case of disagreement, the proposal is not automatically rejected, but the decision-making process is prolonged. This gives a chance to the individual who came up with the proposal to adjust the idea taking into account all the objections and comments gathered during the common meeting. It is also important that the ones who do not agree with the proposal should come up

with an alternative idea which they find as acceptable. In case there are two different objections, the two individuals are usually supposed to discuss and come up with a new proposal (Rasmussen 2017).

In Soleng, the decision-making process is based on the principles of Sociocracy. This process consists of several stages. The first stage is when someone has a proposal they present it in details during the common meeting. The following stage is devoted to reactions from the rest of the community where they can express their feelings regarding the idea. The third stage is a discussion where further improvements of the idea could emerge. This stage allows only reasonable arguments and no feelings to be involved. When it comes to voting, one vote against is enough to cease the implementation of the proposal and all the stages have to be held one more time. According to Christian Lausen, such a decision-making process is democratic and allows everyone's opinion to be taken into account. He believes that such decision-making process empowers individuals to make changes and makes each inhabitant matter. Another advantage of their decision-making system is the fact that proposals and decisions can always be questioned and changed and once they are approved, it does not mean they will last forever. According to Christian, this encourages people to give a chance to new ideas and try new things (Lausen 2017).

Other communities like Munksøgaard, AiH and Fri & Fro have different decision-making processes as well, but overall, they all are aiming to achieve participatory democracy, joint decision-making and a high level of transparency. However, most of the inhabitants we interviewed concede that some of the main internal challenges they face within their community are related to the decision-making process. In case of Svanholm, making decisions especially regarding to the common budget could be certainly challenging (Rasmussen 2017). Niels Aagaard also refers to providing a well-functioning democracy as challenging. In this sense, he believes that being able to avoid conflicts is a precious skill (Aagaard 2017). Lise Reinholdt and Else Jensen who also live in the same community as Niels, share similar thoughts. Furthermore, at AiH, the voluntary participation on decision-making meetings sometimes could be considered as problematic as inhabitants who did not participate on those meetings often oppose to taken decisions and challenge the decision-making process (Hjortshøj 2017).

Living a meaningful life is another idea adopted by most of the eco-villages we approached. Frikøbing for instance has been developed as a project which promotes communality and focus on spending more time with family and at the same time living in a modest way without

spending a fortune on housing or getting into debts (Skands 2017). One of the main goals of the Soleng community is people to have as much time as possible for themselves and their families as well. Christian Lausen from Soleng believes that if people live in a more simple and cheaper manner they could eventually reduce their work hours and spend more time with each other (Lausen 2017). Such descriptions recall Serge Latouche's understanding of happiness as more than just material status, including also quality of life, communality, family and satisfaction of work ***(Chapter 2.1.)*** (Latouche 2009).

Volunteering is a very common approach within the eco-communities we explored. As Ziggie Jensen from Fri & Fro shares: *"Every work we do here, we do it not out of pressure, but because we feel good about it* (Jensen 2017)*".* In Munksøgaard, a common belief that every activity within the community has to be voluntary is adopted as a dominant principle (Larsen 2017).

Niels Aagaard pointed out the problematic aspect deriving from such a voluntary approach. According to him, in order to participate within an activity as a volunteer, available time is a crucial requirement. However, as a part of the fast reality where jobs consume a lot of our time and energy, devoting free time to volunteering is ambitious. As a result, the dynamics and the development of eco-villages could be challenged. Therefore, a very strong consciousness among people is needed in order to maintain constantly such an alternative way of living. People often have a genuine desire to be active within their community, but their job and family duties do not allow them to be committed to voluntary activities (Aagaard 2017). This is the case with AiH, where the initially adopted normative approach based on the idea of residents working outside of the community only four hours per day and devoting the rest of their time to activities within the village was impeded by the demanding mainstream reality which they are still part of (Hjortshøj 2017). Such an attitude - provoked by the prevailing political, economic and social conditions in Denmark - challenges the overall sustainability performance within most of the eco-communities we investigated.

As we already mentioned in our problem presentation, the '*creation of jobs'* argument is one of the main factors which reinforce the current social and economic discourse based on growth. Therefore, looking into eco-communities as an alternative to the mainstream social structures, it is necessary to address the job issue as well. For instance, Peter Larsen believes that creating jobs within the community is a crucial step in order to increase the dynamics and the communality in Munksøgaard. He has been trying to address this issue several times, but the majority of the residents believe that volunteering should remain a dominant principle.

Currently only one person is employed within Munksøgaard (Larsen 2017). In Svanholm, 15 people are employed within the community (Rasmussen 2017). In other communities such as Fri & Fro and AiH, there are people who to some extent acquire their income within the community as entrepreneurs (Jensen 2017; Hjortshøj 2017). In AiH, there are also people with emotional breakdowns employed for few hours per day at the bakery. Their salary is partly covered by funds and partly by the community (Hjortshøj 2017). In Tranehøj, currently none of the residents are employed within the community (Jakobsen 2017), and about Karise Permatopia, Kennet shares that there are no plans for developing job opportunities (Harpsøe 2017). New eco-villages, such as Frikøbing and Soleng, have been considering creating job opportunities and local businesses in the future (Skands 2017; Lausen 2017).

As we could see even though considered as alternative settlements, eco-villages are not completely independent of the mainstream reality, thus cannot be analyzed out of this context. Therefore, it is important to look into their interaction, dependence and relationship with surrounding communities and authorities. Some of the eco-villages we investigate believe in the collaboration with the local municipality and some of them aim towards full self-sufficiency and autonomy. However, all of them maintain positive relationship with their neighbors. This is not surprising, keeping in mind that such communal settlements are not a new phenomenon in Danish settlement history.

For residents of AiH, interacting with the surrounding neighborhoods is considered by residents as crucial for their development as a community. Therefore, they organize the so-called *'Vision meetings'* during which they have an opportunity to exchange knowledge, ideas and experiences with their neighbors. Furthermore, workshops, events and activities within the community are accessible for everyone who would like to participate. People from refugee camps located nearby often take part in common dinners and celebrations organized by the community as well. AiH finds the local municipality supportive to their initiatives and lifestyle, and they even collaborate with each other in different projects. Residents from AiH reckon that such an interaction is beneficial not only for them but also for the district as a whole, contributing for its attractive and innovative image (Hjortshøj 2017).

Roskilde Municipality - where Munksøgaard is located in - is very open and supportive towards their initiatives. This could be easily explained by the fact that within this area, there are around 15 communities similar to Munksøgaard, thus, such a lifestyle does not seem that alternative to the surrounding settlements. Furthermore, being a community was a significant advantage when buying the land on the first place, because the municipality had such a

requirement. However, one of the main principles within Munksøgaard is self-sufficiency, therefore the majority of residents believe that they should aim for complete independence of the municipality and the government in general. There are opponents of such a vision considering it as old-fashioned. According to Peter Larsen, a collaboration with local authorities should not be necessarily regarded as a negative thing (Larsen 2017).

The relationship between Fri & Fro and the nearby villagers is extremely positive as well. Since the beginning of their development, they have been interacting with their neighbors, exchanging ideas and obtaining feedback from them. Today, residents from surrounding villages participate in numerous of activities and initiatives organized by Fri & Fro.

Svanholm, being a 40 years old eco-community, feels like it has been developing together with the local municipality and the whole district (Rasmussen 2017). However, it is an eco-village which intends to achieve a '*decent kind of self-government'*. It was developed as a community within the mainstream political framework, but at the same time following their own rules in many aspects of life. Here, even though there is an intention to increase the power of the community over their resources and to achieve independence to some extent, the community still remains within the prevailing political framework. This status might result in difficulties not only regarding to normative practices within the community, but also influencing cognitive attitudes among the residents. However, having their own internal economic system (which will be presented in ***Chapter 6.2.3.***) and own policies considering traffic, environment, education and health, Svanholm to some extent could be considered as a state within the state. Furthermore, in some aspects, the community overtook the regulative bodies in Denmark for instance by addressing sustainable initiatives and lifestyles long before the Brundtland report came about (Svanholm n.d.).

New eco-villages such as Soleng and Frikøbing also find local municipalities and surrounding neighborhoods supportive and welcoming.

6.2.3. Economic aspects

Analyzing the economic aspects of eco-villages is crucial in order to understand how they thrive in the present economic growth oriented context of Denmark. Finance seems to be a main factor when it comes to developing a project even if the normative basis of this project aims to cease economic profit as a focal point of happiness and prosperity. Exploring several eco-villages in Denmark, almost all of them refer to financial challenges as main ones. Most of the communities were developed without sponsors or any subsidies from organizations or

governmental bodies. Residents of Soleng believe that in order to represent a valid example for alternative lifestyle initiated from the bottom, they must finance the project themselves. With denied loan from the Danish Housing Association, the three families who initiated Soleng had to take a loan from a bank which eventually will be very costly (Lausen 2017). On the other hand, Fri & Fro's inhabitants, following a principle of *'low economy'*, aim to decrease their dependence of loans as much as possible (Jensen 2017). For residents of Frikøbing, looking for financial support was the biggest obstacle for their community. Furthermore, sometimes financial struggles challenge the constancy of the initially adopted normative approach based on communality (Skands 2017).

As alternative social structures, some eco-villages are trying to develop their own internal economic systems aiming at greater independence of the mainstream economic system. Even though most of the eco-communities we explored manage their finances privately and partly share their spending when organizing common activities or events, yet one eco-village stood up with their own internal economic system. In Svanholm, the income of each of the villagers goes to a collective money pool and 20% of their gross domestic income returns back to them and could be spent on *'luxury items'* or activities such as coffee, alcohol, travelling, private cars etc. (Rasmussen 2017). The decision about how the common budget should be spent is taken collectively and according to the inhabitants, such a management procedure helps to continually maintain the sustainability normative adopted as a main principle within the community (Rasmussen 2017).

During our conversation with a representative from Svanholm, she admitted that at the beginning, she and her family were sceptical about this common practice, but later they acknowledged and appreciated the advantages of applying such a system (Rasmussen 2017).

6.3. A comprehensive discussion about the future prospects of eco-communities for growing and spreading in Denmark

We already analyzed the initiatives adopted by eco-villages for promoting environmental, social and economic sustainability. Keeping in mind that their lifestyle peculiarities are very much in line with most of the ideas of degrowth, we will analyze and discuss how eco-communities' lifestyle and initiatives spread in Denmark. We will also investigate in their future perspectives by revealing and discussing opinions about the likelihood of such a lifestyle to become a mainstream one and what should be done in order to make this happen.

Often, eco-villages give an impression to the outside world as being reserved social structures which ignore their connection with the mainstream society. However, such a feeling is mostly relevant when it comes to newly established eco-communities, as initially they mainly focus on organizing their settlement and do not devote essential amount of time to communicate their ideas with external societies (Nissen 2014). Such a tendency was confirmed during our investigation as well. Residents from Soleng, which is an eco-village at the very beginning of their development, concede that currently they are not able to focus on promoting their initiatives as they are primarily occupied with establishing their own community. Yet, they truly believe that once they are settled and all their ideas are implemented in practice, their village will be certainly attractive for people from the outside world. Furthermore, their settlement could be beneficial for the local municipality by serving as a showroom for CO_2 neutral buildings and solutions (Lausen 2017). This is very much in line with the viewpoint of LØS and the community of AiH, who believe that eco-villages could serve as laboratories, where future sustainability practices are compounded.

Residents from Frikøbing also intend to host visitors and educate people interested in sustainable solutions, once they are completely settled down. On the other hand, some of the already settled eco-communities, such as Tranehøj, are trying to dedicate time to communicate their initiatives to the *'outside world'*, but overall they are mainly focused on developing and improving their own community.

Even though it seems like there is a space for improvement in the communication between eco-communities and the *'conventional'* Danish society, yet all of the inhabitants we approached consider such an interaction important. Peter from Munksøgaard truly believes that eco-communities could serve as an example to regular citizens for conscious and more sustainable attitude in terms of their product choice, for instance (Larsen 2017). Furthermore, the practical approach adopted by eco-communities could be a way to communicate an alternative discourse such as degrowth to the mainstream society. This is necessary as today, academic and intellectual criticism to the growth paradigm does not disclose a practical alternative and results in skeptical or negative feedback from the regular society: *"Because it is not enough to criticize the growth paradigm, you have to show how you can live in another way, and they [eco-communities] are doing that*." (Holten-Andersen 2017).

However, nowadays, the growth discourse is embedded in the Danish culture as a cognitive understanding for development, progress and modernization, thus it is challenging to change

peoples' mindset and institutions. Therefore, education is crucial in order to generate a cognitive change towards sustainable behavior and lifestyle (Holten-Andersen 2017).

In this sense, LØS plays an essential role as one of their main goals is focusing on improvement of knowledge and practical experience regarding sustainable lifestyles. This applies to primary schools, technical schools, companies, municipalities, ministries, associations etc. LØS started courses which are open for anyone who is interested, following the Ecovillage Design Education curriculum. The modules consist of social, ecological, economic and cultural - spiritual teachings and the emphasis is on practice (Andersen et al. 2015; Jackson 2004; Aagaard 2017). This curriculum includes a tool created by GEN for eco-communities to plan, build, develop and maintain their own settlement ***(Figure 9)***.

Figure 9: *The wheel of sustainability representing a holistic approach (Nissen 2014).*

Besides educational activities, other communication tools and means are considered useful for promoting sustainable lifestyles. Some eco-villages have been using media including TV, radio and social network to promote their projects and initiatives. LØS also has a quarterly magazine (LØSNET), online newsletter, and published several books about eco-villages and relevant themes (Aagaard 2017). They are also working on the idea of making a newspaper for every municipality in order to provide an agenda on how to make a transition with 40 concrete practical suggestions including circular economy, recycling etc. However, according to Niels Aagaard, in general, the media is extremely passive in terms of raising the awareness about environmental and sustainability problems (Aagaard 2017).

Creating a strong network of actors is another goal of LØS which aims to increase the popularity of the eco-village movement and to promote sustainable lifestyles and solutions. The association works together with other Danish NGOs, such as the National Association for

Practical Ecology (Landsforeningen Praktisk Økologi), the National Association for Sustainable Construction (Landsforeningen Økologisk Byggeri), and Permaculture and Transition Denmark (Permakultur og Omstilling Danmark). The first meeting took place on the renewable energy island of Samsø. The purpose of this collaboration is to have a more powerful voice, which is harder to be ignored by the local and national authorities (Andersen et al. 2015). LØS actively cooperates with GEN Europe and the Baltic Ecovillage Network (BEN), while it also participates in various EU projects and started to facilitate eco-projects in Ghana. Currently, the association is working on a documentary movie which is intended to gather the experiences and examples from Danish eco-villages to help in transferring the best practices to other places of the world (Aagaard 2017).

Furthermore, LØS is trying to build models for transition and to create contact with firms as well in order to learn how this transition could happen in sense of production including food and housing for instance. Meanwhile, the organization acts not just as a civil society movement, but also looks into how to influence the mainstream decision-makers locally. LØS is trying to do their best to communicate their ideas to policymakers and governments, but the politicians within the central government are not interested at all of their initiatives. *"They are in the middle of a dream seeing that there is no problem with the planet and we can do all our consuming and keep on growing the economy."* (Aagaard 2017).

Even though it seems like overall the political spectrum neglects any alternatives to the mainstream sustainable development approach, there are already two parties on the Danish political scene which adopted ideas from degrowth within their political framework. Such a phenomenon was unthinkable a decade ago and even though those two parties do not have a very significant influence on decision-making today, it is still a positive tendency and a sign for progress towards a change (Holten-Andersen 2017). One of those parties, called The Alternative was established in 2013 and has been in the Danish parliament since 2015. Overall, the party is aiming towards sustainable transformation, with emphasis on social and environmental aspects rather than economic ones. According to Uffe Elbæk, the leader of the party: *"We have to rethink and reframe how we understand production and consumption and the way how we develop our country and cities."* (Elbæk 2017) Focusing on the quality of products instead of quantity is crucial in order to adopt sustainable lifestyles. Furthermore, a transition from a *'representative democracy'* to an *'involved democracy'* is necessary (Elbæk 2017).

All this being said, it is important to consider to what extent the Danish society is open for alternatives, and what are the main factors that challenge the change in their cognitive and normative perceptions. Looking into relevant statistics from 2015 made by the independent green think tank Concito about Danes' attitude towards climate change, we found out that 44% of the Danes participated in the research[21] believe that there is a need for a significant change in their lifestyle in order to reduce climate change, while 31% answers that technology can solve the problem without any lifestyle changes. Comparing these results to the outcome from research made by the Pew Research Center, on the same question in other countries significantly more people consider the necessity of changing lifestyles. In Germany those are 75% of the participants, while in the USA, the share is 66% and in China, 58% (CONCITO 2015; Stokes et al. 2015).

Niels Aagaard reckons that even though generally the Danish society is not that open for sustainability and transition, Danes from settlements located close to eco-villages are usually very positive, because eco-communities revive and diversify the local area (Aagaard 2017). During our investigation, we had an opportunity to gather opinions and observations from our interviewees about the Danish society's openness towards alternative lifestyles. All of the inhabitants we approached believe that Danes are open towards alternative lifestyles. It is a major consideration that the number of people who get exhausted from the high-speed, stressful reality and who look for alternative to the 'conventional' lifestyle increases. Slower pace of life, less material consumption and more meaningful life have become more and more attractive among Danes (Larsen 2017; Jensen 2017). There are more and more people who wonder if the growth we have been aiming for so long can be social, cultural, spiritual and meaningful and not only economic growth. However, the common normative understanding of success being equal to material growth reinforces the predominance of the economic growth approach in Denmark (Elbæk 2017).

Another reinforcing factor is based on the normative prejudice among Danes, associating eco-communities with hippie movements (Larsen 2017; Jakobsen 2017). Even a project like Karise Permatopia has been looked upon skeptically, considering it a *'weird project'*. Therefore, the founders prefer to refer to Karise Permatopia as a sensible practical solution whose emphasis is on technical and environmental aspects rather than social.

[21] 2030 Danes were selected for this survey, data collection took place between October 29, 2015 and November 9, 2015, it was an online questionnaire. The sample was selected randomly and divided by sex, age and geography (region) (CONCITO 2015).

Overall the initiatives promoted by eco-villages are spreading around Denmark not only in the rural areas but also in the cities (Aagaard 2017). However, the actual growing of the eco-settlements we investigated is often challenged by different factors. Today, it is extremely difficult to move in to most of the eco-villages we investigated and there are enormously long waiting lists for people who intend to live in already developed eco-settlements. National laws related to rural and urban zoning systems challenge the extension of some of the eco-villages such as Svanholm and Soleng (Rasmussen 2017; Lausen 2017). In AiH, there are requirements set by the municipality in order to rent one of the apartments for people in need as it is a collaborative project where 25% of the rent is covered by the local government (Hjortshøj 2017). At the same time, the tendency for people moving out of eco-villages is extremely low. However, Peter Larsen is positive that there will be many new projects for building eco-villages in Denmark which will manage to meet the increasing interest (Larsen 2017). According to Niels Aagaard, the ideas and initiatives promoted by eco-villages are spreading not only in the rural areas, but in the cities as well (Aagaard 2017).

All this being said, we would like to delve even deeper into the topic and analyze and discuss the likelihood for eco-communities' lifestyle to eventually become a common normative approach; what is needed in order to make that happen and what are the challenges.

Some of the interviewees we approached in the community of AiH believe that their lifestyle will be never spread as a common lifestyle (Hjortshøj 2017). Respondents from other villages truly hope that it will become a mainstream practice (Rasmussen 2017); some reckon that it will for sure become a mainstream approach, no matter if we want it or not (Lausen 2017); and some are explicit: *"It has to become a common lifestyle if we are to survive"* (Holten-Andersen 2017). This vision recalls the argument of ecological economics for an urgent need for a change to a high degree.

But then how, from a mainstream society where the idea of economic growth have shaped our normative and even cognitive senses, we can make a transition to a society where central cognitive and normative institutions are based on environmental and social concerns; something that eco-communities are already doing, or aiming towards?

John Holten-Andersen recalls Denmark during the 70s, where the feeling of *'togetherness'* was the leading feeling which moved the society forward. *"...today we have to revive such a sense of movement that we are moving together; that eco-communities are moving together with the degrowth people, who are moving together with the organic farmers, who are moving together with these new parties and parliaments; that we all are part of one big movement, we*

have to create that sense" (Holten-Andersen 2017). All the interviewees we approached agree that there is a need for joint action where civil society, academia, NGOs, business, media and policymakers all collaborate towards sustainability. Everyone has their role to play during the realization of such a transition. Individuals can make a difference but a renewed institutional framework is necessary in order to change the general picture (Skands 2017). However, during our investigation we found out that some people gave up on hoping that actions from the top will be taken and decided to focus on bottom-up actions (Rasmussen 2017).

The media is often considered as a main factor which reinforces the current economic growth discourse. Here we find it relevant to mention the so-called phenomenon of *'post-factualism'* which refers to a society, whose politics are based on rhetoric instead of science. Even though this phenomenon currently might be mostly relevant in the US context, it is in line with our thoughts and gives a space for further discussions (Busck 2017).

There are more forces which challenge the transition towards a sustainable society in Denmark. Cognitive challenges derive continuously when it comes to a discussion of an alternative to the mainstream growth society. For instance, degrowth as an alternative requires sacrifices of present comforts in order to make a long term difference: '*Of course it would be a sacrifice but people will gain much more than what they lose* (Holten-Andersen 2017). However, even representatives from eco-villages are not yet ready to give up on their present comfort*: "Maybe we have a bit lower Carbon Footprint than others, but we still go to Tasmania"* (Rasmussen 2017).

Another challenge with cognitive/normative character is related to the commonly accepted and already mentioned idea of economic growth being equal of growing employment numbers. At the same time, the job issue seems to appear just few times and not that thoroughly into the critical discourse of degrowth. Our investigation reveals that in practice within eco-communities this issue is not addressed properly as well.

Yet, according to John-Holten Andersen "*exactly the growth paradigm that is also a paradigm of constant rationalisation, constant dismissal of hand labour in favour of machines"* leads to unemployment (Holten-Andersen 2017). Ole Busck also addresses the controversial character of the mainstream *'economic growth = employment growth'* normative perception*: "under the prevailing regimes of free trade and globalisation, it is not certain that high employment is created through continued economic growth. Only the richest few percent of the population appear to be benefitting from it"* (Busck 2016).

Instead of digitalising, there must be bigger emphasis on craftsmanship and eco-communities are doing this (Holten-Andersen 2017). In this sense, it is worth to mention another factor which reinforces the current normative approach of the society; the prejudice about what one calls prestigious job and what not. In the article called *'Life after growth requires closer relationship to natural resources',* Ole Busck summarizes this perception in a simple, yet very representative sentence: "*The dirtier one gets in a line of work, the less prestige it has"* (Busck 2016).

Jobs remain a central topic of discussion when it comes to a transition from an economic growth oriented society towards an alternative sustainable society. Even though, during our investigation we identify that this issue is not addressed properly within eco-communities, it is important to highlight the fact that LØS continues to support the idea of creation of local sustainable businesses and local jobs (Aagaard 2017).

Whilst the question related to job opportunities appears within the scientific field mainly as a topic of uncertainty within the discussions on degrowth rather than eco-villages, yet there are critical voices raising particularly in connection with the eco-settlements as well. A common criticism comes from the scientific field of urban planning and development, highlighting the benefits of living in cities instead of in 'isolated' rural settlements.

In general, eco-villages try to avoid the dense concentration of inhabitants in order to reconnect with nature. Decentralization and re-localization of economic activities is an important point of these intentional communities, therefore, they are usually aiming to achieve a high level of self-sufficiency through the utilization of local resources (Xue 2014). When locating different activities inside the settlement, the goal is also to generate close interaction, social cohesion and autonomy among villagers, just as our study reveals. To sum up, even though the eco-village concept have not originated directly from the thoughts of degrowth, it is in line with the societal arrangements imagined by degrowth; both concepts seem to have essential synergies with each other (Xue 2014; Veciana 2016; Kallis 2017).

From an urban planner's point of view, the most important factors are internal spatial organization, linkage to other settlements and travel distances, because different distributions of densities and locations on various geographical scales usually result in different environmental performances. Given the attributes of eco-villages related to decentralization and localization, these communities require more land per inhabitant than bigger settlements in general (Næss 2001; Xue 2014). Although the reviewed report from Pöyry Energy Consulting concludes different results (Pöyry Energy Consulting 2009), the urban planner

Petter Næss' and Jin Xue's perspective highlights, that despite the advantages of single-family houses arranged with low-density inside the villages (utilizing renewable energies, facilitating local production), the use of energy for space heating purposes increase with this spatial organization, while the thermal efficiency is generally lower than in case of densely built dwellings (Næss 2001; Xue 2014). The decreased thermal efficiency can be explained with the bigger surfaces which enables the heat to leak in during warm season and leak out during the colder months (Xue 2014).

As we perceived during our investigation, the decentralization approach is common within eco-communities in case of energy systems as well, as they are striving to be self-sufficient with different local resources to a high degree. The main difference between centralized and decentralized energy systems is that while the former predominantly rely on power stations which are centralized, the latter is capable to satisfy the energy demand through locally generated power, without the use of the main grids (Kempener et al. 2015). Decentralized energy systems fit adequately to the eco-communities' utilization of renewable energies, although certain challenges and disadvantages exist as well. There is a variety of economic, technical, socio-cultural, institutional and environmental barriers to the dissemination process of these systems, lowering the applicability, cost- and environmental efficiency of them (Yaqoot et al. 2016). The most common drawbacks of decentralized energy systems are their high initial costs and technical issues, such as possible fluctuations in power supply and increased reserve requirements (Altmann et al. 2010). If we take the special case of Denmark, in order to reach the 100% renewable energy target of the country until 2050, a synthesis between municipal and central energy planning should be formed, where both centralization and decentralization is needed. In this scenario, the concrete work on the local level is fundamental, but the effective decentralization can only be realized through simultaneous centralization of strategic energy planning, whereas the necessary responsibilities, instruments and information should be made available for local municipalities (Sperling et al. 2011).

Another issue which can be applied to eco-villages, is the fact that even though they are striving to be as self-sufficient as they can, certain public utilities have to be sprawled and expanded to fulfil the basic needs of residents. We can observe the same, when it comes to the provision of infrastructure, such as public transport. From an environmental point of view, the needed amelioration and rebuilding process carries negative impacts (Xue 2014).

There are empirical studies showing, that the provision of various local facilities does not necessarily imply the increased sense of community and localized activities (Tait 2003), and

eco-villagers do not live strictly within the boundaries of their own settlement. They also have other functional destinations outside their community, where various services, job opportunities, leisure facilities, universities and hospitals are situated. This results in increased weekly total traveling distances and the more frequent use of cars among residents compared to inhabitants of an urban area (Naess 2012). Even though in some of the examined cases of this study, eco-communities have, or planning to have their own shared carpool or car-sharing scheme (Hansen 2009; Skands 2017; Hjortshøj 2017), they also experience problems and difficulties being highly dependent on their privately owned cars and commuting regularly (Jakobsen 2017).

7. Conclusion

Economic growth has been shaping the World's normative discourse regarding societal development for decades. The current neo-liberalist political economic system that prevails in the West, aims towards capital accumulation and continuous profit-making, promoting materialism and consumerism which result in environmental degradation and over-utilization of natural resources. Politicians, policymakers, businesses and individuals adopted monetary profit as a fundamental principle of their existence, actions and decisions, which results in social inequalities, lack of social welfare, poverty and conflicts. Sustainable development has been built as a concept which aims to fight against such social, economic and environmental injustices, yet does not address central issues which cause them. Failure of the state and the market to address major sustainability issues and to provide an appropriate and effective approach towards sustainability increases the need for actions from the bottom, including civil society and grassroots organisations. Even though there are academic critiques towards growth, they do not provide a clear practical approach for transition towards sustainability. On the other hand, in the context of Denmark, eco-villages - alongside with initiatives like green consumer and organic farming cooperatives - provide a model for such a transition, where economic growth and profit-seeking are not core principles. Instead, communality, solidarity, democracy and environmental consciousness define them as social structures. Denmark - as a country where a strong sense of communality has been rooted in the national history - is a favorable environment for settlements as eco-villages to thrive, grow and spread. However, prejudices which are mainly developed as a result of the mainstream normative social, political and economic approach in Denmark, limit the performance of the eco-villages in many ways and challenge their sustainability. Moreover, the lack of will for depriving comfort also does not allow eco-villages to provide a completely *'independent-from-growth'* approach towards sustainability. Remaining part of the contemporary society, eco-villagers are still dependent on public utilities and jobs, which in most of the cases are situated in bigger settlements. Even though there is an intention within eco-communities to develop local job opportunities as part of their decentralized approach, they are still facing barriers in realizing this in practice. Critics towards their decentralized way of living have been addressed by many urban and energy planners as well, highlighting the fact that not all aspects of sustainability are covered efficiently by eco-communities.

All this being said, the current investigation contributes to the scientific field of environmental management and sustainability science, not only by providing an

understanding of the current state and challenges of eco-communities in Denmark, but also by giving a notion about the likelihood for such a lifestyle to spread and become more attractive in Denmark. Furthermore, our investigation suggests further discussions and research within the topic, especially in order to explore eco-communities as a viable model for transition towards sustainability in the context of other countries, for example in post-communist ones.

8. Bibliography

Aagaard, N., 2017. Telephone interview. Interviewed by: Trifonova M., Párdi P. (04-04-2017)

Adloff, F., 2016. Degrowth Meets Convivialism: Pathways to a Convivial Society. Available at: https://www.degrowth.de/en/2016/08/degrowth-meetsconvivialism-pathways-to-a-convivial-society/ [Accessed March 29, 2017].

AILE, 2007. *Purification function of Short Rotation Willow Coppice*, Available at: http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.showFile&rep=file&fil=LIFE04ENVFR320_PurificationFonctionofSRC.pdf.

Altmann, M. et al., 2010. *Decentralised Energy Systems*, Brussels. Available at: http://www.europarl.europa.eu/document/activities/cont/201106/20110629ATT22897/20110629ATT22897EN.pdf.

Andersen, B.H. & Sørensen, J., 2015. Agriculture in Denmark. , (April), pp.1–19. Available at: http://noah.dk/wp-content/uploads/2015/05/Agriculture-in-Denmark.pdf.

Andersen, S.K., Nissen, D. & Aagaard, N., 2015. *En bæredygtig omstilling af Danmark: LØS strategi 2015-2019*, Vig. Available at: http://okosamfund.dk/wp-content/uploads/En-bæredygtig-omstilling-af-Danmark-LØS-strategi-2015-10.pdf.

Asara, V. et al., 2015. Socially sustainable degrowth as a social–ecological transformation: repoliticizing sustainability. *Sustainability Science*, 10(3), pp.375–384. Available at: http://link.springer.com/article/10.1007/s11625-015-0321-9.

Bagley, C., Sawyerr, A. & Abubaker, M., 2016. Dialectic Critical Realism: Grounded Values and Reflexivity in Social Science Research. *Advances in Applied Sociology*, 6(12), pp.400–419. Available at: http://www.scirp.org/journal/PaperDownload.aspx?DOI=10.4236/aasoci.2016.612030.

Baltzarsen, M. & Gormsen, C., 2014. *Den rigeste 1 pct. ejer ca. en tredjedel af formueværdien i Danmark*, Available at: https://cevea.dk/filer/old/materialer/analyser/notat_om_formuefordeling_i_danmark.pdf.

Bates, A.K., 2003. Ecovillages. In K. Christensen & D. Levinson, eds. *Encyclopedia of Community: From the Village to the Virtual World*. Thousand Oaks: SAGE Publications, Inc., pp. 424–425. Available at: http://sk.sagepub.com/reference/community/n160.xml.

Bauler, T., 2013. Political Ecology. Available at: http://www.ejolt.org/2013/02/political-ecology/ [Accessed May 23, 2017].

van den Bergh, J.C.J.M., 2001. Ecological economics: themes, approaches, and differences with environmental economics. *Regional Environmental Change*, 2(1), pp.13–23.

Bhaskar, R., 2008. *A Realist Theory of Science*, New York: Routledge. Available at: http://uberty.org/wp-content/uploads/2015/09/Roy_Bhaskar_A_Realist_Theory_of_Science.pdf.

Bhattacherjee, A., 2012. *Social Science Research: Principles, Methods, and Practices*, University of South Florida. Available at: http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=1002&context=oa_textbooks.

Broadbridge, E., Warren, C. & Jonas, U., 2011. *The School For Life - N. F. S. Grundtvig on Education for the People*, Aarhus: Aarhus University Press. Available at: https://ebookcentral.proquest.com/lib/aalborguniv-ebooks/reader.action?docID=1050577 [Accessed March 14, 2017].

Brown, H.S. & Vergragt, P.J., 2014. From Consumerism to Wellbeing: Towards a Cultural Transition? , pp.1–13. Available at: https://co-munity.net/system/files/3230.pdf.

Burton, M., 2016. Again and again: supposed evidence for decoupling emissions from growth is not what it seems. Available at: http://www.degrowth.de/en/2016/03/once-again-supposed-evidence-for-decoupling-emissions-from-growth-is-not-what-it-seems/ [Accessed March 9, 2017].

Busck, O., 2017. Face-to-face interview. Interviewed by: Trifonova M., Párdi P. (21-02-2017)

Busck, O., 2016. Life after growth requires closer relationship to natural resources. *Information.dk*. Available at: https://www.information.dk/debat/2016/12/livet-vaeksten-kraever-taettere-forhold-ressourcerne?lst_cntrb.

Campbell, J.L., 2007. Institutional Reproduction and Change. *The Oxford Handbook of Comparative Institutional Analysis*. Available at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.465.1572&rep=rep1&type=pdf.

Cattaneo, C. et al., 2012. Degrowth futures and democracy. *Futures*, 44(6), pp.515–523. Available at: http://degrowth.org/wp-content/uploads/2012/11/Introduction-Degrowth-futures-and-democracy.pdf.

Causa, O. et al., 2016. *Inequality in Denmark through the Looking Glass*, Paris. Available at: http://dx.doi.org/10.1787/5jln041vm6tg-en.

Chrintz, T., 2012. *Klimabelastning og import af Soya*, Frederiksberg. Available at: http://hveiti.dk/sites/default/files/Klimabelastning og import af soja - februar 2012.pdf.

City of Copenhagen, 2014. *Copenhagen City of Cyclists - The Bicycle Account 2014*, Copenhagen. Available at: http://www.cycling-embassy.dk/wp-content/uploads/2015/05/Copenhagens-Biycle-Account-2014.pdf.

Clean Heat, 2016. *Residential wood burning. Environmental impact and sustainable solutions*, Available at: http://www.clean-heat.eu/en/actions/info-material.html.

CONCITO, 2015. *Klimabarometeret 2015*, Available at: http://concito.dk/files/dokumenter/artikler/klimabarometeret_2015_endelig_0.pdf.

Cosme, I., Santos, R. & O'Neill, D.W., 2017. Assessing the degrowth discourse: A review and analysis of academic degrowth policy proposals. *Journal of Cleaner Production*, 149, pp.321–334.

Costanza, R., 1989. What is ecological economics? *Ecological Economics*, 1(1), pp.1–7. Available at: http://www.uvm.edu/~jfarley/EEseminar/readings/What is ecological economics.pdf.

Creswell, J.W., 2014. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* 4th ed., SAGE Publications Inc.

Czech, B., 2009. Ecological economics. In R. J. Hudson, ed. *Animal and Plant Productivity*. Oxford, UK: Eolss Publishers. Available at: https://www.steadystate.org/wp-content/uploads/Czech_Ecological_Economics.pdf.

D'Andrade, R.G., 1984. Cultural meaning systems. In R. A. Shweder & R. A. LeVine, eds. *Culture theory: Essays on mind, self, and emotion*. Cambridge: UK: Cambridge University Press, pp. 88–119. Available at: https://books.google.dk/books?isbn=0521318319.

Dalgaard, R.L., 2007. *The environmental impact of pork production from a life cycle perspective*. University of Aarhus, Aalborg University. Available at: http://gefionau.dk/lcafood/Afhandling36.pdf.

Danish Agriculture & Food Council, 2016a. *Facts and figures about Danish agriculture and food*, Copenhagen. Available at: http://www.agricultureandfood.dk/~/media/lf/tal-og-analyser/aarsstatistikker/facts-and-figures/facts-and-figures-2016/facts-and-figures-rev2.pdf.

Danish Agriculture & Food Council, 2014. *Facts and Figures about Danish agriculture and food*, Copenhagen. Available at: http://www.agricultureandfood.dk/~/media/lf/tal-og-analyser/aarsstatistikker/fakta-om-erhvervet/2014/facts-and-figures/facts-and-figures-2015.pdf.

Danish Agriculture & Food Council, 2016b. *Statistics 2015 - Pigmeat*, Copenhagen. Available at: http://www.lf.dk/~/media/lf/tal-og-analyser/aarsstatistikker/statistik-svin/2015/22163-065-16-a5-statistik-svin-2015-uk-v2-web.pdf?la=da.

Danish Energy Agency, 2016. *Energy in Denmark - a green transition*, Available at: https://www.comillas.edu/images/catedraBP/Foro_2016/Larsen_Energy in Denmark_a green transition-Energistyrelsen 2016.pdf.

Demailly, D. et al., 2013. A post-growth society for the 21st century. , (November), pp.1–76. Available at: http://www.iddri.org/Publications/Collections/Analyses/Study0813_post-growth society.pdf.

Demaria, F. et al., 2013. What is degrowth? From an Activist Slogan to a Social Movement. *Environmental Values*, 22(2), pp.191–215. Available at: http://www.jnu.ac.in/sss/cssp/What is degrowth.pdf.

Department for International Development UK, 2008. *Growth: Building Jobs and Prosperity in Developing Countries*, Department of International Development.

Dittrich, M. et al., 2012. *Green economies around the world? Implications of resource use for development and the environment*, Vienna. Available at: https://www.boell.de/sites/default/files/201207_green_economies_around_the_world.pdf.

Drouin, R., 2015. Wood Pellets: Green Energy or New Source of CO2 Emissions? *YaleEnvironment360*. Available at: http://e360.yale.edu/features/wood_pellets_green_energy_or_new_source_of_co2_emissions [Accessed May 20, 2017].

Dubois, A. & Gadde, L.-E., 2002. Systematic combining: An abductive approach to case research. *Journal of Business Research*, 55(7), pp.553–560. Available at: http://www.sciencedirect.com/science/article/pii/S0148296300001958.

Easterlin, R.A., 1980. Does rapid economic growth improve the human lot? Some empirical evidence. *Social Indicators Research*, 8(2), pp.199–221. Available at: https://www.researchgate.net/publication/226098638_Does_Rapid_Economic_Growth_Improve_the_Human_Lot_Some_Empirical_Evidence.

Ebbinghaus, B., 2005. *Can Path Dependence Explain Institutional Change? Two Approaches Applied to Welfare State Reform*, Available at: http://search.proquest.com/docview/1002710808?accountid=9630 LA - English.

Elbæk, U., 2017. Telephone interview. Interviewed by: Trifonova M., Párdi P. (05-04-2017)

EUROSTAT, 2016. Greenhouse gas emissions by industries and households. Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Greenhouse_gas_emissions_by_industries_and_households [Accessed March 19, 2017].

EUROSTAT, 2015. People in the EU – statistics on household and family structures. Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/People_in_the_EU_–_statistics_on_household_and_family_structures [Accessed March 4, 2017].

Fantom, N. & Serajuddin, U., 2016. *The World Bank's Classification of Countries by Income*, Available at: http://documents.worldbank.org/curated/en/408581467988942234/pdf/WPS7528.pdf.

FAO, 2013. Current Worldwide Annual Meat Consumption per capita, Livestock and Fish Primary Equivalent. Available at: http://faostat.fao.org/site/610/DesktopDefault.aspx?PageID=610#ancor [Accessed March 1, 2017].

Fischer-Kowalski, M. et al., 2011. *Decoupling Natural Resource Use and Environmental Impacts from Economic Growth* International Resource Panel, ed., Available at: http://www.unep.org/resourcepanel/decoupling/files/pdf/Decoupling_Report_English.pdf.

Fleming, T., 2000. Habermas, democracy and civil society: Unearthing the social in transformation theory. In C. Wiessner, S. Meyer, & D. Fuller, eds. *Challenges of practice: Transformative learning in action*. New York, pp. 303–308. Available at: https://core.ac.uk/download/pdf/11523840.pdf.

Flyvbjerg, B., 1998. Habermas and Foucault: Thinkers for Civil Society? *The British Journal of Sociology*, 49(2), pp.210–233. Available at: http://www.jstor.org.zorac.aub.aau.dk/stable/pdf/591310.pdf.

Fuusager, H.B., 2016. Faktatjek: Bæredygtigt Landbrug overdriver landbrugets betydning. *dr.dk*. Available at: https://www.dr.dk/nyheder/indland/faktatjek-baeredygtigt-landbrug-overdriver-landbrugets-betydning [Accessed April 7, 2017].

Gaffney, O. & Steffen, W., 2017. Introducing the terrifying mathematics of the Anthropocene. *The Conversation*. Available at: https://theconversation.com/introducing-the-terrifying-mathematics-of-the-anthropocene-70749 [Accessed March 20, 2017].

Garden, M., 2006. The eco-village movement: Divorced from reality. *The International Journal of Inclusive Democracy*, 2(3), pp.1–5. Available at: http://www.inclusivedemocracy.org/journal/vol2/vol2_no3_Garden_eco_village.htm.

Georgescu-Roegen, N., 1971. *The Entropy Law and the Economic Process*, Harvard University Press. Available at: https://www.slideshare.net/LocalMoney/part-1-of-3-the-entropy-law-and-the-economic-process-nicholas-georgescuroegen?qid=00ae7318-6a1c-4aa5-8a8b-47c1b8bdcb1f&v=&b=&from_search=4.

Giljum, S. et al., 2014. Global Patterns of Material Flows and their Socio-Economic and Environmental Implications: A MFA Study on All Countries World-Wide from 1980 to 2009. *Resources*, 3, pp.319–339. Available at: http://www.mdpi.com/2079-9276/3/1/319.

Gilman, R., 1991. The Eco-village Challenge The challenge of developing a community living in balanced harmony - with itself as well as nature - is tough, but attainable. *Living Together*, 29. Available at: http://www.context.org/iclib/ic29/gilman1/.

Hansen, K., 2009. Lifestyle Change as Climate Strategy: Reduction of CO2 from 3 different eco-villages in Denmark. *Løsnet*, (61–62), pp.4–9. Available at: http://svanholm.dk/fileadmin/user_upload/Virksomheder/perma/Lifestyle_change_as_climate_strategy.pdf.

Hardoon, D., Fuentes-Nieva, R. & Ayele, S., 2016. *An Economy For the 1%: How privilege and power in the economy drive extreme inequality and how this can be stopped*, Oxford. Available at: https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp210-economy-one-percent-tax-havens-180116-en_0.pdf.

Harpsøe, K., 2017. Telephone interview with representative of Karise Permatopia. Interviewed by: Trifonova M. (06-03-2017)

Harvey, D., 2014. *Seventeen Contradictions and the End of Capitalism*, London: Profile Books Ltd. Available at: http://www.thewhitereview.org/features/seventeen-contradictions-and-the-end-of-capitalism/.

Haunstrup, T., Aleneboende sætter pres på ressourcerne. Available at: http://nytfokus.nu/nummer-8/aleneboende-saetter-pres-paa-ressourcerne/ [Accessed March 5, 2017].

Helliwell, J., Layard, R. & Sachs, J., 2017. *World Happiness Report 2017*, New York. Available at: https://s3.amazonaws.com/sdsn-whr2017/HR17_3-20-17.pdf.

Hjortshøj, 2017. Field visit to the Co-operative Society in Hjortshøj. Conducted by: Trifonova M., Párdi P. (12-04-2017)

Holm, J., Stauning, I. & Søndergård, B., 2008. Fri og Fro - Climate Change and Innovation in the Building Sector. *climatebuildings.dk*. Available at: http://climatebuildings.dk/frifro.php [Accessed May 17, 2017].

Holmgren, D., 2012. Essence of permaculture. Available at: https://permacultureprinciples.com/wp-content/uploads/2013/02/Essence_of_Pc_EN.pdf.

Holten-Andersen, J., 2017. Face-to-face interview. Interviewed by: Trifonova M. (30-03-2017)

IOM, 2011. *Glossary on migration* 2nd ed. R. Perruchoud & J. Redpath-Cross, eds., International Organization for Migration. Available at: http://www.epim.info/wp-content/uploads/2011/01/iom.pdf.

IPCC, 2014. *Fifth Assessment Report (AR5)*, Geneva. Available at: http://www.ipcc.ch/report/ar5/index.shtml.

Jackson, H., 1998. What is an Ecovillage? *Gaia Trust Education Seminar*, (September), pp.1–15.

Jackson, R., 2004. The Ecovillage Movement. *Permaculture Magazine*, pp.1–11. Available at: http://gaia.org/wp-content/uploads/2016/07/JTRJ_EV-Movement2004.pdf.

Jackson, T., 2009. *Prosperity Without Growth: Economics for a Finite Planet* 1st ed., London, Sterling: Earthscan.

Jakobsen, G., 2017. Telephone interview with representative of Tranehøj. Interviewed by: Trifonova M., Párdi P. (10-04-2017)

Jänicke, M., 2008. Ecological modernisation: new perspectives. *Journal of Cleaner Production*, 16(5), pp.557–565. Available at: http://www.sciencedirect.com/science/article/pii/S0959652607000480.

Jensen, Z., 2017. Telephone interview with representative of Fri & Fro. Interviewed by: Párdi P. (24-03-2017)

Jespersen, K.J.V., 2003. *History: Factsheet Denmark*, Available at: http://denmark.dk/~/media/Denmark/Documents/Society/History-2003-en.pdf?la=en.

Kærgaard, N., 2006. The foundation for the Danish Welfare State: Ethnic, Religious and linguistic harmony. In *XIV International Economic History Congress, Session 22*. Helsinki, pp. 1–24. Available at: http://www.helsinki.fi/iehc2006/papers1/Kaergard.pdf.

Kallis, G., 2017. *In defense of Degrowth: Opinions and Minifestos* A. Vansintjan, ed., Creative Commons. Available at: https://indefenseofdegrowth.com/.

Kallis, G., 2015. The Left Should Embrace Degrowth. *The New Internationalist*. Available at: http://www.countercurrents.org/kalis111115.htm.

Karise Permatopia, 2016. Ressourcekredsløb. Available at: http://www.permatopia.dk/andelsselskab/ [Accessed May 15, 2017].

Kempener, R. et al., 2015. *Off-Grid Renewable Energy Systems: Status and Methodological Issues*, Available at: http://www.irena.org/DocumentDownloads/Publications/IRENA_Off-grid_Renewable_Systems_WP_2015.pdf.

Klitgaard, K.A. & Krall, L., 2012. Ecological economics, degrowth, and institutional change. *Ecological Economics*, 84, pp.247–253. Available at: http://dx.doi.org/10.1016/j.ecolecon.2011.11.008.

Kothari, A., Demaria, F. & Acosta, A., 2015. Sustainable development is failing but there are alternatives to capitalism. *The Guardian*. Available at: http://www.theguardian.com/sustainable-business/2015/jul/21/capitalism-alternatives-sustainable-development-failing?CMP=new_1194&CMP= [Accessed March 9, 2017].

Kvale, S. & Brinkmann, S., 2008. *Interviews - Learning the Craft of Qualitative Research Interviewing* 2nd ed., SAGE Publications.

Larsen, P., 2017. Telephone interview with representative of Munksøgård. Interviewed by: Trifonova M. (26-03-2017)

Latouche, S., 2009. *Farewell to Growth*, Cambridge: Polity Press.

Lausen, C., 2017. Telephone interview with representative of Soleng. Interviewed by: Trifonova M. (26-03-2017)

Lawson, M., 1991. *N.F.S. Grundtvig: Selected Educational Writings*, Skive: The International People's College and The Association of Folk High Schools in Denmark. Available at: http://www.danishfolkhighschools.com/media/812385/full_text_n.f.s._grundtvig_selected_educational_writings.pdf.

Lešinský, D., *Introducing AGROKRUH: An effective system for sustainable growing and marketing of vegetables on a family farm*, Zvolen. Available at: http://ekumakad.cz/download/IVF/CEPTA - Introducing AGROKRUH.pdf.

Levin, G., 2006. *Dynamics of Danish Agricultural Landscapes and the Role of Organic Farming. PHD Thesis*. National Environmental Research Institute, Roskilde University. Available at: http://www.dmu.dk/Pub/phd_GL.pdf.

Liegey, V. et al., 2013. *A Degrowth Project, Manifesto for an Unconditional Autonomy Allowance* 1st ed., Éditions Utopia.

Likavčan, L. & Scholz-Wäckerle, M., 2017. Technology appropriation in a de-growing economy. *Journal of Cleaner Production*, pp.1–10. Available at: http://www.sciencedirect.com/science/article/pii/S0959652616321977.

Lindberg, E., 2017. Economic Growth - A Primer. *Resilience.org*. Available at: http://www.resilience.org/stories/2017-02-22/economic-growth-a-primer/ [Accessed March 9, 2017].

Lipschutz, R.D., 2005. Power, Politics and Global Civil Society. *Journal of International Studies*, 33(3), pp.747–769. Available at: https://ic.ucsc.edu/~rlipsch/Pol272/Lipschutz_33_3.pdf.

Løkke, S., 2016. *Institutional Analysis: "Three Pillars" - Regulative, Normative and Cognitive Institutions*, Aalborg: Aalborg University, Department of Development and Planning.

Lorenzen, M. & Bredsdorff, M., 2016. Three approaches to limit climate impact of food production. Available at: https://ing.dk/artikel/tre-tilgange-til-begraense-klimaeffekten-af-foedevareproduktion-183340 [Accessed March 1, 2017].

LØS, Medlemmer. Available at: http://okosamfund.dk/medlemmer/#det-ny-samfund-thylejren [Accessed May 13, 2017].

Lukka, K. & Modell, S., 2010. Validation in interpretive management accounting research. *Accounting, Organizations and Society*, 35(4), pp.462–477. Available at: http://dx.doi.org/10.1016/j.aos.2009.10.004.

Lund University, 2016. Economic development equals greater carbon footprint, greenhouse gas emissions. *ScienceDaily*. Available at: https://www.sciencedaily.com/releases/2016/04/160412090304.htm [Accessed May 29, 2017].

M'Gonigle, M.R., 1999. Ecological economics and political ecology: towards a necessary synthesis. *Ecological Economics*, 28(1), pp.11–26. Available at: http://www.polisproject.org/PDFs/toward_nec_synthesis.pdf.

Mahoney, J. & Thelen, K., 2010. A Theory of Gradual Institutional Change. In J. Mahoney & K. Thelen, eds. *Explaining Institutional Change: Ambiguity, Agency, and Power*. New York: Cambridge University Press, pp. 1–10. Available at: http://assets.cambridge.org/97805211/34323/excerpt/9780521134323_excerpt.pdf.

Martínez-Alier, J., 2012. Environmental Justice and Economic Degrowth: An Alliance between Two Movements. *Capitalism, Nature, Socialism*, 23(1), pp.51–73. Available at: http://www.tandfonline.com/doi/abs/10.1080/10455752.2011.648839.

Martínez-Alier, J., 2001. International Encyclopedia of the Social & Behavioral Sciences. *International Encyclopedia of the Social & Behavioral Sciences*, pp.4016–4023. Available at: http://www.sciencedirect.com/science/article/pii/B0080430767041358.

Martínez-Alier, J. et al., 2010. Sustainable de-growth: Mapping the context, criticisms and future prospects of an emergent paradigm. *Ecological Economics*, 69(9), pp.1741–1747. Available at: http://dx.doi.org/10.1016/j.ecolecon.2010.04.017.

Martínez-Alier, J. & Muradian, R., 2015. Taking stock: the keystones of ecological economics. In J. Martínez-Alier & R. Muradian, eds. *Handbook of Ecological Economics*. Cheltenham, UK: Edward Elgar Publishing, pp. 1–25.

Mingers, J., 2006. Philosophical Foundations: Critical Realism. In *Realising Systems Thinking: Knowledge and Action in Management Science*. Springer US, pp. 11–31. Available at: http://link.springer.com/chapter/10.1007%2F0-387-29841-X_2.

Modvækst, Hvad er modvækst? Available at: http://www.modvaekst.dk/modvaekst/ [Accessed March 26, 2017].

Monbiot, G., 2017. This is how we take back control: from the bottom up. *The Guardian*. Available at: https://www.theguardian.com/commentisfree/2017/feb/08/take-back-control-bottom-up-communities?CMP=fb_gu [Accessed March 8, 2017].

Munksøgaard, Sustainable technology. Available at: http://www.munksoegaard.dk/en/sustainable.html [Accessed May 17, 2017].

Naess, P., 2012. Urban form and travel behavior: experience from a Nordic context. *Journal of Transport and Land Use*, 5(2), pp.21–45. Available at: https://www.jtlu.org/index.php/jtlu/article/view/314.

Næss, P., 2001. Urban Planning and Sustainable Development. *European Planning Studies*, 9(4), pp.503–524. Available at: http://www.tandfonline.com/doi/abs/10.1080/713666490?journalCode=ceps20.

Neumann, R.P., 2005. *Making Political Ecology* A. B. Murphy, ed., Routledge.

New Economics Foundation, 2009. *The Happy Planet Index 2.0: Why good lives don't have to cost the Earth*, London. Available at: https://static1.squarespace.com/static/5735c421e321402778ee0ce9/t/578de9f729687f525e004f7b/1468918272070/2009+Happy+Planet+Index+report.pdf.

Nielsen, O.-K. et al., 2015. *Denmark's National Inventory Report 2015. Emission Inventories 1990-2013 - Submitted under the United Nations Framework Convention on Climate Change and the Kyoto Protocol*, Available at: http://dce2.au.dk/pub/SR171.pdf.

Nissen, D., 2014. *Lifestyle Change as Climate Strategy*, Copenhagen. Available at: www.livingknowledge.org/lk6/wp-content/uploads/2014/04/LK6_Full-paper-book_April-2014.pdf.

NOAH, NOAH - Historie. *Friends of the Earth Denmark*. Available at: https://www.noah.dk/historie [Accessed May 1, 2017].

Norgård, J.S., 2013. Happy degrowth through more amateur economy. *Journal of Cleaner Production*, 38, pp.61–70. Available at: http://dx.doi.org/10.1016/j.jclepro.2011.12.006.

Nunes, L.J.R., Matias, J.C.O. & Catalão, J.P.S., 2014. A review on torrefied biomass pellets as a sustainable alternative to coal in power generation. *Renewable and Sustainable Energy Reviews*, 40, pp.153–160. Available at: http://dx.doi.org/10.1016/j.rser.2014.07.181.

OECD, 2002. GROSS DOMESTIC PRODUCT (GDP). Available at: https://stats.oecd.org/glossary/detail.asp?ID=1163.

Østergaard, U., 2000. Danish National Identity: Between Multinational Heritage and Small State Nationalism. In H. Branner & M. Kelstrup, eds. *Denmark's policy Towards Europe After 1945 : History, Theory and Option*. Odense University Press, pp. 139–184. Available at: http://kultuffe.dk/284 [Accessed February 28, 2017].

Ostrom, E., 2005. Understanding the Diversity of Structured Human Interactions. *Understanding Institutional Diversity*. Available at: http://press.princeton.edu/chapters/s8085.pdf.

Pedersen, H., 2006. *Economy: Factsheet Denmark*, Available at: http://www.netpublikationer.dk/um/7473/pdf/Economy.pdf.

Pöyry Energy Consulting, 2009. *Project Report: CO2 emissions in eco-societies*, Available at: http://voresomstilling.dk/sites/default/files/attached_files/Livsstilsforandringer som klimastrategi_CO2 analyse i tre danske økosamfund.pdf.

Ramírez-Monsalve, P., 2016. *Institutional Change*, Aalborg: Aalborg University, Department of Development and Planning.

Raskin, P. et al., 2002. *Great Transition. The Promise and Lure of the Times Ahead*, Boston. Available at: http://greattransition.org/documents/Great_Transition.pdf.

Rasmussen, F.N., 2017. Telephone interview with representative of Svanholm. Interviewed by: Trifonova M., Párdi P. (21-03-2017)

Reichel, A., 2015. Re-taking Sustainable Development for Degrowth. *Degrowth.de*. Available at: https://www.degrowth.de/en/2015/12/re-taking-sustainable-development-for-degrowth/ [Accessed March 25, 2017].

Robbins, P., 2012. Political versus Apolitical Ecologies. In *Political Ecology: A Critical Introduction*. Wiley-Blackwell, pp. 14–24. Available at: http://media.wiley.com/product_data/excerpt/94/EHEP0022/EHEP002294-81.pdf.

Roberts, J.M., 2014. Critical Realism, Dialectics, and Qualitative Research Methods. *Journal for the Theory of Social Behaviour*, 44(1), pp.1–23. Available at: http://onlinelibrary.wiley.com/doi/10.1111/jtsb.12056/abstract.

Røpke, I., 2005. Consumption in ecological economics. *Internet Encyclopaedia of Ecological Economics*, pp.1–19. Available at: http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Consumption+in+ecological+economics#0.

Røpke, I., 2015. Er dansk økonomi bæredygtig?: Grundlæggende ideer i økologisk økonomi. *Samfundsfagsnyt*, pp.20–26. Available at: http://vbn.aau.dk/files/222858046/Samfundsfagsnyt_2015_Er_dansk_konomi_b_redygtig.pdf.

Sachs, W., 1999. *Planet Dialectics*, London: Zed Books.

Sachs, W., 2010. *The Development Dictionary: A Guide to Knowledge as Power* 2nd ed., London: Zed Books. Available at: http://shifter-magazine.com/wp-content/uploads/2015/09/wolfgang-sachs-the-development-dictionary-n-a-guide-to-knowledge-as-power-2nd-ed-2010-1.pdf.

Sayer, A., 2000. Key Features of Critical Realism in Practice: A Brief Outline. In *Realism and Social Science*. SAGE Publications, pp. 10–28.

Schmidt, J.H. & Muños, I., 2014. *The carbon footprint of Danish production and consumption: Literature review and model calculations*, Copenhagen. Available at: http://vbn.aau.dk/files/196725552/_dk_carbon_footprint_20140305final.pdf.

Schneider, F., Kallis, G. & Martinez-Alier, J., 2010. Crisis or opportunity? Economic degrowth for social equity and ecological sustainability. Introduction to this special issue. *Journal of Cleaner Production*, 18(6), pp.511–518. Available at: http://dx.doi.org/10.1016/j.jclepro.2010.01.014.

Schumacher, E.F., 1973. *Small Is Beautiful: Economics as if people mattered*, New York: Harper & Row.

Scott, W.R., 2001. Constructing an Analytic Framework I Three Pillars of Institutions. In *Institutions and Organizations*. London: SAGE Publications, pp. 47–70. Available at: http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Institutions+and+Organizations#0.

Scott, W.R., 2005. Institutional Theory. In G. Ritzer, ed. *Encyclopedia of social theory*. Thousand Oaks: SAGE Publications, Inc., pp. 409–414. Available at: http://sk.sagepub.com/reference/socialtheory/n155.xml.

Secretariat of the Convention on Biological Diversity, 2014. *Global Biodiversity Outlook 4. A mid-term assessment of progress towards the implementation of the Strategic Plan for Biodiversity 2011-2020*, Montréal. Available at: https://www.cbd.int/gbo4/.

Shmelev, S.E., 2012. *Ecological Economics. Sustainability in Practice*, Springer.

Skands, M., 2017. Telephone interview with representative of Foreningen Frikøbing. Interviewed by: Párdi P. (28-03-2017)

Spash, C.L., 2015. The content, direction and philosophy of ecological economics. In J. Martínez-Alier & R. Muradian, eds. *Handbook of Ecological Economics*. Cheltenham, UK: Edward Elgar Publishing, pp. 26–47.

Sperling, K., Hvelplund, F. & Mathiesen, B.V., 2011. Centralisation and decentralisation in strategic municipal energy planning in Denmark. *Energy Policy*, 39(3), pp.1338–1351. Available at: http://dx.doi.org/10.1016/j.enpol.2010.12.006.

Stanton, E.A., 2007. *The Human Development Index: A History*, Available at: http://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1101&context=peri_workingpapers.

Statistics Denmark, 2016. *Denmark in Figures*, Copenhagen. Available at: http://www.dst.dk/Site/Dst/Udgivelser/GetPubFile.aspx?id=21500&sid=denmark2016.

Stokes, B., Wike, R. & Carle, J., 2015. *Global Concern about Climate Change, Broad Support for Limiting Emissions*, Available at: http://www.pewglobal.org/2015/11/05/global-concern-about-climate-change-broad-support-for-limiting-emissions/.

Streeck, W. & Thelen, K., 2005. Introduction: Institutional Change in Advanced Political Economies. In W. Streeck & K. Thelen, eds. *Beyond continuity: institutional change in advanced political economies*. Oxford University Press, pp. 1–39. Available at: http://www.ssoar.info/ssoar/handle/document/19498.

Sultana, A. & Kumar, A., 2012. Ranking of biomass pellets by integration of economic, environmental and technical factors. *Biomass and Bioenergy*, 39, pp.344–355. Available at: http://dx.doi.org/10.1016/j.biombioe.2012.01.027.

Svanholm, Self-government at Svanholm. Available at: http://svanholm.dk/index.php?id=75 [Accessed May 20, 2017].

Tait, M., 2003. Urban villages as self-sufficient, integrated communities: a case study in London's Docklands. *Urban Design International*, 8(1), pp.37–52. Available at: https://link-springer-com.zorac.aub.aau.dk/article/10.1057/palgrave.udi.9000092.

The Alternative, Party programme. Available at: https://alternativet.dk/en/politics/party-programme [Accessed May 4, 2017].

The Red-Green Alliance, The Red-Green Alliance. Available at: https://org.enhedslisten.dk/red-green-alliance-0 [Accessed May 1, 2017].

Tranehøj, K., English summary. Available at: http://www.tranehoej.dk/en_summery.html [Accessed May 17, 2017].

UNDP, 2010. *Human Development Report 2010: The Real Wealth of Nations: Pathways to Human Development*, New York. Available at: http://hdr.undp.org/sites/default/files/reports/270/hdr_2010_en_complete_reprint.pdf.

UNDP, 2015. *Human Development Report 2015. Work for Human Development*, New York. Available at: http://hdr.undp.org/sites/default/files/2015_human_development_report.pdf.

United Nations, 2012. *Resilient People, Resilient Planet: A future worth choosing*, New York. Available at: http://en.unesco.org/system/files/GSP_Report_web_final.pdf.

United Nations, 2016. *The Sustainable Development Goals Report*, New York. Available at: https://unstats.un.org/sdgs/report/2016/The Sustainable Development Goals Report 2016.pdf.

United Nations, 1992. *United Nations Framework Convention on Climate Change*, Available at: https://unfccc.int/resource/docs/convkp/conveng.pdf.

Urhammer, E., 2016. *Political Perspectives on Economic Growth and Sustainability - from narrative to models*. Aalborg University. Available at: http://www.emilurhammer.net/wp-content/uploads/2017/02/Urhammer-PhD.pdf.

Vatn, A., 2009. An institutional analysis of methods for environmental appraisal. *Ecological Economics*, 68(8–9), pp.2207–2215. Available at: http://dx.doi.org/10.1016/j.ecolecon.2009.04.005.

De Vaus, D.A., 2001. The context of design. In *Research Design in Social Research*. London: SAGE Publications, pp. 1–16. Available at: http://research.apc.org/images/5/5f/De_Vaus_chapters_1_and_2.pdf.

Veciana, S., 2016. *Synergies between Degrowth and the Global Ecovillage Network*, Budapest. Available at: http://www.degrowth.de/en/2016/09/synergies-between-degrowth-and-the-global-ecovillage-network/.

Victor, P., 2010. Questioning economic growth. *Nature*, 468(7322), pp.370–371.

Wackernagel, M. et al., 2002. Tracking the ecological overshoot of the human economy. *Proceedings of the National Academy of Sciences of the United States of America*, 99(14), pp.9266–9271. Available at: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=123129&tool=pmcentrez&rendertype=abstract.

Weber de Morais, G., Schlüter, A. & Verweij, M., 2015. Can institutional change theories contribute to the understanding of marine protected areas ? *Global Environmental Change*, 31, pp.154–162. Available at: http://www.sciencedirect.com/science/article/pii/S0959378015000102.

WWF, 2012. *Living Planet Report 2012: Biodiversity, biocapacity and better choices*, Gland. Available at: http://www.footprintnetwork.org/images/uploads/LPR_2012.pdf.

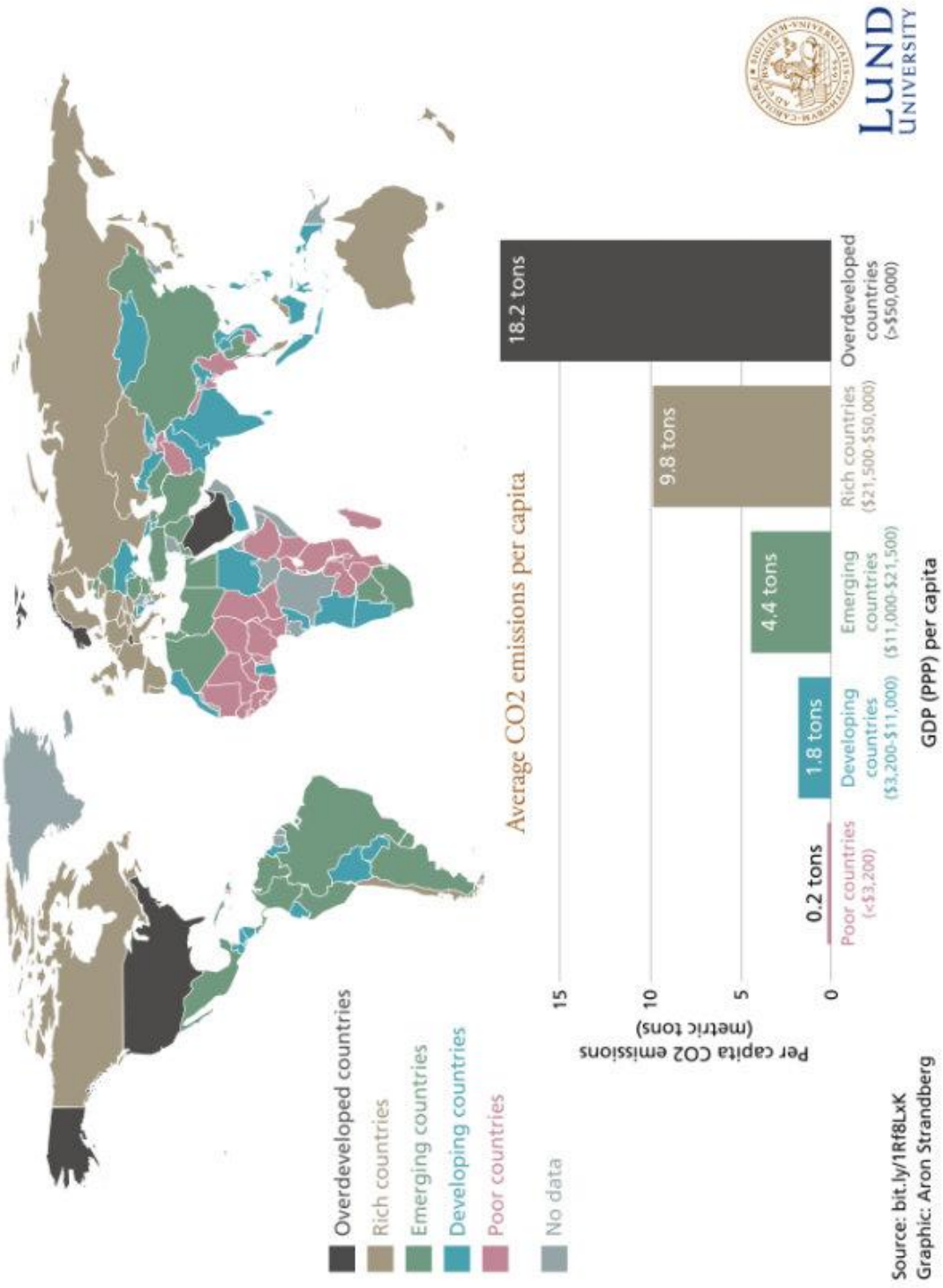
WWF, 2016. *Living planet report 2016: Risk and resilience in a new era*, Gland. Available at: http://awsassets.panda.org/downloads/lpr_living_planet_report_2016.pdf.

Xue, J., 2014. Is eco-village/urban village the future of a degrowth society? An urban planner's perspective. *Ecological Economics*, 105, pp.130–138. Available at: http://dx.doi.org/10.1016/j.ecolecon.2014.06.003.

Yaqoot, M., Diwan, P. & Kandpal, T.C., 2016. Review of barriers to the dissemination of decentralized renewable energy systems. *Renewable and Sustainable Energy Reviews*, 58, pp.477–490. Available at: http://dx.doi.org/10.1016/j.rser.2015.12.224.

9. Appendix

9.1. Annex I



Map 1: *Infographic illustrating the close relation between economic prosperity and high carbon footprints (Lund University 2016).*