AALBORG UNIVERSITET

STUDENT PROJECT

TRANSPARENCY IN MONITORING&EVALUATION OF CONSTRUCTION PROJECTS

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IRIS ENGHIS

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STUDENT:

Iris Enghis

SUPERVISOR:

Arne P. Rasmussen

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Synopsis

The research conducted by student: Iris Enghis enrolled in the Master Programme in Management of Building Industry at Aalborg University; aims to understand how subsidised projects are monitored and evaluated in order to provide a transparent process for the client and comply with the quality demands.

The beginning of the report is presented in context of Monitoring and Evaluation (M&E), to offer the reader an overview and comprehension within the subject.

Further analysis are made according to the building case study "Støvring Bytorv" and tools within Result Based Monitoring and Evaluation (RBME) are applied to find out the core problem of this research such as: What are the factors impending quality?

Quality is achieved through an elaborated M&E plan described in Implementation Chapter. Furthermore, Byggeriets Evaluering Center (BEC) provides the benchmark system to enable a transparent process for the client and evaluation of projects in terms of quality and efficiency.

ABSTRACT

Management in the construction sector looks continuously on how industry practices can be improved. New philosophies emerge constantly and in contrast to traditional methods, new modern approaches take place. Result Based Management (RBM) is one of them, focusing on achieving results and improving performance within construction projects.

Project Managers are encouraged to pay more attention to Monitoring and Evaluation (M&E) system as an important part of the project process. For successful construction projects M&E is essential, in order to track progress and detect failure or defects. Even with minor defects, re construction may be required resulting in increased costs and delays, compromising quality of the work performed. Therefore M&E should be done in all phases of the project cycle to minimize failures and reduce costs.

Before implementation, projects must be carefully planned. Through planning, a number of analyses are required to find out stakeholder's interests, problem and objective analysis and the appropriate strategy for the project in cause. The aim of the analysis is to find out what are the objectives the project should achieve.

Byggeriets Evaluerings Center (BEC) is an organisation established in Denmark and through the Construction Rating system the aim is to provide quality and efficiency during project process.

There are specific obligations of the contractor and advisor to comply with certain Key Performance Indicators (KPI) in order to ensure a transparent qualitative process for the client. The quality of the project will be measured and evaluated in terms of relevance, feasibility and effectiveness in achieving its results.

Acronyms

RBM - Result Based Management

M&E - Monitoring and Evaluation

RBME - Result Based Monitoring and Evaluation

KPI - Key Performance Indicators

BEC - Byggeriets Evaluerings Cente

PREFACE

The report is conducted by Iris Enghis student of Aalborg University enrolled in Management of the Building Industry program (MSc). The project was written during September 2015 until January 2016.

This research has a theoretical approach placing a great emphasis on managerial methodologies. There was used methodologies such as Theory of change, Result Based Management, Project Cycle Management, Traditional Monitoring and Evaluation and tools such Logical Framework, Result Chains or the Result Based Monitoring and Evaluation Cycle. These have been deeply investigated as part of a learning process and applicability to the Case Study. The student has collaborated with Kuben Management and the information was provided in relation to the Case Study: Støvring Bytorv and the company Kuben Management. The information was used for descriptions and analysis.

There has been elaborated a result chain for this specific project in order to show which are the objectives that are monitored and evaluated throughout the project life cycle. The objectives, long, medium and short have been approved by the project manager Michael Gabba from Kuben Management. See Appendix 1. “Objectives Approval”.

Regarding monitoring of activities, explanations of procedures and key performance indicators are given according to Byggeriets Evaluerings Center. Additionally, a Monitoring and Evaluation Plan guidelines are suggested on how project managers should collect, track and document their work. Moreover, standard templates by Byggeriets Evaluering Center are provided as extra information to show how is done practically in Appendix 6.

The procedures provided by Byggeriets Evaluerings Center and the guidelines in M&E plan, should offer sufficient documentation to provide a transparent process for the client.

Other remarks during the writing of this research refer to collaboration with the two project managers of the project, namely the client advisor and contractor. Communication can be different between shareholders and external parties due to different construction language and terms.

Many thanks to Arne P.Rassmunsen, Michael Gabba, Christian Hannesbo and Theis Nørlem for participation, support and knowledge share to conduct this research.

The report consists of three parts – Main report, Appendix and Annex. All the additional information provided to support the given statements and results in the Main report can be found in the Appendix and Annex.

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1. REPORT INTRODUCTION

Report introduction presents for the reader why Monitoring and Evaluation is important in the Construction Industry and which are the research objectives that this paperwork strives to answer. Moreover a literature review is presented to prove the reliability of information collected and how collaboration was undertaken in conducting this research. Scientific research methodologies have been used to further analyze data and come up with a conclusion at the end of this paperwork.

There is a great demand in construction projects to provide a good performance feedback system. Stakeholders are interested nowadays in better performance and progress monitoring, to be one of the most important tasks in construction management. For successful construction projects, there needs to be made assessment how goals are achieved over time. There has been a continuous development in this subject, starting from *Strategic planning* - by identifying clear and measurable objectives, selecting indicators and setting targets, then *Performance measurement* by adding performance monitoring systems, reviewing, analyzing and reporting actual results and lastly, *Results based performance management* has evolved, where evaluation findings were introduced to provide complementary information and using performance indicators for accountability, learning, resource allocation, decision making and reporting to stakeholders.

Result Based Monitoring and Evaluation (RBME) is a powerful approach through which progress can be tracked for decision making and impacts can be demonstrated. The focus is on impact and outcome, rather than on activities and inputs. This is due to the fact that stakeholders demands are on project results, as previously mentioned their interest in better performance. There has been a growing recognition for investment in Monitoring and Evaluation (M&E), because at first it was lacking established indicators and links between inputs and outcomes. Moreover, the attention has been directed towards client surveys and governments have invested increasingly in IT platforms to support Result Based Management (RBM).

Monitoring and Evaluation has become an executive order in Denmark construction industry since 11th of April 2008, which means builders are obliged now to participate in the collection and evaluation of data within project design and implementation.

This research is looking at key figures for advisors and contractors, as demands are different. Advisors key figures are based more on the systematic customer satisfaction survey and for contractors key figures are based more on factual measurements. The client can now select advisors and contractors based on their performance from previous projects. The research objectives of this paperwork are to find out how transparency is enhanced in Monitoring and Evaluation of Construction Projects to make sure quality is delivered as agreed by the client, using a particular case study: Støvring Bytorv. The principle of transparency understands construction process as transforming inputs into outputs by enabling better communication and evidence of project process. It is also important to differentiate how procedures within M&E are different for advisor's client and for the total contractor employed by the client. The Project chose for this investigation is a public subsidy by municipality and the client is a housing association agency.

1.1. LITERATURE REVIEW

Within this research there has been used academic and relevant references regarding Monitoring and Evaluation methodology. This includes Monitoring and Evaluation guides and manuals and other relevant documents certified by organizations such as: DPCD (Department of Planning and Community Development) IFRC (International Federation of Red Cross) IDRC (International Development Research Centre, European Commission Civil Fund, BEC (Byggeriets Evaluerings Center) DCED (Donor Committer for Enterprise Development) Byggerreraadgivning and UNDG (United Nations Development Group).

The IDRC M&E Manual interlinks PCM (project cycle management) with LFA (logical framework approach). "Implementation Guidelines to articulate Result chains" by DCED has been used to link LFA with RBM to further investigate how projects can monitor progress towards objectives, to better measure, manage and demonstrate results, which part of RBM philosophy. In addition, the IFRC Guide starts by explaining Result Based Management as an overall concept that contains Monitoring and Evaluation. RBM is adding to PCM monitoring the quality aspect of service delivery, by explaining the actual results versus planned ones. RBM can be seen as a whole system that is incorporated in the culture of an organisation and its projects. RBME as the tool for RBM looks at the project cycle and comprises 6 stages that are planned and designed at the same time with the project. RBME cycle is used in order for M&E to be successful. And according to Result Based Performance Monitoring and Evaluation (RBPME) Toolkit there are 6 stages starting from project design and finishing with the implementation of the project, namely:

1. Programming
2. Identification
3. Formulation
4. Appraisal
5. Implementation
6. Evaluation

After understanding the stages of PCM in relation to Monitoring and Evaluation, IFRC proposes six key steps to develop the M&E Plan, that are further used as guidelines to develop the plan:

1. Identifying the purpose and scope of M&E System
2. Planning for information gathering and data management
3. Planning for critical process and data analysis
4. Planning for quality communication and reporting
5. Planning for necessary conditions and capacity
6. Prepare the M&E Budget

Moreover, Evaluation is further presented in Step by step guide by DPCD, where guidelines are presented on how assessment is performed through four processes, namely:

1. Thinking:

- Describing the purpose
- Identifying end products
- Considering budgets and timeline

2. Planning:
- Defining objectives
- Establish Evaluation questions
- Identifying information needed to answer the questions
- Reviewing the Evaluation Plan
3. Collecting:
- Identifying methods of data collection
- Overlaying timelines and budget
- Considering Privacy and Ethical Issues
4. Communicating: by utilising findings and contracting.

1.2. COLLABORATION

The report has been conducted in collaboration with project manager: Michael Gabba from Kuben Management, as the client advisor and project manager Christian Hannesbo as the total contractor from TL Byg and his assistant Theis Brønning Nørlem for the development of Støvring Bytorv Project. This dissertation has been made under the supervision and guidance of Arne P. Rasmussen, who provided during the writing of this research paper: constructive feedback, suggestions and direction to improve its content, through supervision meetings.In Appendix 2 are included the discussions with both project managers.

The collaboration was done through emails, interviews and site visits. The format of the interviews was structured and directed in a way that discussions regarded only Monitoring and Evaluation system and quality procedures. To direct discussions, interviewees were informed about the aim of the study, and opinions were collected from both project managers.

Michael Gabba has provided the necessary documents about Kuben Management such as the presentation of the company, quality management policy and risk analyses attached in Annex A, to get an overall idea of the company performance. For the project in Støvring there has been provided architect drawing, engineer drawings, bidding list, invitation to tendering, work specification, the turnkey contract and the BNKI catalogue from TL Byg. All these documents can be found in Annexes A, B, C and D.

The access for the project in Støvring has been granted through Byggeweb. Byggeweb is a web portal with access granted for all parties involved in the project and the client to ensure a better cooperation. Byggeweb working method integrates 5D virtual construction process into physical process to ensure a digitalized way of working.

As already discussed, there has been made investments in IT platforms to better digitalise, which is also the case with Byggeweb, a great initiative for construction project stakeholders. Within Byggeweb, data is gathered and handled into separate information silos throughout the project process: project setup, design, quantity take off, estimating, tendering, contracting, site preparation, site contracting, material procuring, controlling and invoicing, in order to prevent errors and time waste.

1.3.RESEARCH METHODOLOGY

The main methods employed to generate results have been done through primary and secondary data plus the qualitative and quantitative methods. Primary and secondary research methods are appropriate in order to differentiate data that is important with regard to Monitoring and Evaluation for better quality, and avoid irrelevant details such as secondary data.

Quantitative refers to measuring the status or change of a specific variable through numerical results. Qualitative methods are the information gathered by asking the participants about their observations and beliefs through textual descriptions. Qualitative information can be also quantified meaning that by clustering opinions in groups qualitative results can be subtracted.

Monitoring and Evaluation focus in the past has been more on the quantitative data, however nowadays is balanced by qualitative data. Quantitative offers more information than qualitative data because of the specific key performance indicators (KPI), but quantitative can be also useful in the M&E System if it is clear and specific about the topic of interest.

Qualitative data is used throughout Analysis chapter, where the application of RBME cycle and LFA approach, provides descriptive results. Quantitative data is used in the evaluation catalogue as key performance indicators to provide more depth information. Both project managers from Kuben Management and TL Byg use the key performance indicators requested by Byggeriets Evaluerings Center (BEC). Additionally, Ajour System Program is used for documentation.

Data collection is done throughout the project cycle and it has been collated, summarized and analysed. Collation represents grouping together related items to provide a record of events and facilitate further processing. Collation in this context uses the information from Monitoring and Evaluation findings to structure it to arrive later on to a conclusion that leads to action.

Data collection is verified through triangulation, by collecting data from different sources. In this way both project managers were asked to make sure data collection is valid. The purpose of data collection within Monitoring and Evaluation system is to provide informed decision making for improving project results. *"As a general rule, data collection and analysis should be undertaken with those to whom the data, analysis and decisions pertain and therefore, at the relevant level."* (Fund)

Moreover, through triangulation data can be verified, by collecting information using different methods such as: sampling, core M&E through stakeholder's analysis and questionnaires, discussion methods such as brainstorms and methods for time-based patterns of change such as diaries and photographs. There are also, methods for analysing relationships and linkages such as problem tree and methods for ranking and prioritization matrices, see chapter 5.5.3.8 LFA Matrix. In the table below are listed the methods used in this report.

Methods such as Stakeholders analysis, problem analysis, objective analysis and log frame, are used in a structured way by choosing Logical Framework Approach LFA, as a great tool for analysing data and planning. In the log frame, data is summarised and for each indicator listed in this matrix, there are used different methods, accordingly to Støvring Bytorv project. Indicators for monitoring would be: if the project is running on schedule also if the project is running within planned costs

and receives adequate costs. Regarding documents for monitoring finances, such as running within planned costs have not been made available, only documents regarding time monitoring.

Choosing Methods of collecting data is based upon costs, reliability of data, skills needed and ability to quantify results. The methods presented below and used within Støvring Bytorv do not necessitate any increased costs, than the prices for data collection.

Methods	*Description*
Stakeholder Analysis	Identifies participants and information to be included in M&E.
Documentation Review	Helps to track and understand the evolution of a project. It can help establish a baseline, or information on a specific indicator.
Direct Observation	Used to obtain useful and timely information by observing what people do. This often complements statistical data.
Semi-Structured Interviews	Used to gain information from an individual or small group, using a series of broad questions to guide conversations. These allow for building an in-depth understanding of issues.
Case Study	Used to document the sequence of events, or story related to a person, location, group or any other unit of investigation. This provides useful information into impact.
M&E matrix	A table describing the performance questions, information gathering requirements (including indicators), reflection and review events with stakeholders, and resources and activities required to implement a functional M&E system.

Adapted from (Fund)

For evaluation, most used methods are: First-hand information regarding the progress, performance, schedule and problem areas of a project. These are analyzed with direct observations and formal/ informal periodic reports consisting of project status report, project schedule report and project financial status report.

Informal reports can be as anonymous letters, press reports and complaints. Moreover, graphic representations: Flow charts are the most fundamental tools used to enhance monitoring and evaluation through a visual representation of the process with inputs, outputs and actions. The flow chart helps all the staff to be on the same page and presents information that is easy for everyone to understand. In case a flowchart is not enough there are also scatter diagrams, histograms, pareto or cause and effect diagrams.

The report is written to comply with the academic demands, semester curriculum and within the Harvard style system referencing.

2. INTRODUCTION MONITORING AND EVALUATION (M&E)

This chapter describes Monitoring and Evaluation (M&E) as the planning phase whereas the project manager has responsibility for. The chapter ends by explaining the M&E System advantages and disadvantages and the importance of M&E System. The basis for M&E contains the Logical Framework, activity schedule, project budget and implementation schedule, which will be further discussed in the next chapters.

2.1. WHAT IS MONITORING

"Monitoring is the systematic process of collecting, analysing and using information to track progress towards reaching its objectives and to guide management decisions. The focus is on the process such as where the activities occur, who delivers them and how many people they reach."
(Dunn) Progress is measured through the activities completed and use of funds.

Monitoring is part of the planning stage where results and experiences can be documented and used for decision making and learning process. The data collection is used for the next step, which is evaluation. Monitoring main purposes are: Learning from past experiences to improve practices and activities in the future, increase the likelihood of achieving results, account the resources used and the resources obtained and empower the ones taking the action. It measures the progress towards the outcomes and identifies the factors impending achievement. The main differences between monitoring and evaluation are timing, frequency of observations and the types of question asked. In the figure below an example of monitoring questions are presented in relation to Result Chain.

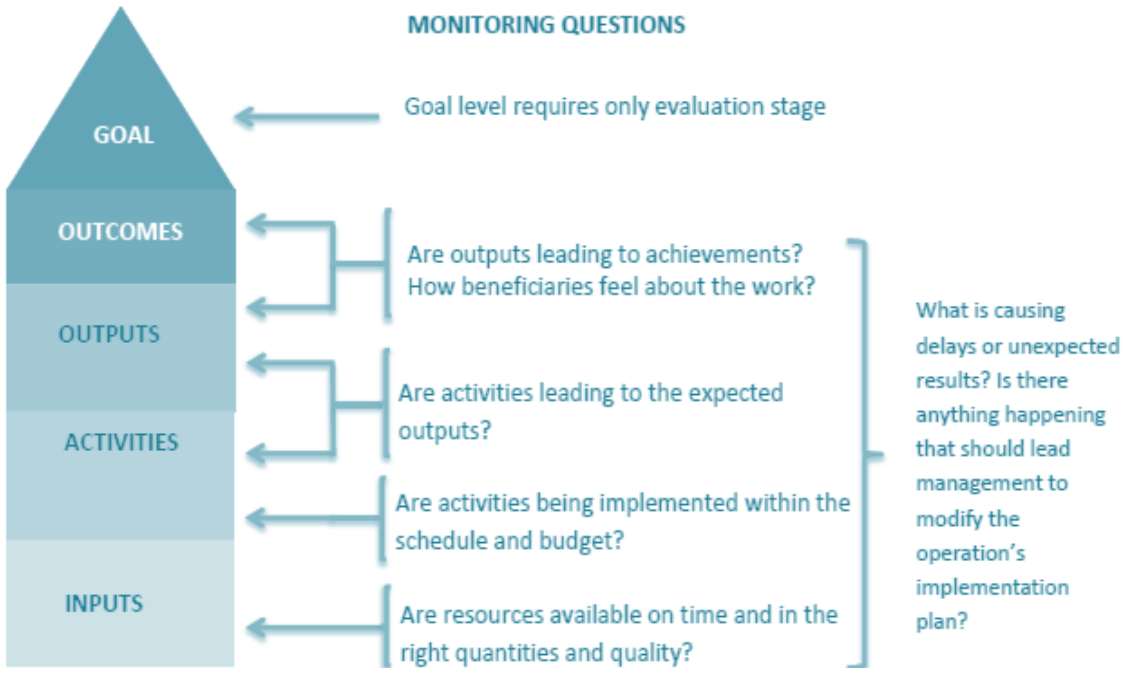


Figure 1 Monitoring questions linked to result chain Source: (Societies 13)

Monitoring is done as day to day basis management, however there are different levels of monitoring regarding to the periodicity and the information required;

- ***Weekly monitoring*** is done for activities to make sure progress has been made, see client demands description in *3.11 Client Specifications and Condition to Total Contractor*, where according to the case study these are weekly meetings to check progress monitoring of the project. Documents such as time and financial planning versus actual results are used, and represent quantitative methods of collecting and assessing data.

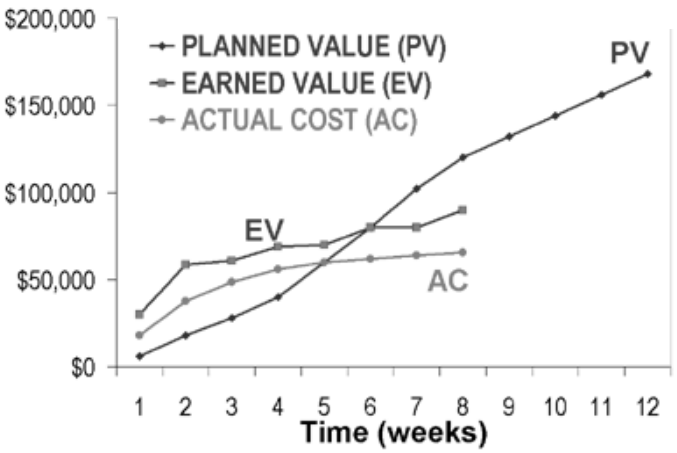


Figure 2 Earned value performance management Source: (PMIS)

Earned value performance management ***(EVPM)*** is a technique that can be used, as seen in the diagram below, through which project performance is measured. It combines scope with time and costs, where:
PV is the planned value;
AC is the actual costs;
EV is the approved costs for actually completed task by the specified date;

$$EV = PV * (\%\ of\ work\ completed\ out\ total\ work\ planned\ by\ that\ time).$$

Moreover other KPI's for cost and time are measured through Cost Variance **(CV)**, Schedule Variance **(SV)**, Cost Performance Index **(CPI)** Schedule Performance Index **(SPI)**, Estimated Cost at Competition and Estimated Time to Complete, as part of EPVM. The rest of formulas are included in Appendix 4.

- ***Monthly monitoring*** is done to see resources used and cost incurred in relation to implementation progress.
- ***Quarterly monitoring*** is done to see if desired results are achieved.
- ***Six- Monthly monitoring*** is done to see at what extent results are still relevant to the project purpose, also to see what are the changes in project environment and if assumptions are held true. This is monitored according to the log frame matrix, where indicators and assumptions are specified for each activity monitored. See Chapter 5.5.3.8 Log Frame Matrix.

Monitoring can be classified as *Activity/Process Monitoring* or *Results Monitoring*. In this paperwork, the concern is more about results monitoring as it measures the projects progress towards reaching its objectives. In this context Monitoring is not just a tool for improving projects performance but also it helps project managers to report information to donors, partners and internal stakeholders. Activity Monitoring is used only for daily operations to asses' compliance with schedules, budgets and work plans; therefore Result Monitoring is more appropriate by focusing on result achievements within this research.

When designing a monitoring plans there are weaknesses that should be considered by the project manager and by the ones that use it. This weakness regards the choice, design and testing of tools, such as: choosing tools that are either too expensive, complex, not tested or adapted; lack of training from the staff, commitment from stakeholder's participation may lack, monitoring system can only satisfy demands but there needs to be commitment for everyone involved in the process, the framework defined by Monitoring may lead to interpretations; therefore it has to be clearly defined. (Societies)

2.2. WHAT IS EVALUATION

Evaluation is assessing a completed project or a phase of an ongoing project. Evaluations are done to use the data and information into strategic decisions and improving the projects in the future.
"Evaluation does not aim to replace decision makers experience and judgement, but rather offers systematic evidence that informs experience and judgement" (Weiss)

The focus is on achieved accomplishments, examining the result chain (input, activities, outputs outcomes and impacts) and processes to understand the achievements or the lack of it. Evaluation differs from monitoring in three aspects: timing, focus and level of detail however they complement each other. Evaluation has 5 main aspects: relevance, effectiveness, efficiency, impact and sustainability. It answers the question: What went well and what can be improved, therefore it has also learning from experience function. (What is Monitoring and Evaluation (M&E))

- ***Efficiency*** refers to getting more output from a minimum input by doing less and accomplishing more. In other words, how the outputs and outcomes are related to the amount of time and resources used.

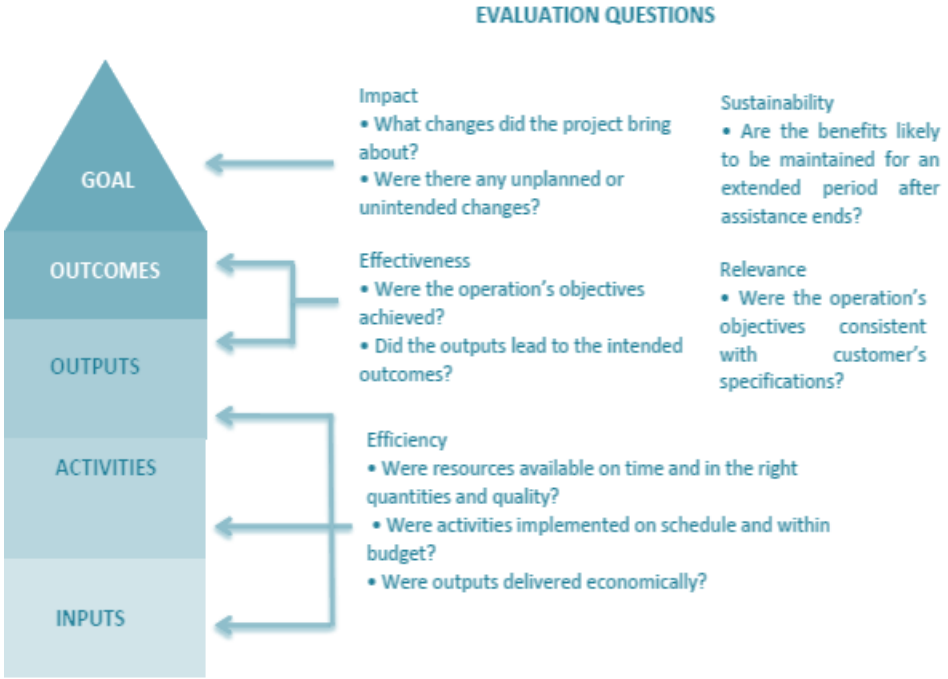


Figure 3 Evaluation questions linked to result chain Source: (Societies, s. 16)

- ***Effectiveness*** descries if the research process was useful in reaching project goals and objectives. "Efficiency is doing things right; effectiveness is getting the right things done."
- ***Relevance*** describes the usefulness, ethics and flexibility of a project within the particular context.
- ***Impact*** refers to the positive or negative changes produced by an intervention, directly or indirectly intended or unintended.
- ***Sustainability*** is concerned with measuring whether the benefits of an activity are likely to continue after the project has ended.

An example of evaluation questions are presented in the figure above. However these questions must be formulated later accordingly to the project being monitored and evaluated. Relevance is a key aspect.

Evaluation can be done during implementation, often called as *mid –term*, at the end known as *final evaluation* or afterwards known as *post evaluation*.

- ***Mid-term evaluation*** reviews the progress of the project and changes can still be made during project design or during the remaining period of implementation. These can be done by involving the client in taking a customer satisfaction survey. See 6.3.1.2 Process Evaluation.
- ***Final evaluation*** is documenting the use of resources, results and progress towards reaching objectives.
- ***Post evaluation*** is done only after some years to assess the impact, which takes place after a period of time.

Evaluation can be classified as formative or summative, depending on the purpose of the evaluation. Formative evaluations only strengthen or improve the object being evaluated while Summative evaluation will examine the effects or outcomes of the project.

In other words, formative evaluations happen at the beginning of the project in the development phase while for summative evaluations, the projects are assessed at the end of the operating cycle. The results obtained at the end of the project can be used to see if the program can be adopted, continued or modified.

As in the case with Monitoring, in this paperwork the focus is on achieving results, therefore summative evaluation is the appropriate one. Its purpose is to assess, determine the overall impact and estimate the relative costs of the intervention. Summative evaluation can also be subdivided as:

- ***Outcome evaluation***: focusing on achievement of outcomes
- ***Impact evaluation:*** focusing weather the specific aims of performance, strategy, practices, products, experiences, policies, programs and technologies have achieved endpoints outcomes.
- ***Cost effectiveness and cost benefit analysis*** are based on financial evaluation, to determine the feasibility of strategies, programs, products, experiences, policies, and technologies with regard to monetary costs and ROI (return on investment)
- ***Secondary analysis*** is based on empirical materials and data to reflect in issues or implementation strategies without previous application.

- ***Meta-Analysis*** represents the statistical analysis of a large collection of analysing results from individual studies for the purpose to integrate findings. (Turk)

Evaluation is different from assessment. Evaluation examines the processes or outcomes to facilitate the project development, implementation and improvement while assessment focuses more on the individual performance by measuring their skill level based on the interest.

2.3. CHALLENGES TO M&E SYSTEM

Within Management a system is defined as a framework of policies, processes and procedures used by an organization needs to fulfil the tasks required to achieve objectives. As with any other system there are advantages and disadvantages. Within Monitoring and Evaluation these are:

- Monitoring and evaluation requires time and commitment from the project manager
- Underestimating the importance of monitoring and evaluation
- Weak commitment regarding the process of collecting data and documenting evidence
- Lack of incentives to carry out evaluation
- Going into useless detail
- Lack of interpretation data
- Lacking professional expertise; it is therefore recommended an expert from outside to conduct monitoring and evaluation; however it is an expensive procedure.
- Underutilization of M&E data as it is not just paperwork to be put aside, but represents and collects valuable data about the process and progress of a project that can be used later on for other projects alike. (results)

2.4. ADVANTAGES OF M&E SYSTEMS

Monitoring and evaluation program can reduce costs and increase rehabilitation by minimizing failures. Through evaluation, the project manager can find out what is working and what is not, create staff development process through identifying weaknesses and strengths and improving reputation by adding existing knowledge in the field.

It can also improve project management and process planning by better adapting to risk factors such as social and power dynamics that generally affects the research process. Moreover, it improves learning by identifying lessons learned that affect outcome and impact.

Through direct participation the various stakeholders understand each other views and values and can design ways to resolve conflicting interests. Even a project with good planning, adequate organizational machinery and sufficient flow of resources, may not achieve the desired results, if there is not a warning mechanism for the organizations possible success or failure. By constant monitoring and evaluation it is possible to save the waste of scarce resources and ensure a lean execution of the project.

Lastly, monitoring and evaluation ensures accountability by assessing if the project is effectively appropriate. Monitoring is rather descriptive and evaluation leans to be more interpretive. However

evaluation is not possible without monitoring. Evaluation purpose is to improve projects and justification. After an evaluation is performed, conclusions can be taken with regard to:

- Has the project achieved its goal?
- How the project has achieved its intended purpose?
- How efficient was converting resources into activities, objectives and goals
- How sustainable was the project for the participants?
- Decision makers can be informed on how to improve projects in the future. (Evaluation)

"The link between actions and outcomes is often not so obvious. Faced with the daily demands of their job, many managers are unable to regularly and formally step back and reflect on the cumulative results of their efforts. In the absence of such reflection, resources may be wasted and objectives may not be achieved."

"Evaluation of management effectiveness thus provides a formal way to learn from successes and failures and helps people understand why and how management practices are to be adapted."
(Pomeroy)

Monitoring and Evaluation is neither too expensive or complicated, however there needs to be a constant involvement of the project manager to point out which are the important areas to be monitored and evaluated for the specific project otherwise the research will be more academic than useful to the project manager.

3. COMPANY BACKGROUND AND DESCRIPTION

This chapter introduces Kuben Management as the case study for this report. A short description about the company's history, organization, vision mission strategy and economy will follow to give the reader an overview about the company status.

Lastly, strength, weaknesses, opportunities and threats (SWOT) analysis will be discussed to make evidence of the companies' competitive advantage.

Furthermore, a case study namely the Støvring Bytorv is presented as one of the company's projects as client advisors. The project will be used for further investigations in Methods and Analysis Chapter for the application of Monitoring and Evaluation system.

3.1. KUBEN MANAGEMENT - COMPANY DESCRIPTION

Kuben Management A/S is a construction company that act as project developer, consultant for private clients and advisers for energy, operational optimization of buildings and building environment. The company provides construction solutions that are meant to be economical social and environmental friendly.

- Within **project development** the company offers advice in all construction phases. Within planning: the idea initiation and other necessary analysis, within programming: the tender procurement, scrutiny the 1 to 5 years inspection, reports of energy consumption, financing and user involvement.
- Within **energy optimization** the company services are offered in strategy and planning, energy management and consumption monitoring, tender procurement and project management.
- Within **analysis plan and strategy** the company offers vision presentations, masterplans, project development, scenario analysis, strategy development and customer specification analysis. (http://www.kubenman.dk/)

3.2. KUBEN MANAGEMENT - HISTORY

As seen in figure below, Kuben Management A/S was founded in 2008 as a result of Kuben A/S and Kuben Byggherrerådgivning A/S a blending of Construction Administration, Construction Rental and Consultancy and Urban Renewal.

In 2011 Kuben Management A/S was bought by NRGi Rådgivning. NRGi is one of the largest energy companies in Denmark with focus on smart urban development that offers services within infrastructure consulting, installation and product sales.

In an article from Dansk Energi, Ulf Christensen, CEO of NRGi Consulting has declared:

"Buying Kuben Management is an important strategic step meant to create a broader consultancy platform for customers. In the same time, both companies will grow within strong academic skills that enable the companies to become a market leader in sustainable consulting solutions within social housing sector and construction industry as a whole."
(http://www.danskenergi.dk/Aktuelt/Arkiv/2011/Marts/11_03_14A.aspx)

Aside growth in market leadership for sustainable consulting solutions, there are also benefits in relation to development of new innovation solutions to ensure that new targets in construction energy efficiency can be reached.

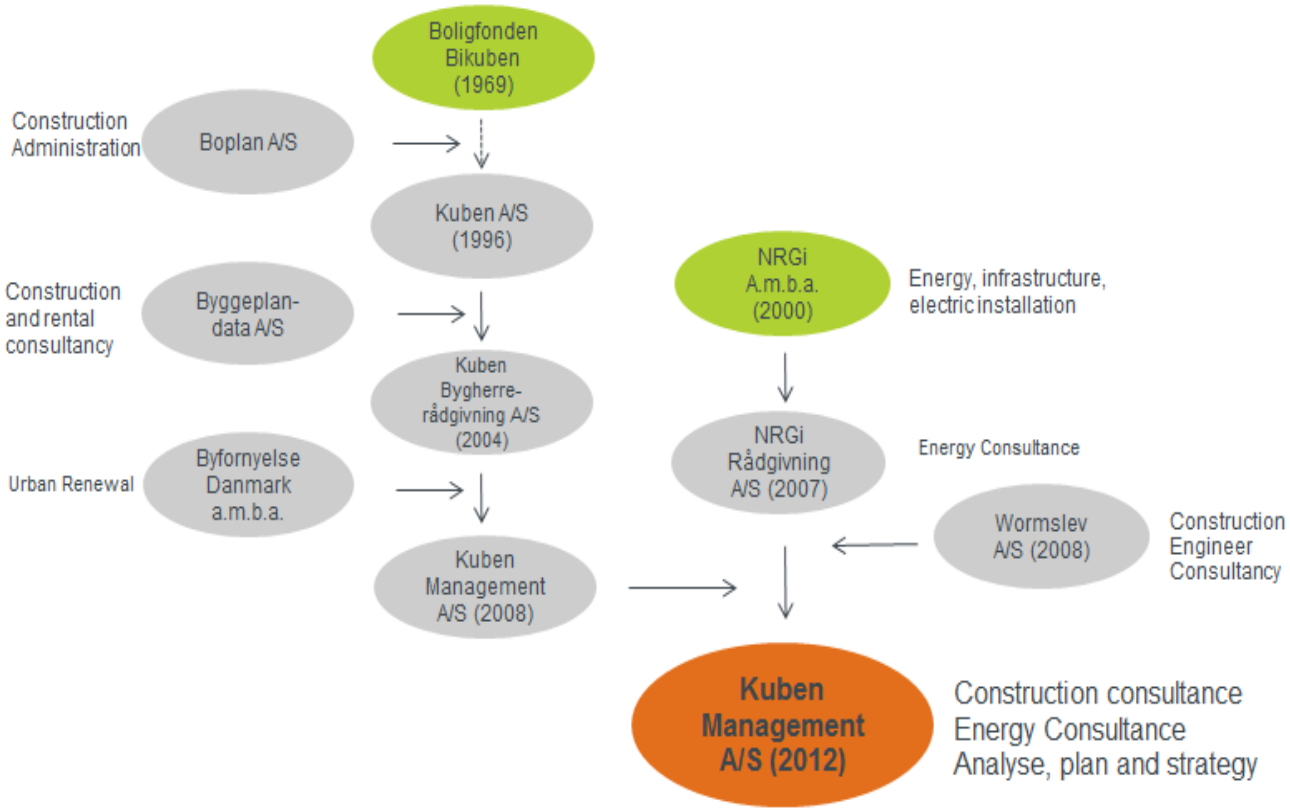


Figure 4 Kuben Management History Source: (Virksomhedspresentation) Annex A

3.3. COMPANY ORGANISATION

The company has approximately 115 employees and is subsidiary of NRGi'S consulting division. Offices are located Aarhus, Copenhagen, Odense, Kolding and Aalborg; in this report the collaboration undergoes with Aalborg division. The company has 6 departments with experts from different backgrounds such as:

- Engineers and architects
- Lawyers and economists
- Planners and geographers
- Sociologists and anthropologists

- Constructing architects
- Machine operators
- VVS engineers and installations.

The client which can be the municipality or a public institution will directly collaborate with Kuben Management as the client's advisor. See client advisor responsibilities in connection to Støvring Bytorv below. The figure below shows the different departments within Kuben Mnagement, where the top down flow starts from the board of managers going through the Economy, IT and sales department and lastly the consultancy services within construction, administration, analyse, tender procurement and energy departments.

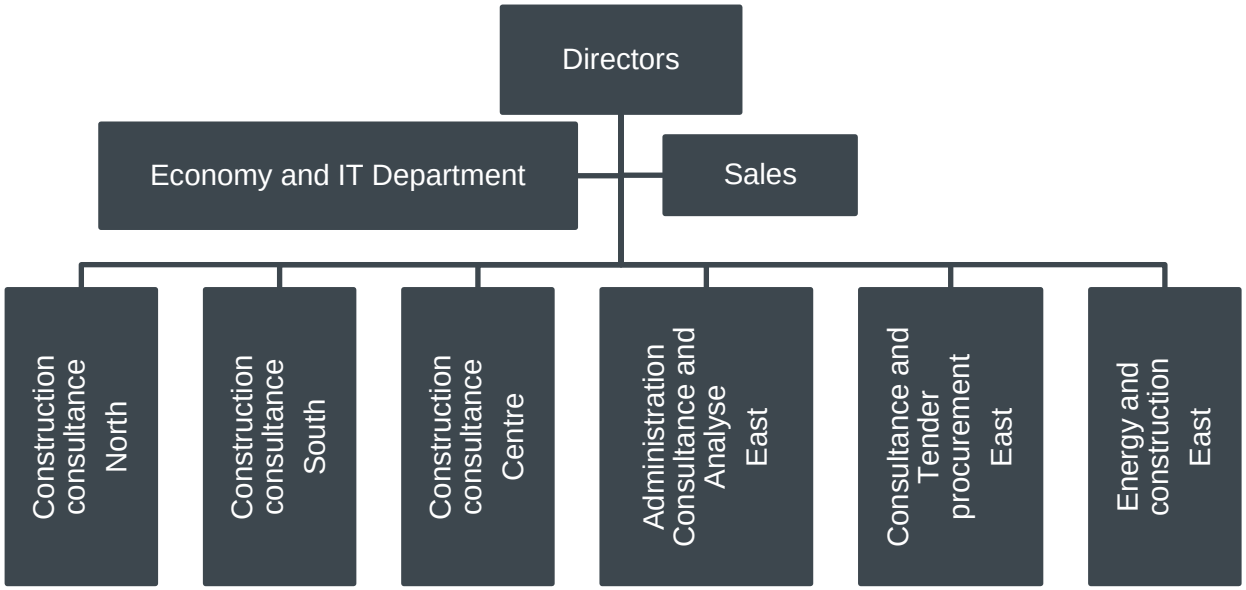


Figure 5 Kuben Management Organization Source: (Virksomhedspresentation, 2015) Annex A

As it can be seen in 3.6 SWOT Analysis there is a strong preference of the company on working with public projects. The explanation for this is that public clients have more experience than private ones, and working as client advisor for public institutions responsibilities may be less hurdle. Within consultancy Michael Gabba has been appointed as the client advisor for the project in Støvring and his responsibilities towards Nørdjylland Housing Association are:

- To assess the case
- To develop the project brief
- Select the type of procurement
- Carry out design reviews
- Monitor construction and testing
- Carry out post project reviews such as evaluation of the project delivery process
- Asses the performance in use

3.4. VISION MISSION AND STRATEGY

As mentioned in the first interview with Michael Gabba, the company's vision mission and strategy is still under construction. However, with regard to the old vision, mission and strategy the company would like to:

- Create a sustainable balance between urban, business, people and the environment through client consulting and energy consulting services;
- To be recognized as the most professional and dedicated advisor in the markets for client consultancy and energy consultancy services;

As mentioned previously in 3.2 Kuben Management history a change in the strategy has taken place once the company was bought by NRGi. The company sees itself now as a market leader maintaining a steady growth and improving services through innovation and skilled employers. Source: (Virksomhedspresentation) Appendix 1.

3.5. KUBEN MANAGEMENT ECONOMY

From the company presentation, it is presented the turnover for the last 5 years, where a steady growth is registered from 2010 until 2014. A good indicator is the equity ratio which was almost the same in 2010 and 2014. However, in 2010 the equity ratio was higher than the turnover which indicates the company was financing its growth by debt which compared to 2014 where the turnover is higher and debts are still the same means a step ahead.

A result of main activities indicates how profitable the company is. Profit is also ascendant; however in 2012 an abnormal low result of main activities is registered. This could be due to high investments.

	2014	2013	2012	2011	2010
Turnover (mio. kr.)	**107,9**	**103,2**	**95,7**	**62,2**	**54,0**
Result of main activities	**11,2**	**11,3**	**1,1**	**6,0**	**3,3**
Equity Ratio (%)	**56,5**	**45,8**	**44,1**	**65,4**	**58,5**
Number of workers	**103**	**101**	**109**	**68**	**73**

Table 1 Kuben management economy Source:: (Virksomhedspresentation)

3.6. SWOT ANALYSIS FOR KUBEN MANAGEMENT

SWOT as the strengths weakness opportunities and threats of the company, is a planning method for evaluation. By identifying SWOT of a company brief evaluation of the companies' competitive advantage can be subtracted.

The data is collected by asking questions about each of the category. Other alternatives to SWOT are Growth share matrix or Porter five forces analysis but for the compliance with LFA (logical framework approach) and M&E, SWOT analyses will be used.

Figure 6 SWOT Analyses. Source: showeet.com

According to figure 6, it can be stated that Kuben Management competitive advantage is:

- Being the best and only choice on the market. Moreover by becoming a part of NRGi, the company has positioned itself strong enough to maintain a stable position in the future.

One of the greatest strengths is working with the public sector, which on the other side working with private sector is becoming a threat. More private constructions are in the focus now which could force a change in the strategy and market focus. The project portfolio selection is done strategically in order to become two times larger. This opportunity is increased also with Støvring Bytorv and many other projects, some of them presented in the next subchapter.

3.7. PROJECTS

Kuben Management has built a strong relationship with the public sector to deliver construction projects such as renovation, new construction and project development. On the other hand Kuben Management has a great demand from municipalities for both large and small construction projects whereas they perform as advisers to optimize the energy consumption and operation. Kuben Management are advisers also for private investors for corporate and headquarter buildings. Among the project references that worth to be named within project development is:

- City Campus Aalborg, a project of 11 hectares
- Skanderborg Municipality new city hall and sports center
- Bispebjerg Hospital client consultancy
- Slagelse Psychiatric Hospital client consultancy
- Canal Connection Odense Largest N. Europe Swing Bridge

Figure 7 Slagelse Psykiatriske Sygehus

Figure 8 Kanalforbindelse, Odense

Figure 9 Bispebjerg Hospital

3.8. CASE STUDY: STØVRING BYTORV

Figur 11 Støvring Bytorv Local Plan Source: Byggesagbeskrivelse Annex C

3.9. PROJECT DESCRIPTION

The project will be built in 2 phases, the apartment phase and the shopping area phase. The methods and analysis for this project are performed only for the apartment phase due time limitations. The timeframe for this project started from October 2015 until August 2016. A master time schedule can be seen in Appendix D. Before the construction started there had to be demolished the existing buildings and there has also been an agreement with the municipality to enlarge the local plan.

There will be 20 subsidized family apartments consisting of 2 floors above ground level and shopping centre with shops at ground floor. Storage rooms will be also constructed at basement level. The apartments are fully furnished consisting of 3 up to 4 rooms with entrance, kitchen and bathroom. All apartments have access through balcony. Balconies will be constructed as a wide area so it can be used also as living area. All apartments have balconies towards Hobrovej, west side. Part of the agreement is the construction of a center. For more information please check the drawings in Appendix B.

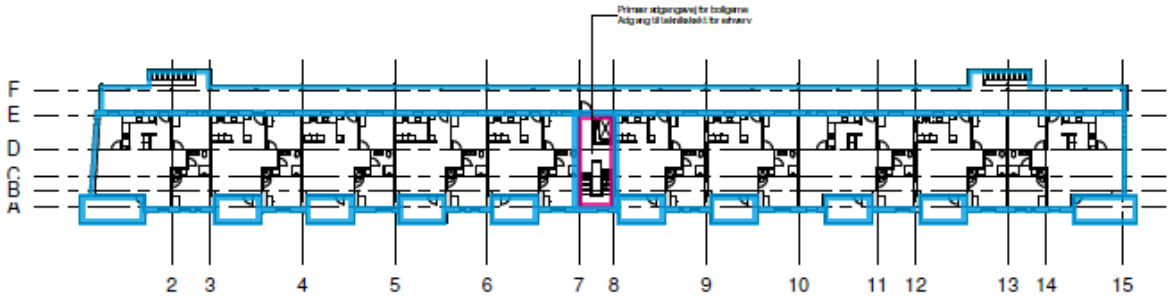


Figure 10 Ground floor plan of the apartments; 2 floors Source: (Grænsefladenotat, July 2015) Annex C

The building is made out of concrete elements with polished masonry on the outside. Roof is flat and made out of roofing felt. Balconies are made in concrete and stairs of steel.

According to Rebild Municipality it has been negotiated for a long time with TL Byg to sale Støvring Bytorv. Støvring Bytorv was sold for 9.5 million kr. Mayor Anny Winther has stated:

"I am now delighted that the project is finally becoming a reality. For an active trading of Støvring it is important to have a vibrant and thriving city center with even more great shops and homes."

3.10. CONTRACT FORM

The project is a turnkey contract in collaboration with Kuben Management as the client advisor, TL Byg as the turnkey contractor and Housing Association Nordjylland as the client. Nordjylland Housing Association has an AB89 contract with Kuben Management and an AB93 with TL Byg.

The client consultant is the client independent representative and adviser. Kuben management responsibilities as client advisor for Nordjylland Housing Association are to provide consultancy (including building programme, inviting tenders for consultancy services, assistance in connection with choosing the form of competition, assistance with assessment of tenders and conclusion of agreements, as well as handling follow up on behalf of the client during design and construction phases) . A key aspect is that the construction is subsidised by the municipality which imposes certain obligations for both the client advisor and turnkey contractor, which will be further elaborated in the next chapters

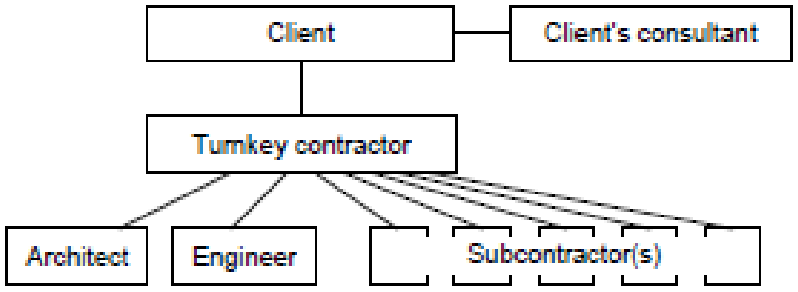


Figure 12 Contractual organisation Source: (Architects)

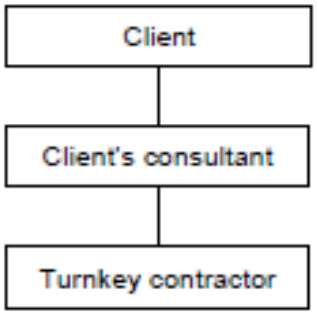


Figure 11 Project Organisation Source: (Architects, 2003)

As it can be seen in Figure 14 the project organization flow is different than the project legal form in figure 13.

Within project organisation, the client consultant established the communication between the client and turnkey contractor during all project life cycle

In the contractual organisation form, figure 13 the client has direct legal contract with both the contractor and client.

The project award criterion is quality according to Circular no. 174 Oct 1991 and Circular no. 9784 Nov. 2003.

3.11. CLIENT SPECIFICATIONS AND CONTIDITONS TO TOTAL CONTRACTOR

Description of client specification with regard to total contractor contains secondary data which will not be included in this report, only within Appendix. However, description of demands and conditions with regard to monitoring and evaluation will be further scrutinised and included in the report to be taken in consideration for further analysis. These include defects, project reviews, documentation and testing, deterioration, damages or lost parts before delivery, changes in work, clarification, client's supervisor specifications, contractor's control, closed meetings and site meetings.

Defects - as an important KPI for monitoring

"(...) defects at delivery will be solved at the Arbitration tribunal.

If the contractor may fail to meet provision of subsection 4, (materials and other supplies to work must be delivered within 5 years liability for defects) there will be significant additional costs for him or significantly delays in the works or less substantial supplies will be difficult to monitor in compliance with the provisions. The client should be notified if there are present essential defects at delivery."

§ 11 Project review, documentation and samples

"Project review should be performed by one of the parties. According to the contract there should be documentation for work completion, materials used and the tests carried out by the contractor must be delivered. These provisions must be included in the control plan. The participation in the project review together with tests and provision of documentation are part of contractor's performance.

Stk. 2. Additional tests can be required by the client and in such cases the contractor should have the necessary staff available for testing, sampling and examination. The client is obliged to pay the additional work. If contrary the contractor will pay to the client the extra work as expenses.

Stk. 3. The contractor should provide to the client supervised access to the site and where work is performed. The client can require the necessary information for how the performance is evaluated.

Stk. 5. The contractor must make ongoing cleaning, evacuation or removal of waste materials as soon as possible.

§ 11 Deterioration, damages or lost parts before delivery

"It is the contractor's responsibility to make sure the work is done according to the contractual performance except the ratios attributed by the client. The contractor shall maintain the work performed until delivery. The contractor provides reviews, applying for permits, and procures certificates relating to execution, and pays the expenses hereby."

§ 14. Changes in work:

Stk. 2. "If there are changes from the agreement regarding price, time and safety, the client amendment must be made in writing and the same applies to the rest of parties. There should be as soon as possible notifications with regard to changes."

§ 15. Clarification:

"No additional work must start without prior written agreement. This also applies where the contractor believes a work falls outside the contract. The contractor must arrange for the written agreement and must be approved in time. If the contractor finds out that the work cannot be carried out in accordance with the agreement, the contractor must inform the client and follow his instructions."

Stk 3. "The Contractor shall as soon as possible inform the developer, if there are any circumstances, which prevents or hinders the work or makes it obvious that there will be a loss for the developer or incurs liability against third parties. If there is no time to obtain the client's instructions, it is best to take measures to prevent client losses."

Stk. 4. "The tender documents should contain information regarding groundwater and pollution or other obstacles. If despite the implementation of such feasibility studies (taking into account the land, the nature, location and previous use), unforeseen circumstances happen which result in prohibition that prevents proceeding, the contract is cancelled against compensation to the contractor.

The compensation does not include the contractor lost profits by not completing the work, but just the other losses, contractor suffers.

§ 17. The client's supervisor

The client's supervisor represents the developer to the contractor in terms of work. The supervisor can provide and receive notifications regarding work and approve or reject materials or work.

§ 18. Contractor's control

Although the developer participating in the project review or supervising contractor work, this does not entail any reduction in the contractor's responsibility project or work in general.

§ 19. Closed Meetings

Unless otherwise agreed, convene contractor building meetings with the developer and prepares minutes, as soon as possible must be sent to the developer. Total contractor must keep site meeting with the client every week during the construction period by prior arrangement.

§ 20. Site Meetings

At each site meeting it must be stated the reason and the number of working -waste days - where the work is partially or completely done. This is an important part of monitoring and indicators; however the only document that has been made available is the Master Plan Schedule with critical Path.

3.12. QUALITY MANAGEMENT

Quality assurance is defined as the process of managing quality and must be specificity that is not the same as quality control which is used to verify the quality of the output. Quality Management comprises both quality assurance and quality control as its components by focusing on the service but also on the means of providing it. Quality assurance will form the context in which quality control can be performed. Quality evolution has transformed the manner in which Monitoring and Evaluation are conducted.

Figure 13 From Quality Control → Quality Assurance → Quality Management to create the TQM

Quality Management in Kuben Management A/S

Quality Management at Kuben is a very important factor for successful projects by creating value to clients and building owners through analysis, planning, process, operational advice and project management. Through the quality management system Kuben Management purpose is to provide efficient advice. Quality is measured through systematic customer feedback and customer satisfaction surveys. Efficiency is ensured as an ongoing process during implementation by providing professional advice.

The evaluation covers the following information :

- Results from completed project review, customer satisfaction surveys and state assessments.
- Evaluation of the quality policy if it is in complience and remains sustainable.
- Evaluation of objectives achievement (If the quality targets are not achieved, it must be discussed by the Executive Board and the management team)
- Internal or external changes that could affect the quality management system
- Status from previous audits
- Product improvements related to customer requirements
- Recommendations for improvement of the quality management system, processes efficiency
- Assessment of resources needs

The quality management offered by Kuben, is structured in three main process levels, as following:

1. Management: Quality management is linked to the overall business strategy and management, within: quality policy, quality objectives, and requirements for customer satisfaction surveys.
2. Benefits: by covering the processes offered for customers and documentation of quality system documents including: description of related processes supplemented by income documentation, checklists, specifications, standards and regulatory requiremenets
3. Support: by covering internal processes and ensuring good operations within the company. (Management)

Client consultant: Regarding client's consultant's obligations during design phase, the following indications have been taken from 2.4.5 Client Consultancy (byggerådgivning) where it is specified:

- The client's consultant assesses whether the turnkey contractor's quality management system for the design phase is consistent with the provisions of the agreement.
- The client's consultant performs spot checks to establish whether the turnkey contractor complies with quality management systems agreed for the design phase.
- The client's consultant reviews the project in general terms to check whether the quality of the project complies with the requirements of the building programme and other agreements.
- The client's consultant assesses the turnkey contractor's proposals for tender verification and supervision plans.
- The client's consultant draws up a plan for its own overall supervision.

The Client consultant's obligations within quality during construction phase are stated in section 2.5.5, as following:

- The client's consultant assesses whether the turnkey contractor's quality management system for the construction phase is consistent with the provisions of the agreement.
- The client's consultant participates in project review meetings to the extent agreed upon. The client's consultant performs spot checks to establish whether supervision and control plans are followed.

Turnkey contractor: The turnkey contractor duty for quality management is listed in Byggesagsbeskrivelse.pdf and specifies that it is the client to convene on the start-up meeting, and a Quality Plan for all contracts should be outlined after this first meeting.

Subcontractors should forward to the supervisor their own process review no later than 5 working days before the project review meeting. The contractor must participate actively in the project review. Agenda includes the following points:

- Reviewing contractor's presentation
- Building supervisor's review of the material in question
- Joint solution and investigation of possible problems

Moreover, there will be agreed fixed weekly meetings and the quality management documentation should contain plan and control records, material documentation of supplies delivery and brochures of supplies. The contractor shall participate actively in the necessary project review.

There should be delivered: advice for maintenance, cleaning instructions and operating instructions before the handing on procedure.

3.13. EVALUATION

From the work specification it is stated that key figures are needed from previous evaluations, and if these are not available an accredited third party should issue them as evaluation assessment is compulsory for subsidized buildings.

Key figures are a Governmental order since 2005 aiming to create a better development of the construction process with regard to the quality, price and productivity. The key figures for public subsidy constructions became mandatory in 2008. The rating system shows the average which represents the position of the company where: A is much better than the average, B better than the average, C like the average, D worse than average and E much worse than average.

The contractor is selected in the tendering after the kpi's from previous evaluation. The document is attached in Annex and presents TL Byg previous ratios from the last three projects. The document, as the BNKI Catalogue with key figures is issued by Byggeriets Evaluering Center (BEC) a description of BEC is further presented in implementation chapter.

From the Byggerybeskrivelse is specified with regard to evaluation:

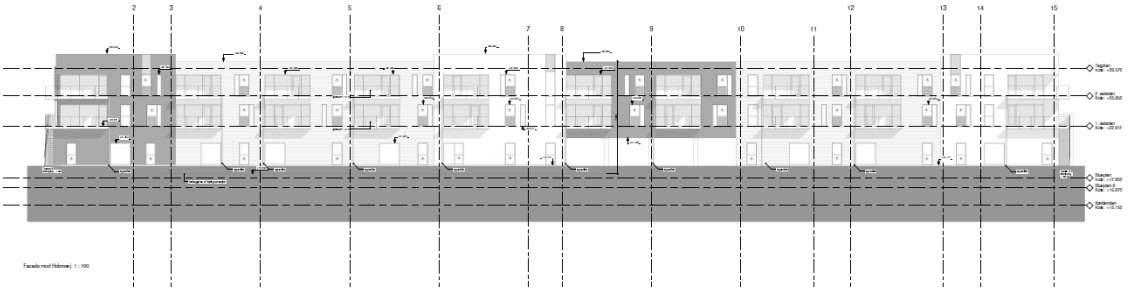
"Once the contract has been signed the contractor together with the developers should enter into agreement with an evaluation company for evaluation of the particular contract. The contractor pays a fee to an evaluation company, and receives no compensation from the developer for the costs. The cost of fees and time by filling questionnaires etc. is part of the contractor's work."

It has been agreed that quality should be delivered as demanded and this is done by delivering a fully furnished apartment once the construction is closed. Key figures for the project in Støvring should be issued no later than 8 weeks after handing in.

3.14. OTHER SPECIFICATIONS RELATED TO THE PROJECT

The deadline for handing in the construction is 1st of august 2016. According to the interview with Michael Gabba, it has been mentioned that there are no fixed deadlines imposed by the client other than final completion time. It is therefore the responsibility of Turnkey Contractor to set deadlines for subcontractors to make sure construction is delivered on time. The price is also fixed, due to the fact that is a subsidized construction by the Municipality. Most important is monitoring the quality as this is the perquisite imposed by Nordjylland Housing Association. There has to be a clear and good communication between all the stakeholders of the project to make sure quality is understood by everyone in the same way. Miscommunication is an important topic in the construction industry, as it plays an important role in the efficiency and effectiveness of the construction process.

3.15. PROJET SUMMARY



Fige 14 Facade elevations through the courtyard 1:300 Annex B Project Drawings

		PARTNERS
TITLE	Støvring Bytorv	• Client: Boligskabet Nordjylland, Arsenalvej 20 9800 Hjørring, Contact person: Torben Fisker
LOCATION	Støvring Bytorv 5, 9530	
STARTING DATE	1 october 2015	
COST	24 478 750	• Advisor: Kuben Management A/S Skibbrogade 3, 9000 Aalborg, Contact person: Michael Gabba
TIMESCHEDULE		
GOAL	More public housing	• Total Advisor including technical supervision: Architects: Bjørk & Maigård ApS Gasværkvej 30 Aalborg
	The city council has promised that about 2000 m2 of the homes will be listed as public housing. There is a general lack of housing in Støvring, and the municipality is interested to be an attractive settlement.	• Project Manager: Søren Noses, tel. 96 31 40 44
		• Advisory Engineer with technical supervision: Frandsen & Søndergaard K/S Nylandsvej 15, 9000 Aalborg
		• Project leader : Peter Gasberg

TURNKEY CONTRACTOR> TL Byg	Heavy Elements	Roof
	Structural Work	Glass&Steel
	Plumbing	Paintwork
	Electricity	Inventory
	Masonry	Windows&doors
	Tiles	Elevators
	Concrete work	Construction Site
	Carpentry	

Table 2 Project Støvring Bytorv Summary

4. PROBLEM STATEMENT

The problem formulation has been depicted as a result of investigations and analysis.

In the Analysis chapter, a problem and objective tree is developed where a logical sequence on determining the focal problem is explained. The problem formulation contains the Study Curriculum guidelines, the student's topic of interest and the companies focus on complying with client demands.

Moreover, from the analysis of a real building case study it has been shown that, the way resources are managed, plays a key role in the performance and efficiency of achieving project objectives. Having in mind that the building case is a public subsidised project, it is important to document the process to ensure it complies with what has been agreed.

In this context it can be formulated: *How to provide a transparent process for the parties involved in the project, through Monitoring and Evaluation and what is the importance of involving stakeholders in this process?* With the following sub questions:

- *How Result based management as a modern approach within Monitoring and Evaluation can ensure achievement of results, during planning, monitoring and evaluation phases?*
- *How monitoring and evaluation can be sustained throughout the project life cycle?*
- *What techniques can be used to manage better the use of resources?*
- *How Monitoring and Evaluation can be implemented?*
- *What are the differences in client's advisor and contractor performance?*

Delimitations:

Monitoring and evaluation is delimitated to Danish Building Regulations for a specific case project, namely Støvring Bytorv. The data collection for investigating and analysing this cause, was collected through discussions with the project manager Michael Gabba from Kuben Management, and the project manager from TL Byg, Christian Hannesbo

Monitoring and Evaluation is limited to Kuben Management and Tl Big procedures. Due to time restriction, evaluation results of Støvring Bytorv will be available only after August 2016, when BEC ratings will submit the grading.

5. METHODS AND ANALYSIS

The structure of Methods and Analysis Chapter follows the stages corresponding to Result Based Monitoring and Evaluation (RBME). There will be a total of 6 stages following the project cycle for a successful implementation of M&E. The methods of collecting qualitative data were performed through interviews. Moreover, Result Based Management (RBM) as the theory is build up on Results Chain, a systematic process to offer a clear view over the projects purpose and outcomes that will be used as a necessary part of analysis, through which objectives are defined.

This Chapter provides an assessment on how an approach is better than the other by comparing Project cycle management (PCM) with Result Based Monitoring, RBM with traditional M&E, Logical Framework Approach (LFA) as part of Theory of Change (ToC) and finally proposing the structure for RBME.

There will be concluded to use the Logical Framework Approach (LFA) as a planning thin Resource Based Monitoring and Evaluation (RBME) for a systematic planning, implementation, monitoring and evaluating projects. This tool will be applied within this report due to its systematic approach to analyse and identify a problem.

5.1. PROJECT CYCLE MANAGEMENT (PCM)

Project Cycle Management will be described in order to introduce Results Based Management (RBM). Result Based Management together with Project Cycle Management are two approaches that complement each other. PCM can be seen as a part of RBM. RBME will be presented in 6 phases that represent the structure of planning, designing and implementing M&E throughout Støvring Bytorv. It is important to mention that the duration of each stage vary upon the project scale, scope and operating modalities.

"PCM contributes to RBM by rationalizing the steps leading to a successful outcome." (Societies) *And is accepted by European Commission since 1992 for project development and management.*

Project Cycle Management (PCM) was introduced in 1990 by the European Commission to improve the quality of the project and its effectiveness. It has been introduced as a result of poor project planning, risks not being taken in consideration, also factors affecting the long term sustainability of project benefits, and lessons learned that were not being used and integrated in the next projects.

By describing and applying the stages of PCM there are used management principles, analytical tools and techniques. Projects should be relevant, feasible and sustainable. The principles of PCM refer to:

- Make a well informed basis for decision making;
- Provide sustainable benefits for the beneficiaries; in other words an inclination toward client demands;
- Incorporate aspects of sustainability into project design

- Provide an analytical approach to project design and management through Logical Framework Approach (LFA)
- Make the process an integral system where objectives, work plans and budgets are prepared on the basis of the project log frame.

"PCM obliges practitioners in project design to focus on the real needs of the beneficiaries by requiring a detailed assessment of the existing situation and by applying the logical framework method……Right from the beginning, aspects assuring sustainability are incorporated in the project design. The strength of PCM is that project documents are structured according to a standardised format dealing with all relevant issues, including the assumptions on which the project is based. At each stage in the project cycle, these issues are examined and revised where necessary and carried forward to the next stage. This system makes the project concept and context in which it operates clear and visible, and enables therefore better monitoring and evaluation
(Comission)

An alternative to project cycle is offered by IFRC. In the diagram below there are presented three stages of the project cycle. At project start it is presented an *Initial Assessment*, then a *Planning phase* that comprises a log frame, an M&E planning and a baseline study, going through last phase in the project end as the *Implementation, M&E*. Implementation and M&E is achieved during the midterm evaluation with or without reviews, a final evaluation and the dissemination and use of lessons learned. Throughout the project cycle there is ongoing reporting, reflection and learning. IFRC states also that there is no generic project cycle associated with M&E activities and the one below is just an example.

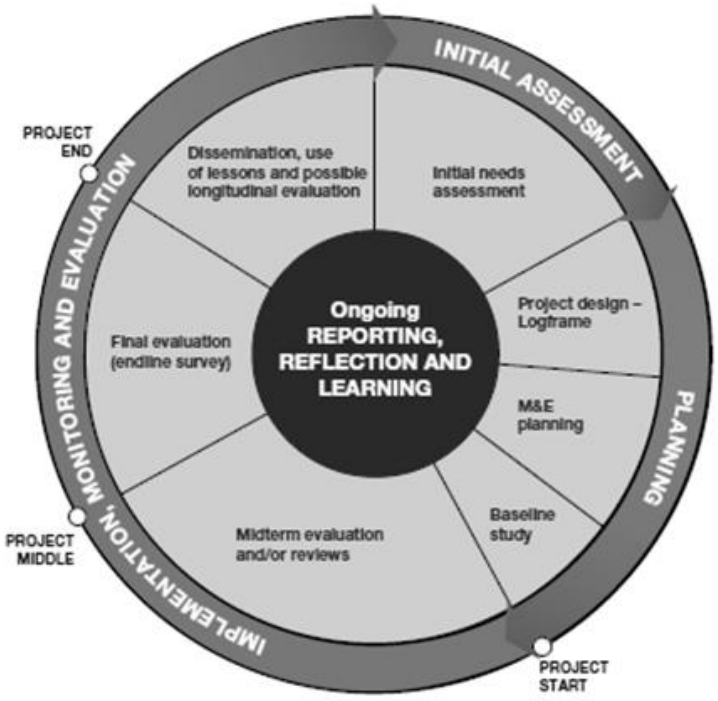


Figure 15 ey M&E Activities in the project cycle Source: (Societies, 2011, s. 12)

The quality of a project is measured in terms of *relevance* by meeting the imposed demands, *feasibility* by delivering sustainable benefits to target groups and *effectiveness* if the project is well managed and achieves the desired results. In the image below namely the Quality Frame each of the attributes has a number of criteria which in total are 16 used for evaluating quality. Projects should be analysed in each phase of the life cycle to make sure it still meets the quality criteria's and facilitates further decision making. (Barbera)

Relevant The project meets demonstrated and high priority needs	**Feasible** The project is well designed and will deliver sustainable benefits to target groups	**Effective & well managed** The project is delivering the anticipated benefits and is being well managed
1. Consistent with, and supportive of, EC development and cooperation policies 2. Consistent with, and supportive of, Partner Government policies and relevant sector programmes 3. Key stakeholders and target groups are clearly identified, equity and institutional capacity issues analysed, and local ownership demonstrated 4. Problems have been appropriately analysed 5. Lessons learned from experience and linkages with other ongoing/planned projects/programmes have been assessed and incorporated into strategy selection	6. The objectives (Overall objective, purpose and results) and the work programme (activities) are clear and logical, and addressed clearly identified needs 7. The resource and cost implications are clear, the project is financially viable and has a positive economic return 8. Coordination, management and financing arrangements are clear and support institutional strengthening and local ownership 9. The monitoring and evaluation (M&E) system and audit arrangements are clear and practical 10. Assumptions/Risks are identified and appropriate risk management arrangements are in place 11. The project is environmentally, technically and socially sound and sustainable	12. The project remains relevant and feasible 13. Project objectives are being achieved 14. The project is being well managed by those directly responsible for implementation 15. Sustainability issues are being effectively addressed 16. Good practice principles of project management are applied by EC Task Managers

Figure 16 Quality Frame Source: (Barbera) *EC* European Commission*

5.2. RBM OR TRADITIONAL M&E?

Traditional M&E measures and reports the status of results while RBM measures and reports results to produce results. Therefore, RBM is more of a pro-active tool than traditional M&E which tends to be more reactive. RBM is a dynamic tool for planning and budgeting to improve performance and achievement of results. (Khan)

Resource based management is looking inside the company in contrast to other strategy models such as Porter's Five Forces which focus is on the external competitive environment.

In other words by looking at the companies' internal environment, strategic action can be correlated with the internal resources and capabilities of the company, rather than focusing on the external environment.

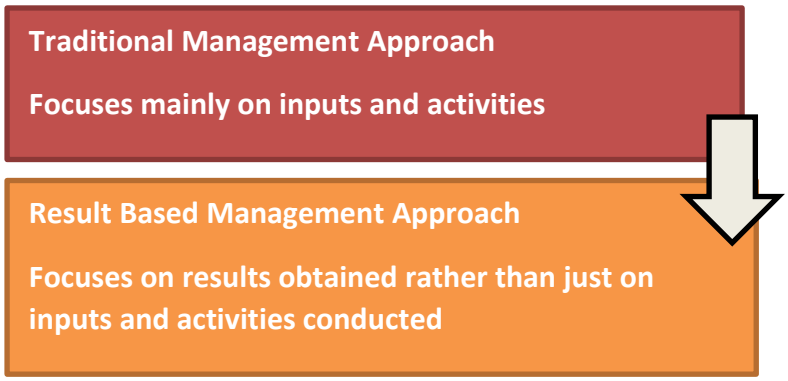


Figure 17 Traditional Management approach vs. Results- Based Management Approach Source: ***Invalid source specified.***

5.3. RESOURCE BASED MANAGEMENT (RBM)

RBM is a management and performance reporting system through which results aim to be achieved. The evidence on the actual results resulting from the RBM system, is used for decision making. Resource Based Management is a system useful for companies to incorporate it into the organisation's culture, operational systems and decision making procedures.

Traditionally the aim has been for long time to focus on inputs and activities as already described in Traditional M&E; however RBM focus is on achieving outcomes and impact, which is in accordance to nowadays trends.

Results are defined as changes that derive from the causality relationship and refer to the outputs outcomes and impacts. Results are intended or unintended, positive and/or negative.

Management is referring to the effectiveness management of results. In order for results to be achieved there needs to be a good management, but also flexibility in changing strategies and activities. Results should be updated at least once a year to ensure a good management.

The main characteristics of the RBM system are:

- **Goal Orientation** towards change and improvement
- **Causality** refers to the result chain where inputs and activities determine outputs, outcomes and impact.
- **Continuous improvement** by monitoring to keep track on the progress and if necessary maximize the outcome.

Result based management is a technique initiated by United Nations in 1990 to improve organizations effectiveness and accountability. It can be seen as a project cycle approach with elements such a planning and defining the results. After these have been decided, implementation becomes an essential task to ensure results are being achieved.

Overall, RBM is a strategy that contributes on achieving a set of desired results. As the name suggests, the resources possessed by a firm, determinates its performance. The RBM Logic goes through assessment, by asking: What is the current situation? Through thinking, asking: what has caused it? Who is involved and what are we going to achieve? The third stage will be then, planning, by asking: How are we going to do it, with whom, when and with what resources? Follow up by doing and asking if there is needed to be adapted? Lastly, reviewing of what went good or bad and what can it be learned from this next time?

"Resources (as the inputs and activities) are all the assets, capabilities, processes, information and knowledge the company has and represents the basis for producing results." (UNDP)

UNDP, the United Nations Development Programme, also OECD, DIFD are organisations that help countries to develop policies, leadership skills, partnering abilities, institutional capabilities for achievement of results in different sectors such as construction, agriculture, technology and so on. Their advice on Result Based Management is commitment from organisational leadership that values constant learning through evidence based information and openness.

Furthermore, the key elements or phases of RBM include:

- ***Identifying*** clear and measurable objectives (results), aided by logical frameworks.
- ***Selecting*** indicators that will be used to measure progress towards each objective.
- ***Setting*** explicit targets for each indicator, used to judge performance.
- ***Developing*** performance monitoring systems to regularly collect data on actual results
- ***Reviewing, analysing and reporting*** actual results towards targets.
- ***Integrating*** evaluations to provide complementary performance information.
- ***Using*** performance information for internal management accountability, learning and decision-making processes, and also for external performance reporting to stakeholders and partners.

The first three stages are accordingly to the logical framework approach system used for planning and emerging strategies. Adding the monitoring system and reporting on actual results refers to the concept of performance measurement. All seven phases combined are essential to an effective results based management system. (Garbutt)

RBM reporting should be done to:

- ***Describe*** what has been achieved and indicators for success
- ***Compare*** actual results with expected results
- ***Quantify*** achievements
- ***Document*** findings with quotes, testimonials, photos
- ***Highlight*** any unforeseen problems or opportunities that may require new strategies or a redesign of the initiative (UNDP)

Monitoring and Evaluation (M&E) is a vital part of RBM as it forms the basis for clear and accurate reporting on results achieved by a project. Information reporting will have in this case a basis for critical analysis and organizational learning.

In the figure below the RBM Approach as in the case with PCM, a diagram alternative is presented where the same phase are followed but described slightly differently.

- Within Planning the context is on defining results, formulating them and creating a result chain.
- Within Monitoring there will be developed a Monitoring and Evaluation Plan, (this will be indicated with guidelines in chapter 6.1) and measuring progress;
- Within Evaluation phase RBM is used for programme improvement, accountability and organisational learning. Evaluation step by step guideline is also presented further on in chapter

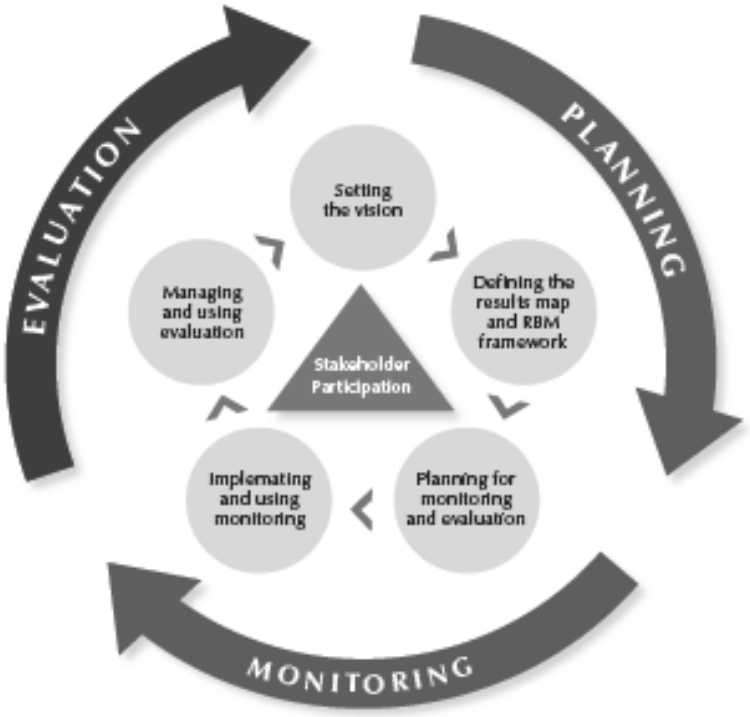


Figure 18 RBM Approach Source (UNDP)

5.4. RESULT BASED MONITORING AND EVALUATION (RBME)

"If you do not measure results, you cannot tell success from failure

If you cannot see success, you cannot reward it

If you cannot reward success, you are probably rewarding failure

If you cannot see success, you cannot learn from it

If you cannot recognize failure, you cannot correct it

If you can demonstrate results, you can win public support" Osborne & Gaebler, 1992

Result based monitoring and evaluation is a management tool to track progress and demonstrate the impact of a given project. Result Based Monitoring and Evaluation uses the Logical Framework Approach to indicate objectives, monitoring indicators, assumptions and risks towards achievement.

RBME is adding to PCM the monitoring quality aspect, of service delivery. RBME provides extra information on what are the actual results versus the planned results at the end of the project, by reporting and taking corrective action if necessary. The results are collected to provide information about the achievement of the programme. Furthermore, RBM interlinks Monitoring and Evaluation with regular feedback and adjustment system, something that is not incorporated in PCM. PCM leans more on the first stages of programming and proposal design while RBM adds accountability, effectiveness and efficacy to the program by:

- defining realistic expected results
- integrating lessons learned into management decisions
- reporting on performance

Furthermore, RBM is used to:

- Identify stakeholders problems and opportunities
- Set clear and agreed objectives, targets and milestones
- Set the adequate resources to achieve objectives
- Monitor progress with use of appropriate indicators
- Identify and manage assumptions/risks
- Using indicators to measure progress
- Increase knowledge by lessons learned and integrate them into decision making
- If necessary, change objectives according to lessons learned
- Reporting results achieved (Spreckley)

From the methodology point of view the stages of Result Monitoring and Evaluation in figure 19, can be seen on the right side as qualitative and on the left side quantitative measurement. The qualitative measurement is used to gather data as external components that affect the project, namely: stakeholders' record and responses, assumptions, unforeseen positive and/or negative consequences, DAC criteria and contribution to the overall strategy, which will be further described in the project. Quantitative methods go through all stages from Project M&E design, implementation, measurement and impact.

Project M&E design is done during first meetings for the creation of preliminary results and indicators. This as a first stage influences the most the success or failure of M&E process.

Project delivery is done to finalise result statements, indicators and performance monitoring plan to ensure achievement. If unrealistic objectives are set, then making a good M&E is impossible. The direction must also be clear in order to get the relevant information.

Project Implementation is done by regular project reviews to ensure expected results and indicators are still relevant. Information comes from tracking outputs, outcomes and impact that should be achieved through project operations. Corrective action must be taken if it gets to the conclusion the information does not show progress.

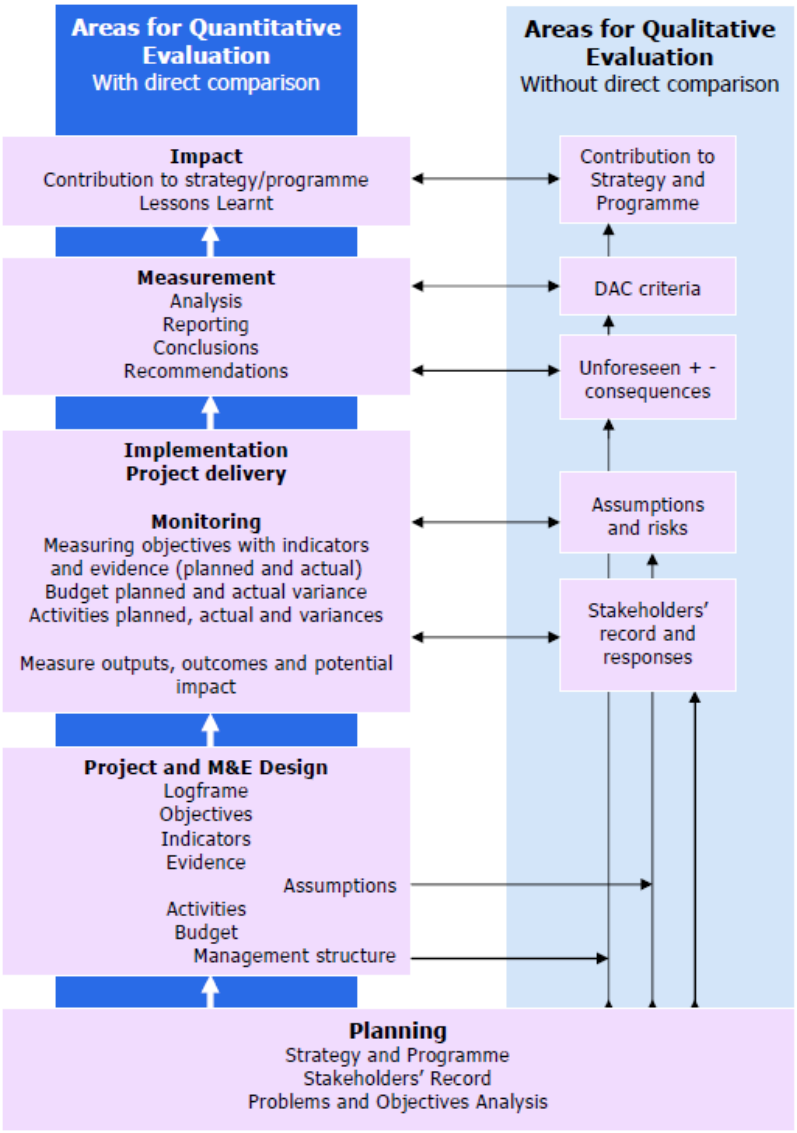


Figure 19 Result Based Monitoring and Evaluation Outline Source: (Spreckley)

Measures must be documented through analysis, reports, concl usions and recommendations, and a reflection/ assessment of the project should be eventually formulated to understand the project programme impact.

Result chains are the basis for M&E activities. The first two components in the result chain are inputs and activities, as the basis for achieving results. It is important therefore to identify within a project: What do we want to achieve and why by making use of the capabilities available.The result framework also called result chain or log frame is a good tool for monitoring, management and evaluation because it focuses on outcomes, as already mentioned the tendency is more on results than just listing implementation activities, processes and inputs;

Result frameworks in RBME are providing evidence to help the policy makers understand if the intervention has succeeded. Measuring is another factor that through result chains is possible and crucial towards achieving objectives. Result frameworks are used in planning, coordination, management, communication, eva luation and reporting

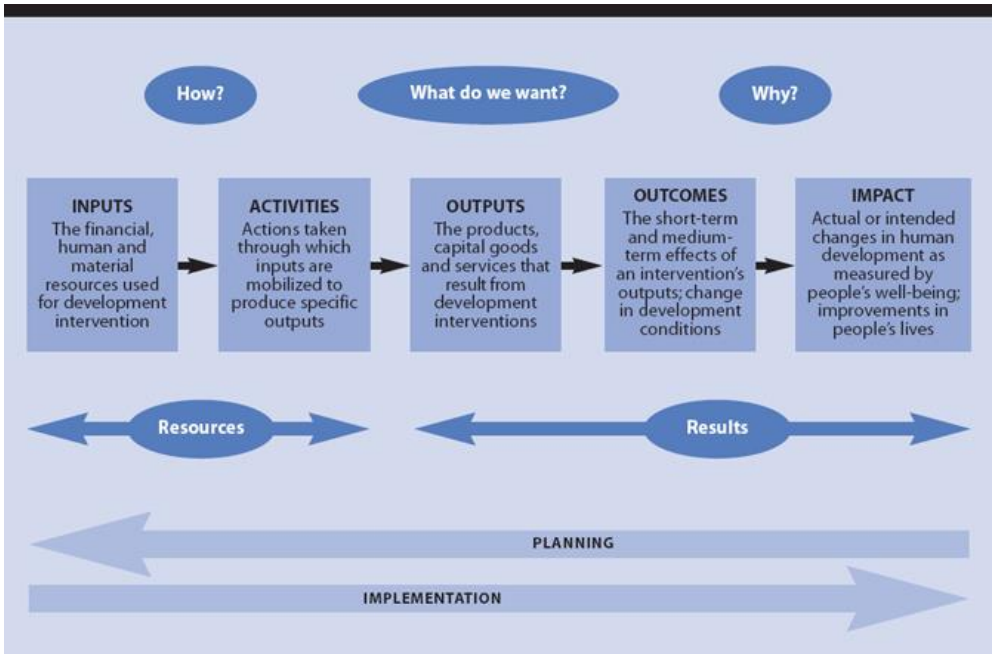


Figure 20 The RBM Result Chain Source: ***Invalid source specified.***

Result frameworks in RBME are providing evidence to help the policy makers understand if the intervention has succeeded. Measuring is another factor that through result chains is possible and crucial towards achieving objectives. Result frameworks are used in planning, coordination, management, communication, evaluation and reporting.

Within Planning Result Chains are used to show the immediate results of activities in connection to the overall objectives and goals.

Within Coordination result framework is used as the common ground regarding expected results, while checking assumptions and specifying needed resources with the other parties involved in the

program/project. Within Management the use of performance data should help on making decisions. If there are impediments on achieving results, corrective actions should be taken and a relocation of resources could be a good management tactic.

Within Communication and reporting the result framework is used as a visual tool for communicating resources, activities and outcomes to the program staff and other interested parties. (Group)

Lastly, within Evaluation and learning from experience, result frameworks should contain indicators, measures and targets for the ongoing monitoring and evaluation and later on to assess what approaches contribute most effectively to achieve the desired results. If such approaches are verified to be successful and identify good practices than they may be used for replication in other projects and similar contexts.

DAC Criteria is a standard set that relates the result chain from the log frame with evaluation criteria's, to guide process. It is summarised as seen in the figure below:

Impact/ Outcome	**Sustainability** –how the benefits of the project will continue once the project completes, and can they be mainstreamed by appropriate and permanent bodies during the project implementation?
Project Purpose	**Outcome** –the utilisation of the outputs and the impact of this in solving the original problem(s), its affect on the wider environment and its contribution to the wider policy or sector objectives.
Outputs	**Feasibility** – is the project feasible in terms of skills, resources, systems and external support? Is it well managed and able to understand the monitoring results and make changes if needed? **Effectiveness** –the ability to achieve results on time and with the appropriate target groups. This involves assessing the effect of assumptions on the outputs.
Activities Inputs/ Problematic situation	**Efficiency** –the use of resources and value for money. **Relevance** – is the project clear about why, with whom and what it is concerned with? Is the project appropriate to the original problems and does the project still retain internal coherence.

Figure 21 Hierarchy of objectives and DAC Criteria Source: (Spreckley 21)

5.5. APPLICATION OF RBME CYCLE

In figure below RBM Cycle is presented in six phases that are the basis for M&E to be successfully implemented. These stages go through identification, implementation, monitoring and evaluation and ending with lessons learned.

Each step will be applied within the Analysis chapter for the case study of this report, respectively Kuben Management A/S. The stages use planned and actual quantitative measurement.

The cycle principles is to make decisions at each stage progressively, meaning that each phase must be completed before the other starts ensuring monitoring and evaluation as a part of feedback and learning process. At each stage, the activities/tasks that are implemented in the project will be monitored and evaluated. In order that M&E to be successful, the whole cycle needs to be understood and approached as an entity.

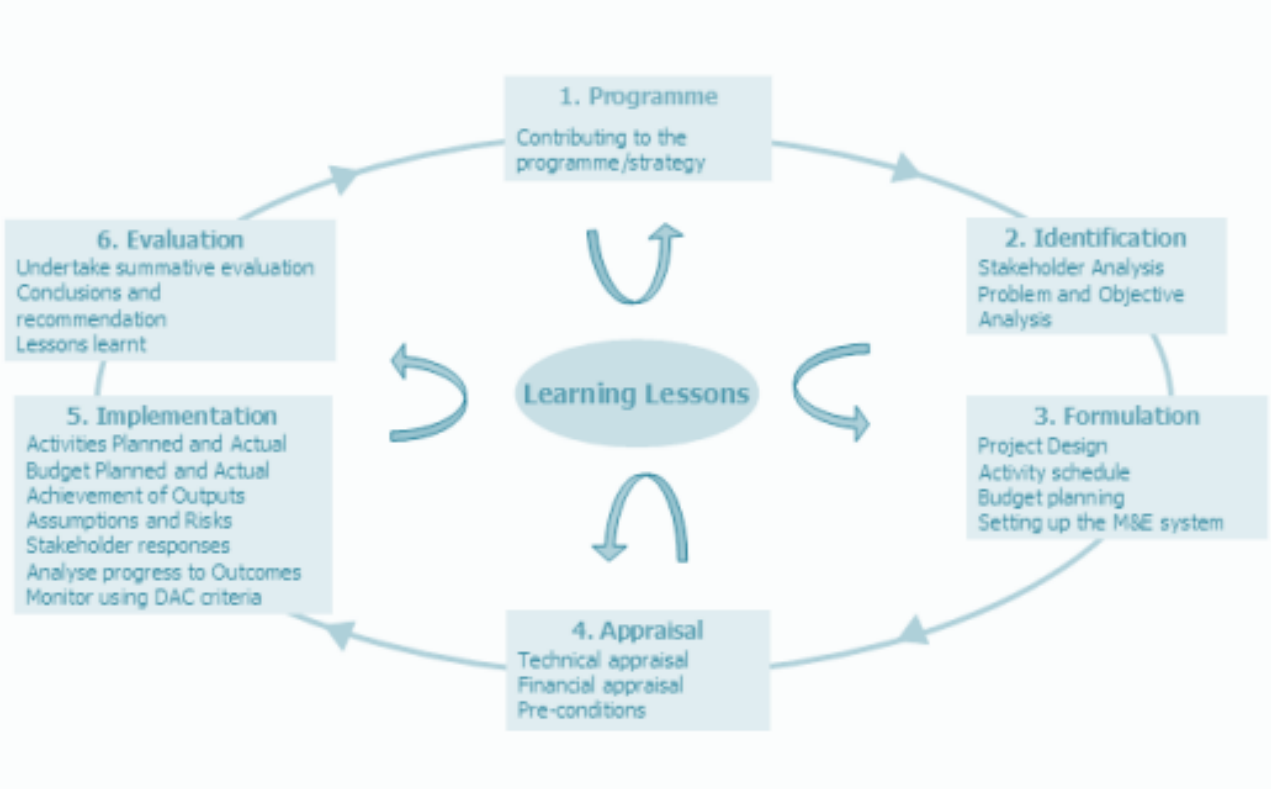


Figure 22 RBM Cycle Source: (Spreckley, 2nd edition 2009, s. 8)

5.5.1. STAGE 1 PROGRAMMING- SETTING THE CONTEXT FOR MONITORING AND EVALUATION

Programming phase refers to identifying problems, constraints and opportunities. Programming should be concluded with identifying and agreeing on objectives and priorities and providing a feasible framework for identification and preparation of the project.

In this stage, a clear strategy must be defined in relevance with the project to achieve the sustainable benefits it will create. Lessons learnt from previous projects should be revised as a contributor in formulating the strategy.

LESSONS LEARNED

From the interview with Michael Gabba the lessons learned from previous projects that contribute to the strategy are related to how the building site roads are used, economy and the collaboration between the client and contractor.

The first cause, building site roads are monitored to be respected as it should due to a previous incident Nordjylland Housing Association had. This incident was fined by Arbejdsmiljø (Health and Safety work environment) due to the placement of heavy roads and traffic roads near to a crane. It has been noticed some of the workers walking under the crane during mounting of elements. There were no accidents but Arbejdmiljø are very strict with complying with regulations, therefore they will check for the project in Støvring so this will not happen again.

Economy of building site activities has to be monitored at each stage to remain within the financial threshold imposed by the municipality. However documents related to financing are not available, as these are comprised in Ajour Program, which will be submitted later as reports. Taking in account that the price is fixed, it is the total contractor responsibility to monitor finances frequently to make sure there are no overrun costs.

The Client- contractor communication is essential within projects as it influences the projects outcomes. Therefore employing the client advisor, will solve most of these issues where the client advisor will make sure that the turnkey contractor fulfils the client demands.

STRATEGY

Another important factor for setting the context for Monitoring and Evaluation is formulating the strategy. In formulating strategy lessons learned need also to be considered. Further in the Analysis chapter, an identification of the main stakeholders and their demands are identified and should formulate the strategy for the project in Stovring.

5.5.2. STAGE 2 IDENTIFICATION ON SOLVING PROBLEMS

Within identification stage, the purpose is to identify objectives expressed in relation to programming. In the identification phase in order to ensure the relevance and feasibility of the project, following assessments need to be done:

- Assessment of policy and programming framework
- Stakeholder analysis
- Problem analysis
- Assessment of other ongoing and planned initiatives
- Assessment of lessons learned;
- Preliminary objectives and strategy analysis;
- Preliminary assessment of resources and cost parameters;

- Preliminary assessment of project management, coordination and financing (Barbera)

In this stage, LFA Approach will be used as part of analysis stage where stakeholder mapping, problem and objective analysis and determination of acceptable strategies will be developed. By doing so, there will be established a logic in the project objectives and stakeholder expectation that need to be monitored throughout the project. The relevance, feasibility and sustainability are achieved by use of LFA project planning and management core tool. Internationals NGOs (Bakewell & Garbutt, 2005) identified that:

- LFA encourages clear thinking by creating logic in how activities contribute to the desired goal through delivering outputs and outcomes. It eliminates unnecessary information provided by the researchers, also termed as "waffle" writing long and unclear reports.
- LFA provides a simple summary of the key elements and enables rapid understanding over the projects.

There is also criticism towards using LFA however there are no currently viable alternatives, according to Bakewell and Garbutt. Criticism of LFA relies on the linear logic of causality resulting in just one dimension analysis of the project

Furthermore the challenges are:

- Communicating LFA thinking to others and is treated as a contract document, and modifications are complicated to be made once it has been something agreed at multiple stakeholders' negotiation level.
- Unintended consequences and possible negative outcomes can appear in a project and LFA does not provide any consideration and guidelines on how to cope in this situation

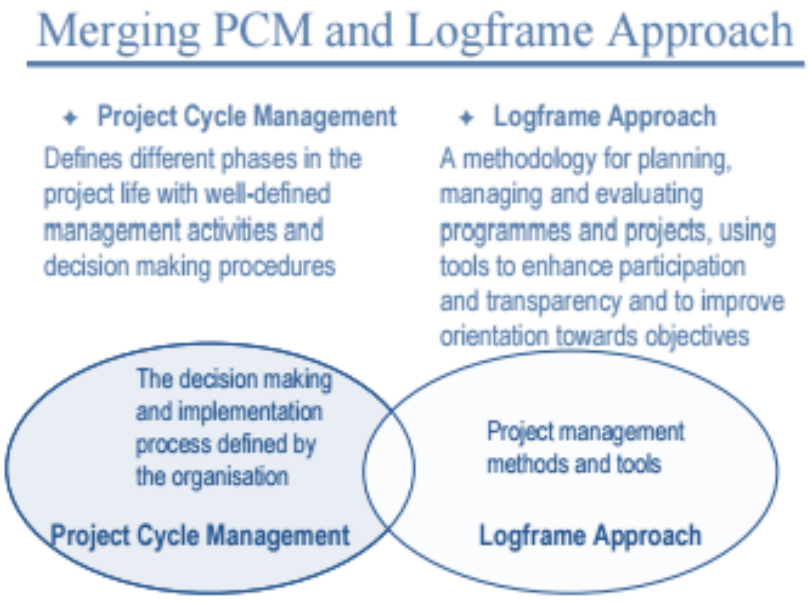


Figure 23 5 Merging PCM and Log frame approach Source: (Commission, Project Cycle Management Handbook)

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Using LFA throughout the project cycle, in programming phase is to analyse problems, constraints and opportunities and determine objectives. In the identification phase the initial project proposal should be conceived and formulated by use of LFA.

Within formulation stage relevance and feasibility of the project should be confirmed, and there should be prepared a financing plan, cost benefit analysis, risk management, monitoring and audit arrangement.

Lastly in the implementation stage, resources can be managed efficiently to deliver the desired results and achieve purposes to contribute to the overall objective of the project.

Monitoring is not used on basis of LFA however for Evaluation and audit stage the log frame matrix is a good summary of records. (funds)

5.5.2.1. THEORY OF CHANGE (TOC) AND LOGICAL FRAMEWORK APPROACH (LFA)

ToC is a methodology for planning and evaluation that defines long term goals in order to identify necessary preconditions. Theory of change is vital to evaluations success. By using this as a methodology, managers can be assured that the right activities are used to achieve the desired outcomes. It shows the positive impacts (that are beneficial) the negative ones (that are detrimental), and how they contribute to producing impacts. Overall, Toc refers to making a change in the program/project and showing how that change is going to happen. In general ToC should be:

- **"Plausible**. Do evidence and common sense suggest that the activities, if implemented, will lead to desired outcomes?
- **Doable:** Will the economic, technical, political, institutional, and human resources be available to carry out the initiative?
- **Testable:** Is the theory of change specific and complete enough for an evaluator to track its progress in credible and useful ways?" (C.Kubich)

A good log frame has ToC embedded in its structure; the two approaches blend into each other as:

"If we do these Activities and these assumptions hold, then these Outputs will be delivered. If these Outputs are delivered and these assumptions hold true then this Purpose will be achieved, and if this Purpose is achieved and these assumptions hold true then this Goal will be achieved. The whole thing is designed around an/if...and/then series of propositions." (Rick Davies)

Logic Framework is a way to represent ToC, in a more simplistic way. Logical framework is widespread while ToC seems to be less standardized. Log frames illustrate graphically the components and helps through stakeholder involvement to clearly identify outcomes inputs and activities while Toc links outcomes and activities to explain how and why the desired change is expected.

Moreover, log frames focus more on specific program to meet the outcomes while Toc is more a general picture. However Toc and logic framework is more or less the same thing but expressed differently. There is still a debate over the differences. Toc has originated from two kinds of thoughts: evaluation, by clarifying the links between inputs and outcomes and social action. To

conclude, log frames will be further used to show analysis more systematically and easier to understand.

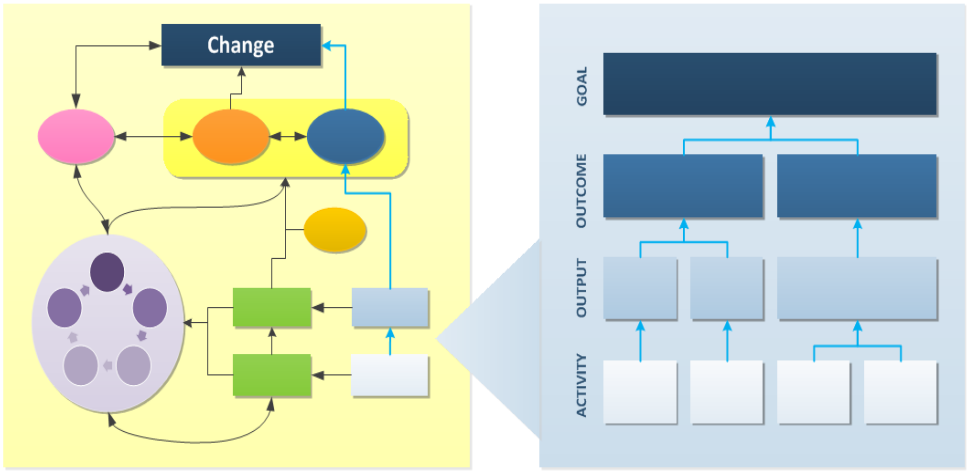

Figure 24 Theory of change versus Program Logic Source: http://www.tools4dev.org/

5.5.2.2. LOGICAL FRAMEWORK APPROACH (LOGFRAME) (LFA)

The Logical Framework Approach (LFA) is an analytical process and set of tools used to support objectives-oriented project planning and management. It provides a set of interlocking concepts, which are used as part of an iterative process to aid structured and systematic analysis of a project or programme idea.*"* (Guide to the logical framework approach 10)

LFA was developed in 1969 for United States Agency for International Development (USAID). It has 20 years of popularity, and has become universally known .LFA is agreed to be the most appropriate management tool due to its usage within monitoring and evaluating international development projects. However it does not replace target group analysis, cost benefit analysis, time planning, and impact analysis. (Logical Framework : Making it Results Oriented)

The Logical Framework (log frame) is a way to apply RBM to the management of the project. The LFA consists of two main stages – analysis stage and planning stage. The analysis stage comprises: stakeholder analysis, problem analysis, objective analysis and strategy analysis, whereas the planning stage includes the Logical Framework Matrix, activity scheduling and resource scheduling.

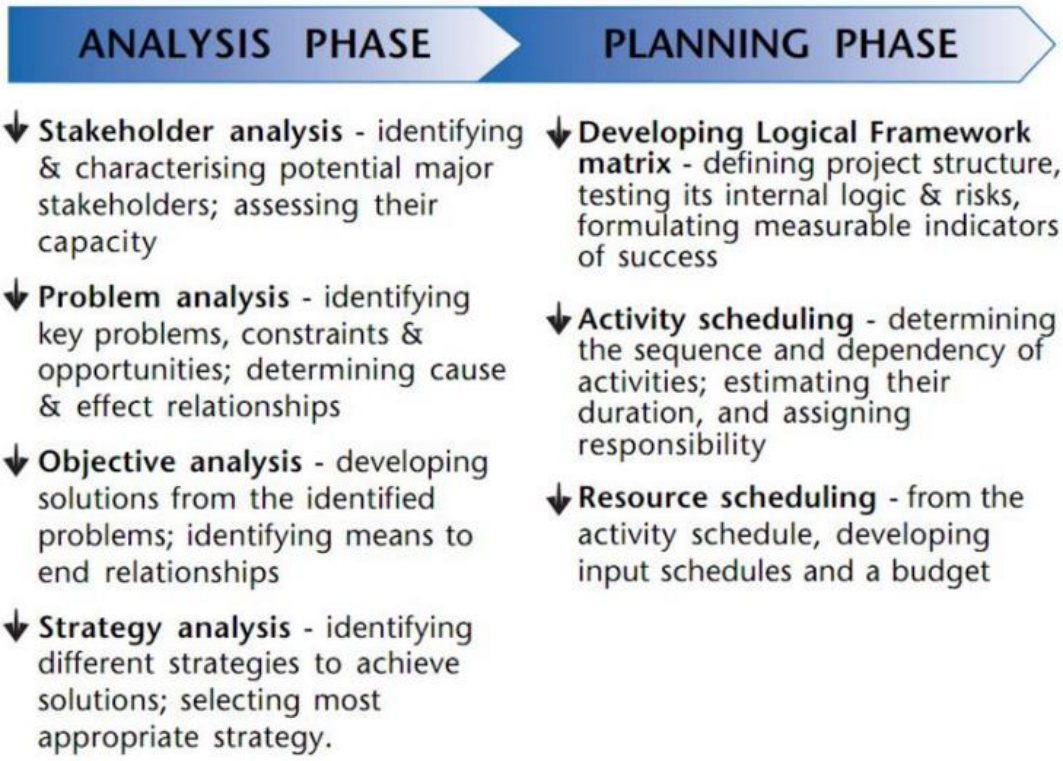

Figure 25 LFA Analysis and Planning Phase Contents, Source: (Commission, The logical framework approacg)

When using a result oriented Logical Framework Approach, fundamental question arise such as: Why are we doing this project? What results do we expect to achieve for the resources being

invested? Who will the project reach out to in terms of beneficiaries? How will progress toward the achievement of results be measured? In order to get an effective result of using LFA, stakeholder's perspective and the intended outcomes play a crucial role in answering the questions above. (Logical Framework : Making it Results Oriented) LFA helps to:

- Analyse the existing situation within the company, including the identification of stakeholders' needs and the definition of related objectives
- Establish a causal link between inputs, activities, results, purpose and overall objective
- Define the assumptions on which the project logic builds
- Identify the potential risks for achieving objectives and purpose
- Establish a system for monitoring and evaluating project performance (Guide to the logical framework approach)

As mentioned, PCM uses LFA as a core tool. This refers to the fact that LFA is used throughout all the stages of Project Cycle Management, namely in: identification, formulation, implementation and evaluation. In the identification, it is analysed the existing situation and possible new strategies are identified, during formulation clear objectives, measurable results, assumptions and risks are identified, whereas in implementation there is monitored what has been formulated and lastly during evaluation , the log frame provides the summary as the basis for performance and impact assessment.

Project Description	Indicators	Source of Verification	Assumptions
Overall Objective – The project's contribution to policy or programme objectives (impact)	How the OO is to be measured including Quantity, Quality, Time?	How will the information be collected, when and by whom?	
Purpose – Direct benefits to the target group(s)	How the Purpose is to be measured including Quantity, Quality, Time	As above	If the Purpose is achieved, what assumptions must hold true to achieve the OO?
Results – Tangible products or services delivered by the project	How the results are to be measured including Quantity, Quality, Time	As above	If Results are achieved, what assumptions must hold true to achieve the Purpose?
Activities – Tasks that have to be undertaken to deliver the desired results			If Activities are completed, what assumptions must hold true to deliver the results?

Table 3 Log frame Matrix Source: (Commission, Aid Delivery Methods 58)

5.5.2.3. STAKEHOLDER ANALYSIS

Stakeholder analysis consists in identifying all the people and organizations that are impacted by the project, both positively and negatively.

Moreover is necessary to document relevant information such as interests, involvement and stakeholders influence on the success of the project. In regards to that, within stakeholder analysis the following questions should be answered:

- ***Who is the stakeholder by name?***
  Within Støring Bytorg the stakeholders have been defined in section 3.6 Project summary where all partners are listed. The ones that have the most influence over the project development is Nordjylland House Association and the municipality. More information available on their website: www.bonord.dk
- ***What is the nature of their interest in the project? Professional or personal?***
  Nordjylland Housing Association will benefit from 20 new apartments in Støvring. The housing association will have therefore a greater supply of apartments to rent/sell.
  Due to the fact that the municipality has subsidised this project they also have a great interest in transforming Støvring as an attractive settlement of housing. It is a professional requirement also to monitor and evaluate the construction throughout project cycle and report kpi's to the stakeholders.
- ***What are the stakeholder's expectations of the project manager?***
  The best way to determine this is for the project manager to have a meeting with the key stakeholders, such as building owners (developer parties) or investors. As informed, it is expected to deliver the construction in time, quality and within financial threshold.
- ***What to expect from the stakeholders?***
  This is the opposite of the previous question. It is definitely needed to set expectations and this is not telling the stakeholder what to do or how to act, but if done correctly it is providing the stakeholder with a description of the support that the project manager needs.
- ***What are the priorities of the stakeholders to be considered*?**
  For Nordjylland Housing Association the most important is quality.
  After gathering the above information, the stakeholders are classified according to their roles as being part of external or internal groups of stakeholders. Internal stakeholders usually refer to the people who are part of the organization they work for and have an interest in the development of the project. Internal stakeholders refer to any kind of internal investors or shareholders, CEO, core project teams, providers of functional resources and different support groups.

External stakeholders refer on the other hand as the group of people that has an interest in the development of the project but are not part of the organization. This group of people includes *the client* as the developer, which in case of Støvring Bytorv is Nordjylland Housing Association. Other parties are the *end users*, which are the ones who will rent/buy the apartments. *Suppliers:* Projects require materials to be supplied from external companies. When analysing this category of external stakeholders, the project manager should consider the list of major suppliers. *Contractors and consultants:* As it is the case with the materials, which are procured from suppliers, the project

manager often collaborates with both contractors and consultants in order to perform certain tasks or require some services.

In conclusion to stakeholder participation there will be established: a level of understanding towards setting strategic goals, defining the result chain of expected results, identifying assumptions and risks to be further used in analysis of this research.

5.5.2.4. PROBLEM ANALYSIS

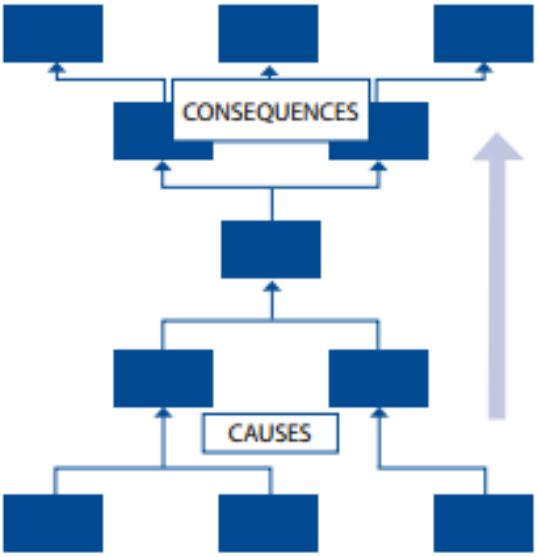

Figure 26 Problem tree Source: (Guide to the logical framework approach)

The problem analysis aim is to identify the negative aspects of an existing situation and displaying a causality relationship between the problems. After the main problem is identified also called core problem, a problem tree can be developed by starting with: causes of the problems on the downside of the tree and the effects of the problem on the upper side an example is shown in figure. 2 Subsequently the steps in developing a problem tree are:

1. Determine the scope of analysis
2. Identify stakeholders
3. List the problems
4. Identify the core problem
5. Identify causes and effects
6. Arrange the causes as roots
7. Arrange the effects as branches

According to the project in Støvring, the scope of this analysis is to determine what is affecting the quality of work. Causes that could endanger quality have been identified together with the project manager from TL Byg and his assistant Theis Brønning Nørlem. See Appendix 2 Email discussion and questionnaires. The main causes have been stated to be: lack of time, lack of funds and quality of work performed by labours. Based on this a problem tree has been developed to understand what are the effects in order to diminish these problems.

Each cause of the problem tree will be explained to understand the context in which is happening, As seen in figure 27 Problem Tree, 3 main causes have been mentioned to be as the time factor, finances and labour capabilities.

Not enough time: According to document Critical Path Time Schedule in Annex D, the critical path shows the activities that cannot be delayed, otherwise it will delay the whole project leading to performing less quality than expected. The activities that are most important are mounting of elements, which can be also seen on the critical path and it has been mentioned that: to prevent wasting time on delivery of elements, due to the fact that these were not available right on time

from one supplier, elements were ordered from four suppliers to make sure mounting will happen on time.The consequence for not having enough time is due to insufficient planning. If activities receive realistic time to be completed plus a buffer to make sure it won't exceed the planned time allocated for each of the activity then there will be enough time to make sure everything is going accordingly to what has been planned. If activities consume the buffer and delay the next ones leaving no other solution, the only possibility is to compromise quality, in order not to waste more time.

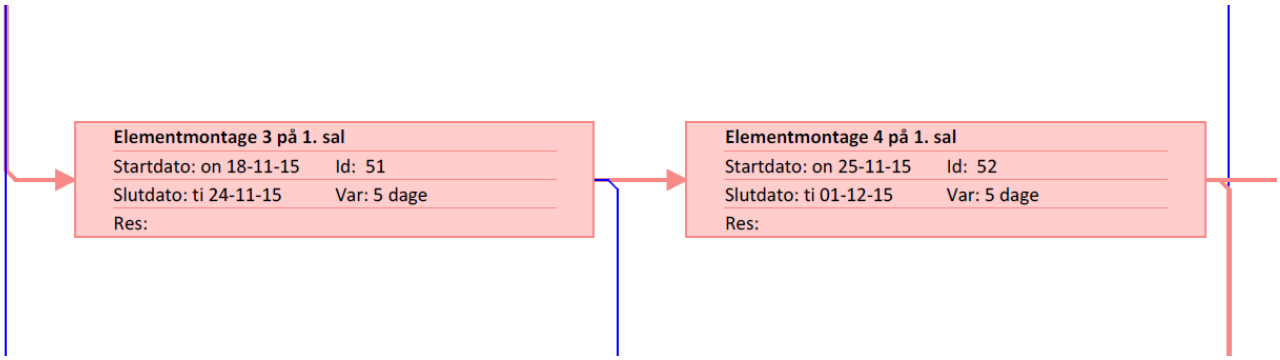

Figure 27 Activity: Element Mounting Source: Tidsplan med Kritiskvej

It should be taken in consideration unforeseen conditions, such as governmental orders or weather storm for example which could jeopardise the process flow. It must be therefore taken in consideration a total buffer for the project to make sure unforeseen risks are covered.

Other Analysis, are not available, but another way to illustrate monitoring of time schedule is through: Time versus completion curves; this will show how the project was planned according to its Early Start and Late Start and what the current state is, according to percentage of work completed. Moreover, future possibilities of early and late start can be also recalculated. This is shown as seen in the figure below:

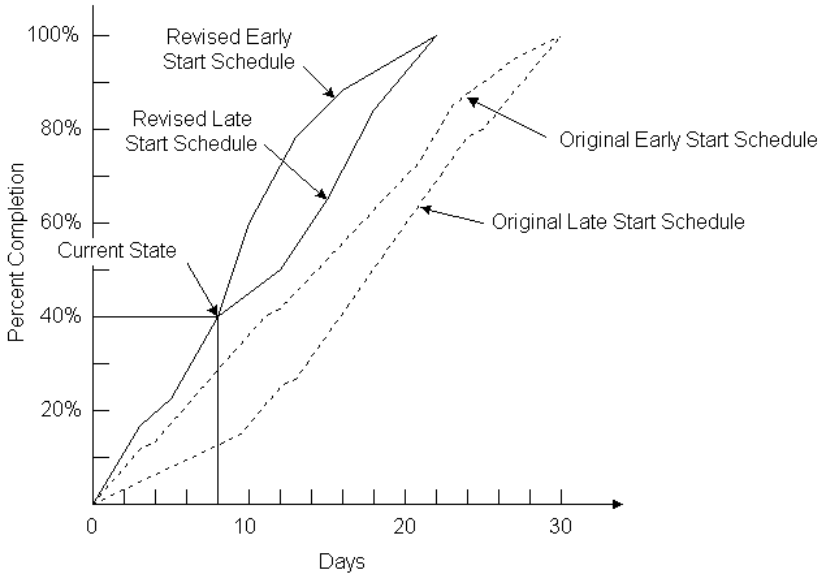

Figure 28 Illustration of Actual Percentage Completion versus Time Source: (pmbook)

Insufficient funds: As mentioned previously the total price is fixed and is the responsibility of the project manager to manage funds for each contract. Not having sufficient funds to comply with quality demands for certain activities is due to poor monitoring of budgets during construction. Regarding budget there are no financial analyses available but as mentioned in 2.1 what is Monitoring, and example of key performance to monitor budgets is Earned Value Management.

Qualified workers: This refers to workers which could be from other countries than Denmark. This endangers quality due to Danish regulations that may not be known to other foreign workers. Also workers may not have the process overview the project manager has in mind. Therefore communication is essential between project manager and workers to make sure the work is performed according to expectations.

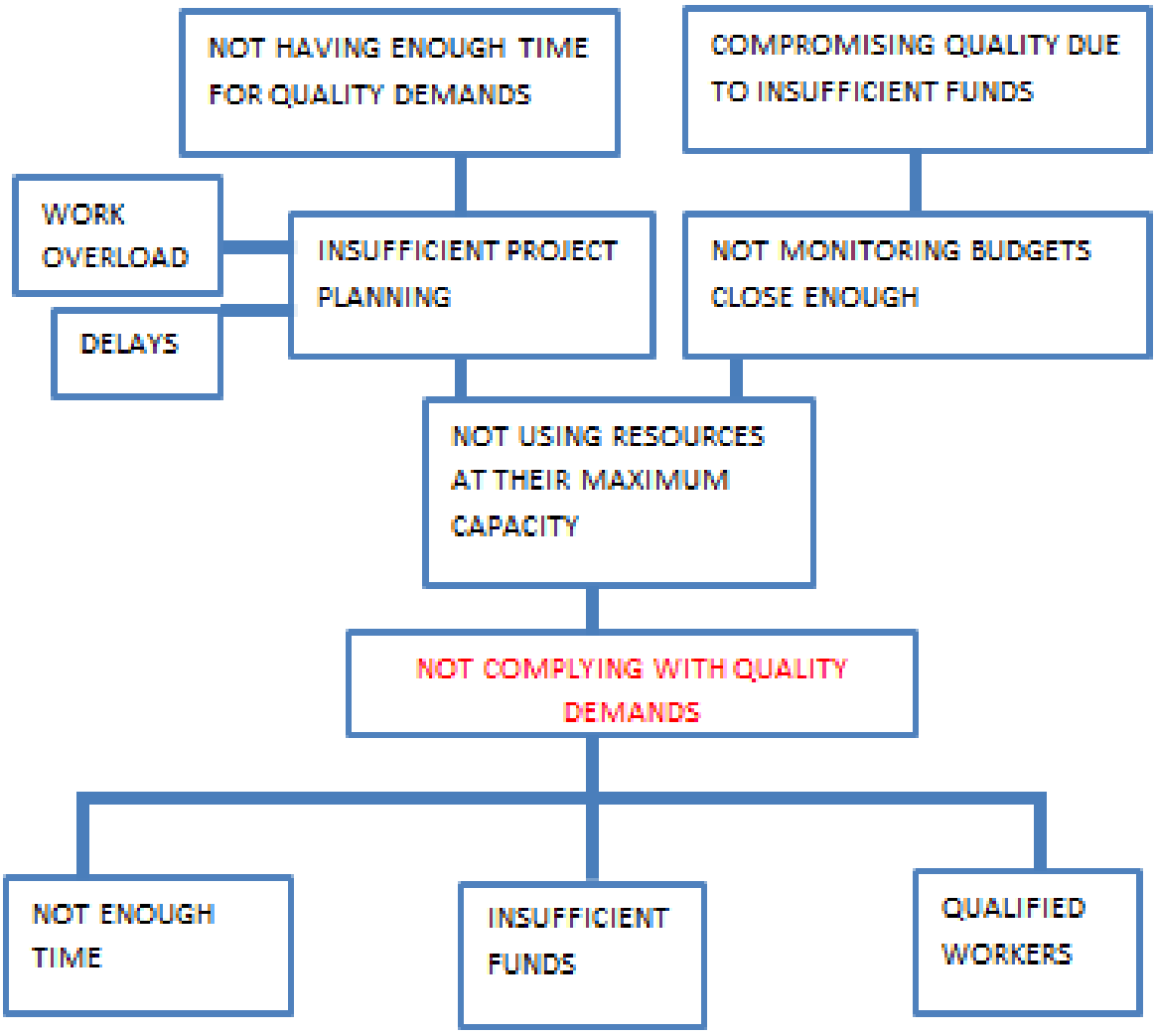

Figure 29 Problem tree Source: (Guide to the logical framework approach)

5.5.2.5. OBJECTIVE ANALYSIS

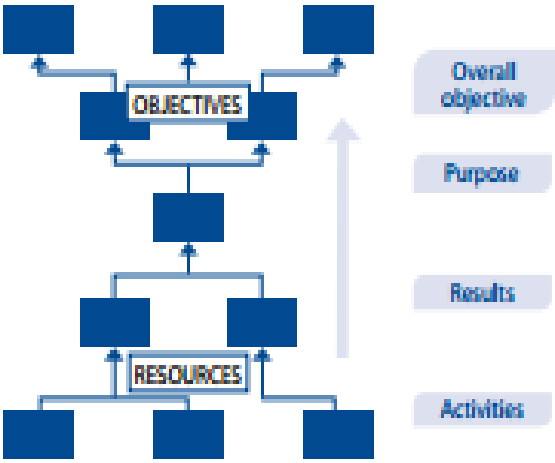

Figure 30 Objective tree Source: (Guide to the logical framework approach)

Within objective analysis, the negative situations are converted into solutions, also called "positive achievements". The formulation of positive achievements must be desirable by the stakeholders involved in the project and of course achievable. It must be assessed how achievable the objectives are, and generally if there are too many objectives there must be made a prioritization of which are of high importance and which are of less importance. Only objectives of high importance should be considered according to a preference ranking. Furthermore, the objective tree will provide an idea of the desired future situation that the company/project could achieve. In figure 30 an example of Objective tree is shown.

Objective tree analysis can be further used in contouring the idea for the result chain. It can be seen in figure 31 that in order to perform activities, resources as the inputs such as: time, funds and labour are needed. This means that planning efficiently resources there will be enough time, funds and acknowledged workers. To do so, performance methods can be used. Some of them have been already mentioned and in use, such as: the critical path methods, earned value management, but also: risk analysis as mentioned in 6.1.3.2, milestone trend charts and buffer management chards.

Furthermore, regarding methods on using resources at their maximum capacity, the heuristic methods can be suggested for resource constrained project scheduling. This method is very useful in case activities require the same resources and cannot be scheduled in parallel. The result of a heuristic method will provide the creation of a model on how resources can be best planned, based on experience and practice of the project manager. It is relatively easy to implement and if activities are prioritised right than an optimal schedule can be produced. Using this method, schedules can be optimised as follow:

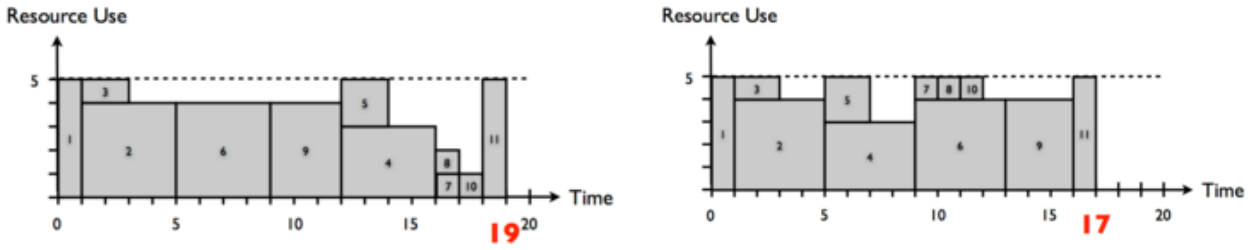

Figure 31 Resource constrained scheduling Source: (PM Knowledge Center)

Continuing with the objective tree at result level, assuming with the right methods resources will be used efficiently then the project will be delivered on time. Furthermore, the construction will receive the subsidised funds only if it complies with the demands and key performance indicators, therefore the main purpose is to deliver within the quality agreed.

Assuming everything goes as planned, this will contribute to the overall goal to make Støvring Bytorv an attractive place to live and to become a city centre as part of the agreement. Assuming the project is successful it will contribute in making Støvring as the city a better settlement with a great offer of housing.

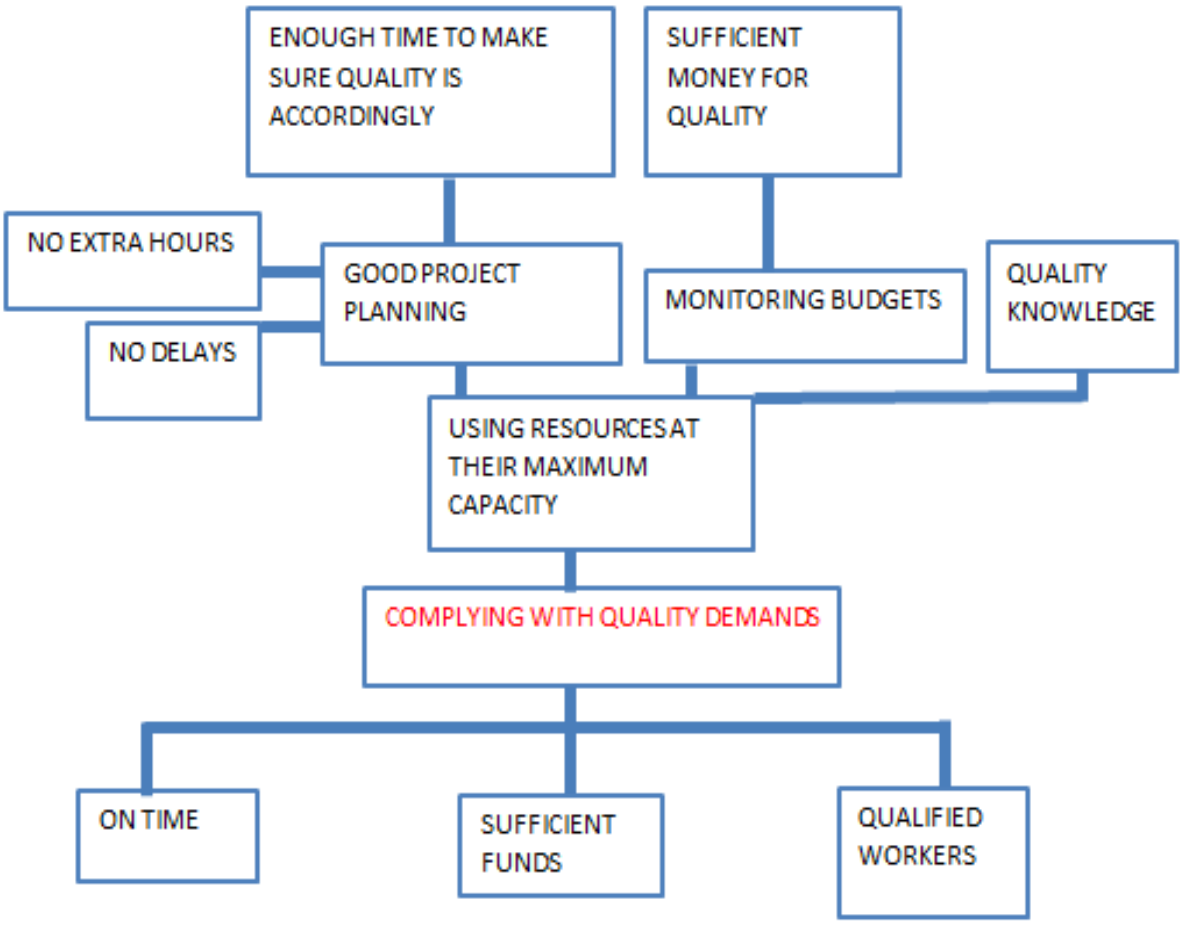

Figure 32 Objective tree

5.5.3. STAGE 3 FORMULATION

Through formulation, the relevance and feasibility of the project should be confirmed and a detailed plan should be prepared. Stakeholder's involvement still needs to actively participate and further prepare and approve the LFA Matrix (log frame).

In this stage, it is used the information gathered in stage 2 and a Logical Framework Matrix (log frame) can be developed where objectives, assumptions, indicators and evidence are listed. From activity schedule, activities can be then budgeted in Implementation Chapter.

As it can be seen in the figure below, all the information regarding to the ***SITUATION ANALYSIS*** has been already discussed regarding: *stakeholder analysis, problem analysis, lessons learned so far and a strategy selection*. Regarding the ***PROJEC DESCRIPTION*** *overal objective, purpose, target group, location and duration , results, activities, resources* and *costs* will be described in chapter 5.5.3.3 Formulating Objectives

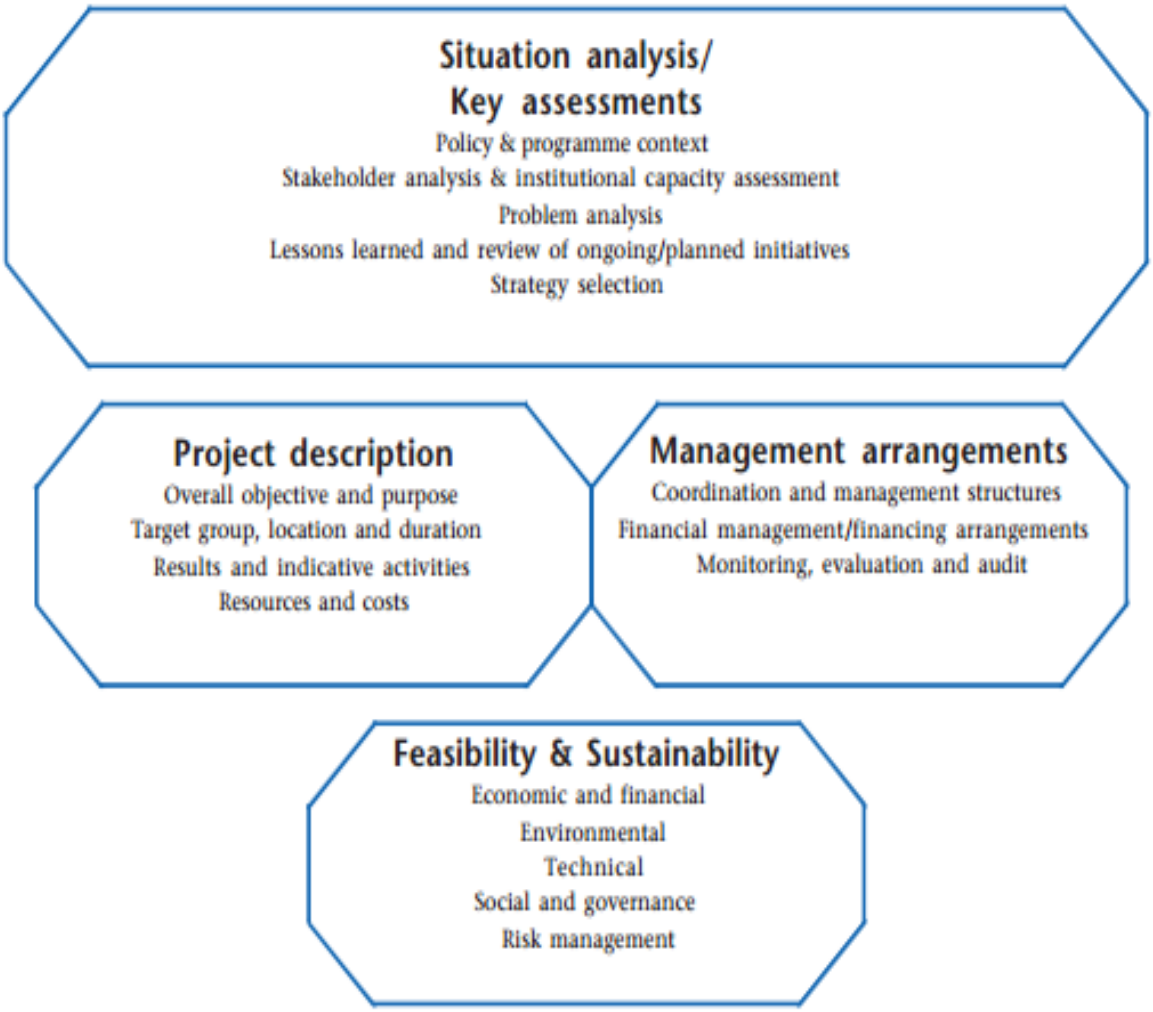

Figure 33 Information elements produced by end of formulation Source: Project Cycle Management Guidelines, Volume 1, European Commission - Europe Aid Cooperation Office, 2004, p. 38

5.5.3.1. LFA MATRIX (LOGFRAME)

Log frames have been already mentioned by now, and represent the output of all the analysis performed in this report by now. The log frame is basically a matrix where the summary of analysis stage at activity level is presented and further analysed. Log frames can be used throughout project life cycle to track progress and if necessary re adapted to the changing situations. This makes log frames to be a planning and monitoring tool.

As seen in figure 34 the log frame consists of four columns summarizing the key elements of the project: overall objective, purpose, results and activities; this is the vertical logic which represents what the project intends to do through the causality relationship while the horizontal logic refers to measuring effects and resources through indicators and sources of verification.

Logic of Intervention	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Overall Objective (1)	(10)	(11)	(9)
Purpose (2)	(12)	(13)	(8)
Results (3)	(14)	(15)	(7)
Activities (4)	Means (16)	Costs (17)	(6)
			Preconditions (5)

Figure 34 Log frame Source: (Guide to the logical framework approach, 2011)

Each of these columns will be described and completed in the order presented:

1. ***Intervention logic*** (result chain)
2. The project environment and key external factors contributing to the project success: ***Assumptions***
3. How the project is going to be monitored and evaluated: ***Indicators and Sources of verification***

Intervention logic: Through the intervention logic the strategy of the project can be deducted as it clarifies what are the means (preconditions) through which results are achieved. A description of program logic (result chain) is needed in order to formulate the overall objectives, purpose, results and what are the activities through which it will be achieved. As it can be seen in the figure above, the intervention logic is the first column of the log frame.

Program logic in figure 35, is represented through a result chain of inputs, activities, outputs and outcomes, shown either as a table or series of results with activities alongside. Alternatives to program logic are as outcomes hierarchy, realist matrix and triple column.

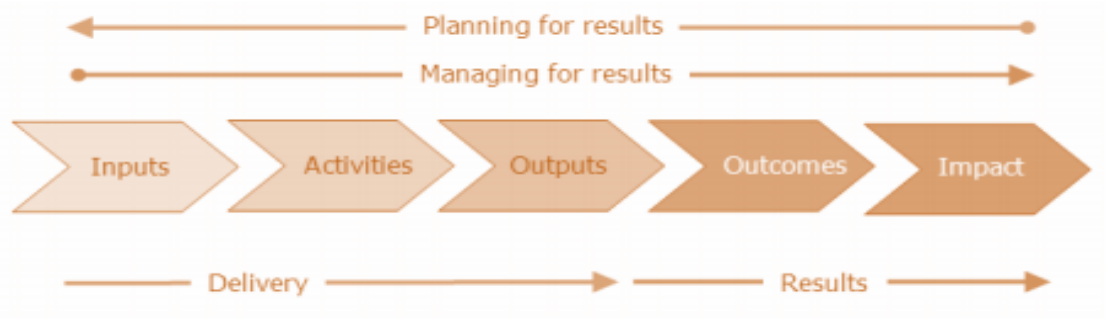

Figure 35 Result Chain Source (Spreckley, 2nd edition 2009, s. 3)

- Inputs are referred to financial, human and material as the resources used for development.
- Activities are the actions taken through which inputs are used to produce certain outputs.
- Outputs are the products, capital and services that result from the development process. These are the **short term outcomes** that are the result of the logical consequence of project activities, as seen in figure x program logic.
- Outcomes (objectives) are the **medium term results** that are the logical consequence of achieving a combination of outputs.
- Impact is the **long term objectives** as the overall objective of the project meant to contribute in the long run. Long term objectives are expressed in verifiable terms, represent a sufficient justification of the project and are clearly written. (Develop Programme Theory)

5.5.3.2. STEPS IN CREATING INTERVENTION LOGIC

Figure 36 Result Chain example Source : (Kesler, 2015)

The program logic should start with defining the overall objective, as it can be seen in the figure below: *"Income of poor farmers increase*". The activities that contribute to the overall objective are stated as*: "Building capacity of associations to advocate about farmer's needs"* and *"Training retailers to give quality information on cultivation practice to farmers"*. Activities contribute to the overall objective but short, medium and intermediate objectives must be defined as causality relation. After these are defined as seen in figure below, it can be formulated objectives. Finally, medium term objectives should bring value to the overall goal, reflecting on overall goal achievement.

Inputs: If inputs are in the right time, quantity and quality than what are the activities?
Activities: If activities are implemented within schedule and budget than what are the outputs?
Outputs: If outputs are leading to the expected results than what are the outcomes?

Outcomes: Are outcomes leading to achievement? How do beneficiaries feel about the work?

5.5.3.3. FORMULATING OBJECTIVES

According to RBM requirements, objectives must be result driven and are often referred to as SMART. SMART is a criterion categorized by Peter Drucker's and each letter means:

- S - Specific must describe a future condition
- M - Measurable indicators to assess if results have been achieved
- A - Achievable results must be in the capacity of the contributors to be achieved
- R - Relevant: must make a contribution within the development framework
- T - Time bound: results have an expected date of accomplishment

Objectives can be classified as short-term, intermediate, or long-term.

- **Short-term outcome** objectives are the initial expected changes after implementing certain activities or interventions (e.g., changes in knowledge, skills, and attitudes).
- **Intermediate outcome objectives** are those interim results that provide a sense of progress toward reaching the long-term objectives (e.g., changes in behaviour, norms, and policy).
- **Long-term objectives** are achieved only after the program has been in place for some time (e.g., changes in mortality, morbidity, quality of life).

(Developing Program Goals and Measurable objectives)

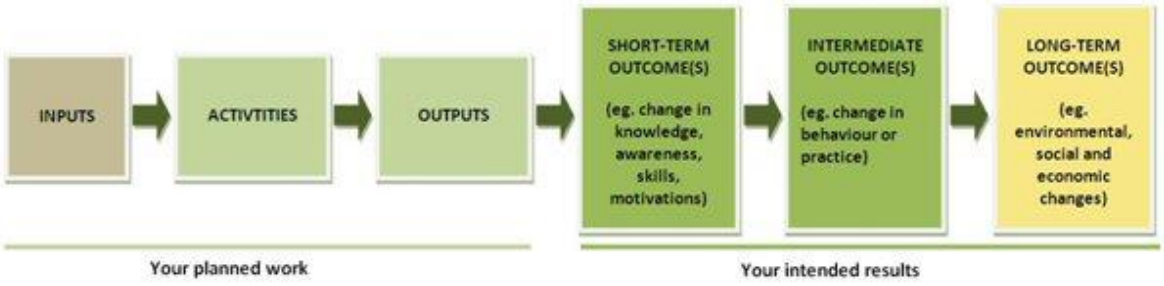

Figure 37 Program logic Source: http://evaluationtoolbox.net.au

The difference between the outcome and impact is that the impact is about the long term expectation of what should happen as a result of the program, while the outcome is the manner in which it will be achieved as an intermediate effect.

Outcome objectives specify the intended effect of the program.

After describing and understanding the result chain, according to the project in Støvring suggestions can be given. The most important part to look at is intended results. The logic starts by stating the long term objective, intermediate and short term.

The long term goal can be identified from stakeholder's analysis. When stating the overall goal is important to have in mind that is should be used as main point of reference, it should be clearly written and have sufficient justification for the project. Lastly the overall goal should be expressed in verifiable terms. As a main point of reference is that the municipality has invested in this project,

and their interest is to: ***creating Støvring an attractive place to live.*** The monitoring and evaluation system is compulsory for subsidised buildings for this reason to make sure constructions are delivered within the quality demanded. The method to verify this is by submitting the monitoring and evaluation KPI's at the end pf the project for assessment.

From the previous analysis, activities can be formulated according to the objective tree, as these are the initiatives necessary to achieve the overall goal. These would be using resources at maximum capacity by monitoring time and budgets closely. If time is monitored and budgets, there are enough resources left to comply with the desired quality. Monitoring quality is also a necessary activity to make sure there are no hidden mistakes. A ***list of activities*** is included in the Annex D. Documents relevant to budgets have not been made available.

Having the activities and overall goal stated down, the logic of the result chain can be written down. The purpose of the activities happening on the construction site for Støvring Bytorv is to deliver the construction in time, therefore it can be formulated as a short term outcome that:

By 1st August 2016 Apartments will be ready for handing in to end users..

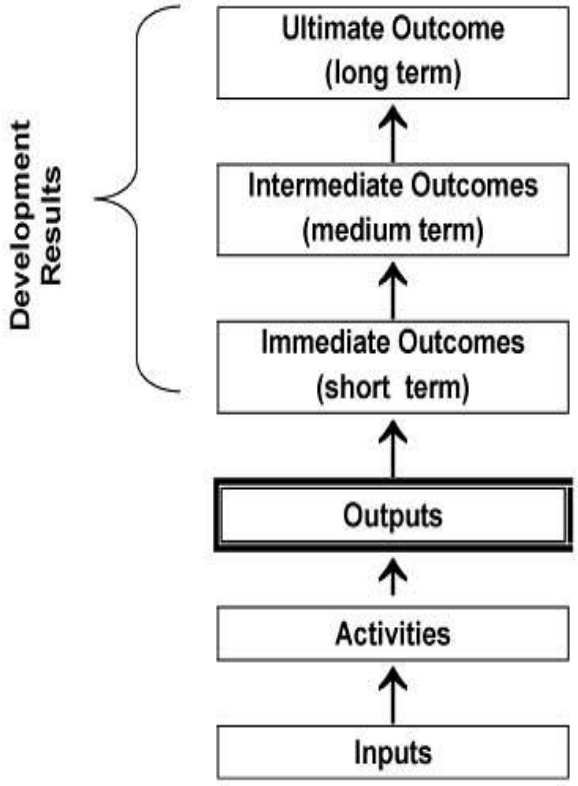

Figure 38 Result Chain Source: ***Invalid source specified.***

5.5.3.4. FORMULATING ASSUMPTIONS

Assumptions are external factors that influence the success or failure of the project. External factors need to be listed down in the assumptions column and have to be formulated in a way to reflect how these impact the long term sustainability of benefits that are outside of control. Assumptions can be crisis related, institutional, social, economic and technical nature. Assumptions and risks mean the same but the way those terms are put in words describe different views; assumptions are therefore a positive way to describe a risk, thus the conditions that need to be met if the project has to go ahead and vice versa, a risk is a negative way of describing an assumption.

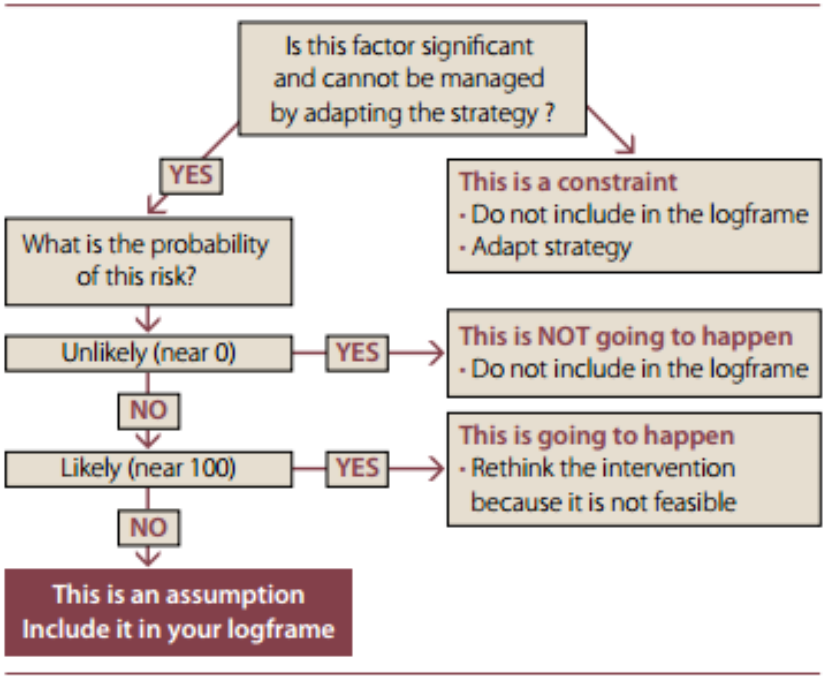

Figure 39 Assessing risks Source: (Programme/project management: The results based approach)

Assessing risks may lead to subjectivity but there is no other way when deciding which is the likelihood of these external factors to occurr.

Assumptions that do not constrain the project with regard to its success can be categorized as constraints for the overall strategy.

Assumptions must be probable and manageable. Assumptions that can be solved should get a solutions before any failure happens. To write down assumptions, the starting point is at the bottom of the matrix and going upwards.

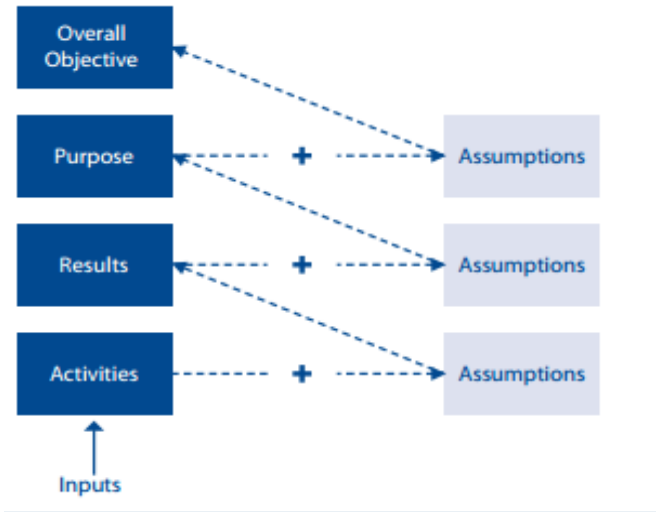

Figure 40 The relationship between assumptions and objective hierarchy Source: (Guide to the logical framework approach, 2011)

5.5.3.5. FORMULATING INDICATORS

Indicators are variables that specify what to measure along a scale or dimension (e.g. the percentage of farmers adopting new technology, the ratio of female to male students, the degree of quality of something, the perception of results, the number of products destroyed or resold, the existence of new demands, etc.). (Programme/project management: The results based approach 67)

Results are measured based on indicators. Indicators are defined as the signs, changes or progress within a project because of an activity or a set of activities. Indicators will be stated for each outcome, and it should reflect the progress of the project.

Through RBME, progress can be measured to provide information if the project is on the right track. Otherwise, corrective measure must be taken. Therefore, by measuring, you can tell success from failure and it can be rewarded accordingly.

From project success, it can be learned and from project failure it can be corrected detection happens at an early stage. By demonstrating project results, managers get recognition and public support

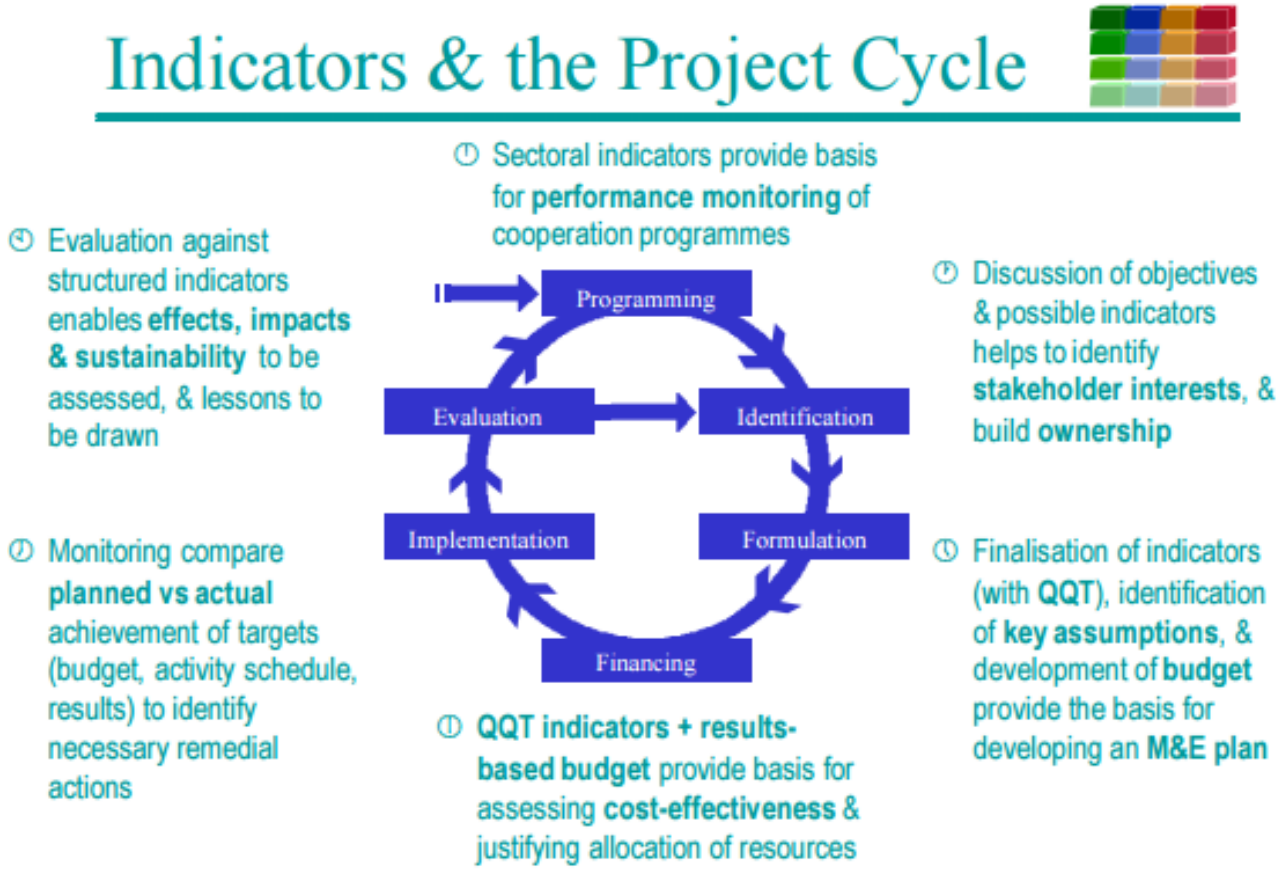

Figure 41 Indicators and the project Cycle Management Source: (PCM Training Hanbook 65)

5.5.3.6. SOURCES OF VERIFICATION (SOV)

Together with indicators, sources of verification are specified at the same time. If any of the stated indicators cannot be verified than it should be replaced in the matrix by other verifiable indicators. Sources of verification should specify: what is the information available (for example surveys) also where, or in what form the information can be collected (for example progress reports) who is collecting the information and how regularly is this done.

5.5.3.7. ACTIVITY SCHEDULE

Activity Schedules are used to analyse and present graphically project activities. Through activity schedules it can be allocated management responsibilities by dividing tasks into their logical sequence with an expected duration and dependency relationship with other activities.

Activities can be inserted in the log frame after objectives, indicators and assumptions have been defined so it is more logical to define activities that are only connected to the overall objective.

Scheduling of activities can be done by use of Gantt chart and there has to be specifies:

- Who does what
- When it will happen
- What types of inputs are needed to achieve completion of activity
- What contribution will it make to the outputs/outcomes/impact.

To bear in mind, activity schedules are a flexible document that can be changed according to circumstances; therefore a continuous monitoring of the progress must be done according to the activity list and if changes occur it must be updated. Together with the activity list, resource schedule and budgets must be linked.

5.5.3.8. LFA MATRIX

After defining all the elements in the logical framework matrix and applying the theory to the case study of this paperwork, a suggestion is given for Støvring Bytorv stakeholders.

LOGIC INTERVENTION	PERFORMANCE INDICATORS	SOURCES OF VERIFICATION	RISKS AND ASSUMPTIONS
OVERALL OBJECTIVE: *Nordjylland Housing Association benefits of 20 new homes creating Støvring as an attractive place to live.*	Number of homes increased on Støvring Number of satisfied end users	Assessment of surveys	
PURPOSE:			

Deliver the construction within the quality imposed by Norjylland Housing Association.	Number of defects	Visual and observations KPI that shows the number of defects	Nordjylland Housing Association will go through defects and some of them may be still unsolved. This means more time to fix defects and fines. Assumption that Nordjylland Association will find no defects at handing in
RESULTS: ***By 1st August 2016 Apartments will be ready for handing in to end users.***	MEANS: Handing in protocol Going through defects Surveys	Handing over meeting	Risks of handing in with defects. Assumption that visible defects will be repaired before handing in
ACTIVITIES: Work activity list see Stovringbytorv etape1. Pdf in Annex D	Schedules Budgets	Monitoring schedules and budgets.	Risk that activities are delayed due to storm weather conditions. Assumption: working extra hours or asking for extension of time due to unforeseen conditions

Table 4 LFA Matrix

5.5.4. STAGE 4 APPRAISALS

Within Appraisal, after the meeting with Michael Gabba it has been discussed the result chain and log frame for approval. Regarding the result chain short medium and long term outcome have been approved; however inputs, activities and outputs needed to be discussed with Christan Hannesbo. With regard to that the time schedule has been made available. Assuming there will be no changes in the meantime regarding objectives, M&E plan can be defined and further on implemented.

5.5.5. STAGE 5 IMPLEMENTATION, INCL. MONITORING AND REPORTING

All the previous stages support the final stage as the implementation, where benefits identified previously are expected to be delivered. Within Implementation stage it is discussed the Purpose and Main periods.

The Purpose of implementation is to: deliver results, achieve the purpose and contribute to overall objective; manage the available resources efficiently and monitor and report on progress (Barbera)

The main periods, as seen in the figure below are: Inception period: the process of concluding contractual agreements with stakeholders, mobilizing resources, continuing working with stakeholders, holding workshops, reviewing and revising plans and establishing the M&E System. Implementation period: the process of procuring and deploying resources, implementing activities and delivering results, monitoring and reviewing progress, revising operational plans and reporting. Phase out period: responsibilities are handed over, maintenance, capabilities effectiveness and recurrent costs should be under control.

Inception	Implementation	Phase out
•Conclude contracting arrangements •Mobilise resources •Establish working relationship with stakeholders • Hold inception workshop(s) •Review and revise project plan •Establish M&E systems	On an ongoing basis: • Procure and deploy resources, including personnel •Implement activities and deliver results • Monitor and review progress • Revise operational plans in light of experience • Report on progress	Progressively: • Hand over all responsibilities to local partners •Ensure maintenance plans are in place •Ensure relevant skills are effectively transferred • Help ensure recurrent cost requirements are secured

Table 5 Main implementation periods Source: (Barbera)

6. IMPLEMENTATION

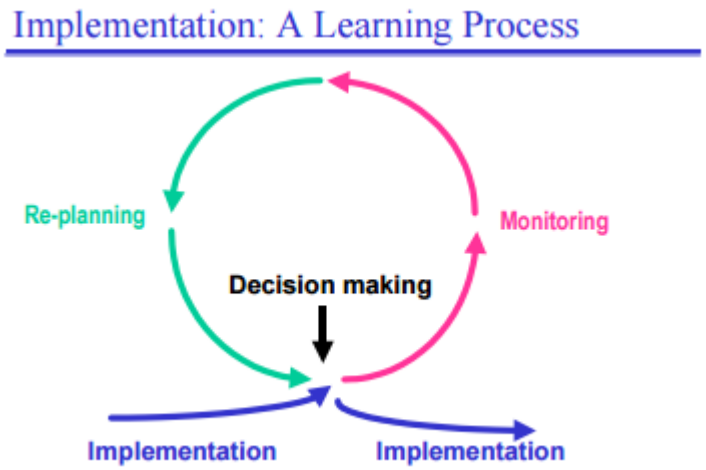

Figure 42 Implementation a learning process Source: (PCM Training Hanbook)

Monitoring and Evaluation is an ongoing process, which functions as basis for decision making by monitoring: activities, budgets, schedules, outputs and assumptions stakeholder's response and the projects contribution towards long term outcomes. It is therefore important to manage the available resources in order to deliver results, achieve the purpose and contribute to the overall objective of the project. Monitoring and evaluation is done periodically. Evaluation is done also at the end of the project and mid-term evaluation.

By implementing the Monitoring and Evaluation system, the project will achieve its intended objectives formulated in 5.5.3.3 Chapter and resources will be used at their maximum capacity, through the application of suggested performance methods. The Monitoring and Evaluation system will assess the project impacts on target communities which is also part of the overall objective to have a positive effect on the satisfaction of end users. There will be assessed also the effectiveness of project outputs in producing short term and long term impacts and to which extent these impacts can be attributed to the effects of the project.

The results obtained from the Monitoring and Evaluation system will help extract lessons and best practices for the design of future project. It will also provide guidelines if necessary to modify the project design and adequate data to evaluate program impact.

The criteria's for assessing the quality of a Monitoring and evaluation system is its utility, feasibility, propriety and accuracy.

- ***Utility*** refers on how the practical information will serve its intended users.
- ***Feasibility*** refers to how realistic are the methods, sequences, timing and procedures.
- ***Propriety*** is about being legal, ethical and having the best intentions for those affected by results.
- ***Accuracy*** refers to how the outputs reveal and convey technically adequate information. (Introduction to M&E using LFA)

As a next step within implementation, it is recommended to gather all the information in analysis stage and develop a M&E Plan. The following chapter describes the content of M&E Plan.

6.1. DEVELOPING THE M&E PLAN

Monitoring and evaluation plan is made to contain all the information gathered in analysis stage. This document is called either M&E Plan, M&E Procedures, M&E Standard operating Procedures (SOP) or M&E System Documentation. The name used in this paperwork will be M&E Plan, however no matter the name the content is mostly the same. The contents viewed as steps in the M&E Plan are:

1. Purpose and scope
2. Planning for information gathering and organisation
3. Planning for critical process and data analysis
4. Planning for quality communication and reporting
5. Planning for necessary conditions and capacity
6. Prepare the M&E budget

It is important to understand the plan before applying it. Some of the key reminders for M&E steps are that these are interconnected and even if in this paperwork are written as separate steps, in practice these are inter related. Monitoring and evaluation are integral, as data collected depends on data reporting and are planned at the same time.

Planning of M&E should begin immediately after the project design phase. By preparing it early in the project phases, there will be time to allocate resources before project implementation.

The M&E system builds itself on the initial assessment, based upon the short, medium and long term objectives also the indicators identified in the log frame, and expectations of the stakeholders and practical considerations such as time and budget.

As already mentioned, stakeholder's interests play a key role in determining the scope of M&E, therefore particular attention should be directed to their expectations throughout the M&E process.

Another important aspect mentioned also in the beginning of this report is the dynamicity of the M&E system. This means there needs to be a constant flexibility and adaptability, if necessary of the M&E Plan throughout the project cycle. If major changes that affect the project occurs than there will be a change also in the objectives which must be addressed. Arising problems and concerns may disrupt the well-functioning of the project. Actually, not just the project is in need for monitoring but also the M&E plan itself needs to be tracked for improvements.

As it has been stated in the delimitation, monitoring and evaluation should remain focused on the quality aspect. Investigating several issues will end up in adding costs and waste of time, as it takes resources to collect, manage and analyse data for recording. Extra information will only distract the attention from the relevant data, which is also one of the challenges in the RBME, referring to collecting irrelevant information.

6.1.1. PURPOSE AND SCOPE OF M&E PLAN

Within the purpose it should be described why Monitoring and evaluation is done, who prepares it and which is the audience and why. It answers the question "Why do we need M&E and how comprehensive should it be?" There will be discussed: the log frame review, the stakeholders expectations, how information is gathered and organised, developing an M&E table, assessing availability of secondary data, the balance between quantitative and qualitative data, triangulation, sampling requirements, surveys, data collection tools, the feedback system and project review mechanism.

Key steps in Identifying the purpose and scope of M&E System.

- Review the project operational design (log frame)
- Identify Key stakeholders Informational needs and expectations
- Identify any M&E requirements
- Scope of major M&E events and functions

There is the need to make a M&E Plan, because as already mentioned in Denmark it is a governmental order to undertake Monitoring and Evaluation of construction projects and it is a specified demand by the client in the tender documents to deliver the project within the agreed quality. M&E Plan is prepared by an external party and needs to responds to the kpi's imposed by Byggeriets Evaluerings Center. Furthermore, the advisor and total contractor will be assessed based on the performance of the project delivered.

6.1.1.1. REVIEW THE PROJECT OPERATIONAL DESIGN (LOGFRAME)

M&E system is based upon the log frame. Again, the log frame serves as a summary of the project's operational design given by the problem analysis. The log frame should reflect the needs of the project in the long term. For emergency situation there will be a different log frame.

Furthermore, log frames must be checked for logic and relevance. If an outside evaluator is employed he/she might not be acquainted with the realities and changing circumstances on the construction site. If there are rapid changes in a short time it is important to consult again stakeholders to make also the necessary changes in the log frame.

It is important to use standard indicators in the log frames that are universally recognised, well developed and tested. Industry recognised indicators contribute to credibility and legitimacy across stakeholders and can be useful in combination with indicators specifically for the local context. The types of industry standard indicators are exemplified by the IFRC as:

- Industry indicators to be used for cross industries
- Sector specific on thematic indicators
- Cluster indicators, developed by UN Clusters to asses' achievements of overall focus area of the cluster. These are particularly useful where outcomes and impact achieved cannot be attributed to the work of one organization, but rather to the collective efforts of multiple organizations in a cluster or across clusters.

- Organisation specific indicators which have been developed for use in specific operations or for organizational reporting against its strategy.

See the 6.3.1.1 Construction Rating, where are indicated the indicators for contractor and advisor assessment on quality of the work delivered.

6.1.1.2. IDENTIFY KEY STAKEHOLDERS INFORMATIONAL NEEDS AND EXPECTATIONS

As mentioned identifying stakeholders needs and expectations are crucial, and start through a stakeholder assessment during the planning stage of the project. See 5.5.2.3 Stakeholder Analysis.

6.1.1.3. IDENTIFY ANY M&E REQUIREMENTS

Requirements refer to guidelines, governmental laws and regulations and internationally agreed standards. In Denmark it is stated:

"*On 1 January 2004 it was introduced the requirements for key figures for the subsidised buildings with Executive Order 1135. The Order has since been replaced by "Order no. 1469 of 16 December 2009 on key figures for government buildings, etc."*

Here it appears that contractors and consultants, who participate in tenders within the country, must submit data for previous construction projects to the client. The developer is obliged to impose this requirement.

It also appears that the contractors and consultants through an evaluator must have calculated the ratio of the precise construction. The developer is obliged to impose this requirement.

In addition, the developer via an evaluator needs also to calculate the ratio of the pecise construction."

6.1.1.4. SCOPE OF MAJOR M&E EVENTS AND FUNCTIONS

In connection to monitoring quality, the core purpose of the M&E system for Støvring Bytorv is to provide transparency of quality procedures during construction process to document the information needed for stakeholders to make sure quality is respected accordingly.

Audience: It will be also made a distinction between the client's advisor responsibilities regarding quality and the turnkey contractor responsibilities and their procedures. The M&E System will provide regular reports on project progress and documentation with regard to quality for the client, who is the external stakeholder with the greatest interest.

6.1.2. PLANNING INFORMATION GATHERING AND ORGANISATION

Planning information gathering and the way it is organised - refers to collecting data. Collecting data is essential as it will help gain an understanding of the problem which can be addressed properly. Gathering data has been done from the beginning of the project until this stage, throughout the life cycle of the project. Adjustments should be made most likely at the end of the project cycle, when information can be assed and checked according to what is working and what is not. Adjustments are made to improve results.

"Data is a term given to raw facts or figures before they have been processed and analysed. Information refers to data that has been processed and analysed for reporting and use". (UNDP)

Within planning information gathering and organisation it is included:

1. Develop an M&E plan table
2. Assess the availability of secondary data
3. Determine the balance of quantitative and qualitative data
4. Triangulate data collection sources and methods
5. Determine sampling requirements
6. Prepare for any surveys
7. Establish stakeholder complaints and feedback mechanisms
8. Establish project/programme staff/volunteer review mechanisms
9. Plan for data management
10. Use a risk log (table) (UNDP)

Data collection is one of the most expensive aspects of Monitoring and Evaluation plan. However, by reducing the amount of collected data also costs can be reduced, according to Bamberger et al.2006. It is important therefore to assess if the information is necessary and if the secondary data is used it must be taken in account its reliability. If surveys are used, it is indicated to reduce the amount of questions in order to reduce survey fatigue among respondents.

In 1.3 Research Methodology, more explanation is given on how data has been collected for this investigations and what methods have been used to get the results regarding this research project.

6.1.2.1. DEVELOP AN M&E PLAN TABLE

The M&E Plan is a table where is included key indicators information about the data, sources, methods and timing of data collection. An example of M&E Plan Table is offered by IFRC, attached in Appendix 7. The plan is however completed before implementation as preliminary to the log frame to ensure that indicators, scope of work, data collection, analysis and reporting are realistic. Question that are raised are if Monitoring and evaluation plans worth the time and effort.

There are actually several studies reports that confirm developing M&E Plans have multiple benefits due to the fact that data collected will be more efficient and reliable. Also, by making evidence of what is measured, project managers have more control over the implementation of the

program. It is actually much more costly to manage poor quality data than making efforts to plan for reliable collection.

6.1.2.2. ASSESS THE AVAILABILITY OF SECONDARY DATA

Secondary data, if available must be assessed if is really needed within monitoring and evaluation of the project in cause. Secondary data must be relevant and reliable despite its availability. The term of biased and unbiased refer to subjective and objective characteristics of the information.

6.1.2.3. DETERMINE THE BALANCE OF QUANTITATIVE AND QUALITATIVE DATA

Credibility of qualitative data tends to be lower due to personal observations and judgements, but on the other hand quantitative data may be costly and exclude explanations of why a certain situation happened and how people feel about it. A mixed method of quantitative and qualitative data should be used as both are prone to have subjective and objective based characteristics.

6.1.2.4. TRIANGULATE DATA COLLECTION SOURCES AND METHODS

Different methods of verifying data such as: interviews, observations and examination refer to triangulation to better ensure data is valid, reliable and complete. Triangulation does not refer to just three sources of collecting data, it just emphasize the idea there needs to be more sources to collect it for verification.

6.1.2.5. DETERMINE SAMPLING REQUIREMENTS

Through sampling generalizations can be made if the of collection data does not have the capability to measure the whole system. Through sampling time and money are saved. However the scale of this project is not that large in order for sampling methods to be used. The sampling method is appropriate for example when making statistics about the population and analysing only a subgroup to make generalisations. Sampling together with statistics is recommended to be performed by an expert.

6.1.2.6. PREPARE FOR SURVEYS

Surveys are classified as semi- structured or structured. Semi structured refer to open question that accept all kind of answers but using this kind of method supposes more work in extracting information. The structured surveys, ask fixed questions such as answers with yes or no, false or true and multiple choices.

The timing and functionality classify surveys as descriptive and comparative. Descriptive surveys obtain data at a single point of time without making comparisons while comparative surveys takes data at different points in time to compare it. Depending on the type of research performed, the right type of survey must be used to obtain the right information.

6.1.2.7. PREPARE FOR SPECIFIC DATA COLLECTION METHODS/TOOLS

The data collection tools must be testes before in order to detect inadequate questions; also the tools must be linguistically accurate, compatible with the culture of the organisation and must address ethical concerns.

6.1.2.8. ESTABLISH STAKEHOLDER COMPLAINT AND FEEDBACK SYSTEM ANNEX 11

The purpose of establishing a stakeholder complaint and feedback system is to give the right for the beneficiaries to express their opinion on the performance of the project/programme. The same is with stakeholders, project/programme staff, partners and other parties involved in the project to file complaints and provide feedback. It is recommended that feedback is inclined to be positive as a result to give the chance to express opinions on lessons learned and reflections. Complaints and feedback systems can written or oral, directly or through third parties, individual or through groups, personally or anonymously.

IFRC Guide for Stakeholder Complaints and Feedback identifies six main steps for the feedback and complaint mechanism:

- *"Agree on the purpose of the complaints and feedback mechanism – this helps to build understanding and ownership among those who will use it.*
- *Agree on what constitutes valid feedback, especially a complaint – this helps to give stakeholders a sense of where and what kind of action is likely to be required in future*
- *Agree on the stakeholders targeted by the complaints and feedback mechanism – this helps to tailor that mechanism to its audience.*
- *Agree on the most appropriate channel for communicating complaints and feedback – this checks that the mechanism is culturally compatible and appropriate, so it is more likely to get used if needed.*
- *Agree on a standard process to handle complaints and feedback – in addition to stakeholders providing complaints and feedback, it is important that those expected to review and respond also understand and uphold the process.*
- *Sensitize stakeholders about the complaints and feedback mechanism – this is a critical step because how the mechanism is presented to intended users will largely shape how receptive and likely they are to use it"* (UNDP)

6.1.2.9. ESTABLISH PROJECT REVIEW MECHANISM

Assessing the project implementation and performance are the basis for monitoring and management. There need to be periodic reviews. Tools must be established to track and review time management and performance. Among the tools, individual time resourcing sheet is very useful to track the time required for each individual to complete a task. Actual time is measured against planned time enabling a better assessment of the project progress. An example is included in Annex

Moreover Project Team Time Sheet of key activities and deliverables is a visual tool for teams to see in which activities they are engaged, when and how much time is required to complete the activities.

6.1.3. PLAN FOR DATA MANAGEMENT

Data Management refers to how data is stored, managed and the access to M&E data. If not done properly there is a waste of resources but will also affect the quality and reliability of data. Data management should follow the organisations established policies and requirements. Data management refers to the format on how is recorded stored and reported primarily as: numerical, descriptive, visual and audio. Data is typically organised: chronologically, by location, by content or focus area and by the format.

Moreover, data should be available for users and secured from other unauthorised users through access (how permission is granted), searches (how data is searched and found) through archival (how it is stored for future use) and dissemination (how it is shared with others). For the case of Støvring Bytorv data accessibility is done through Byggeweb membership.

Data security and legalities refers to protection rights as well as legal requirements with governments, donors and other parties.

IT, information technology refers to digital storing and use of data, especially in the construction sector where is a condition due to large volume of data and the advantage of sharing the information with others.

Data quality control is very important in order so there are no mistakes and old versions are removed. Version control is a simple way to track documents changes over time. Furthermore, there needs to be assigned data responsibility and accountability.

Within planning for data management it will be discussed: the use of a indicator tracking table and a risk log table.

6.1.3.1. USE AN INDICATOR TRACKING TABLE

"An ITT is an important data management tool for recording and monitoring indicator performance to inform project/programme implementation and management. It differs from an M&E plan because while the M&E plan prepares the project/ programme for data collection on the indicators, the ITT is where the ongoing measurement of the indicators is recorded." (UNDP)

The ITT is composed of the project background information, project indicators and log frame indicators. ITT most important characteristic is variance and targets.

"Variance is the difference between identified targets and actual results – the percentage of target reached. Variance encourages critical analysis and reporting on project performance." (Guide)

Variance that is higher than 10% needs to be explained in the project report. The percentage of targets reached determines the variance. Setting targets ensures the project has expected realistic

results, resources can be planned accordingly, progress can be tracked and reported against the targets (variance) and decision can be based upon. Even though there is a challenge in setting targets, due to the fact that targets are difficult to predict and project teams are afraid that they may not accomplish them.

6.1.3.2. USE A RISK LOG TABLE

Risks are also an important factor in the development of the project. Collection of data needs to collects also the risks in order to be tracked and see what threatens the project. The risks as already defined in Analysis Chapter are identified together with assumptions in the project log frame. Besides the already identified risks there can appear also unexpected ones.

Risks must be recorded and furthermore handled. Risks can be as well monitored for its prevention, where besides tracking it is important to state when it was first reported, its impact and likelihood and the corrective actions that need to be taken upon and by whom. Noting down that the risk is closed refers that is no longer a risk.

An example of Risk table has been provided by Michael Gabba with regard to the project Psychiatric Hospital in Slagelse. The document is attached in Annex A and describes the type of risks such as: strategical, financial, juridical, organisational, political, environmental, technical or regarding time. Regarding all these risks are related to different area of concern within the project, and risks are graded also as their probability to happen, their consequence and level. Lastly what is the impact of the risk and how it is managed.

6.1.3 PLANNING CRITICAL PROCESS AND DATA ANALYSIS

After collecting the necessary data the next step is, converting the raw data into usable information. Data collection and analysis is a continuous process throughout the project cycle. Data analysis is done to assess the performance against plans and targets, anticipate problems and identify solutions and best practices for decision making and organisational learning.

Planning the process and reflection is crucial in order to make sure the information collected is making sense and will be used as a reflection process to make improvements. In the critical reflection stakeholders are very important, and engaging them in the critical process can be done through: Quarterly progress review by staff, annual project review involving key stakeholders, participatory review workshop with stakeholders. Critically reflections can be done also through on-going discussions. Planning for data analysis is structured in two steps:

- ***Developing a data analysis*** plans, identifying: purpose of data analysis, frequency of data analysis, responsibility for data analysis, process for data analysis.

There should be a plan for data analysis as a separate document, or it can be included in the M&E system. Within the purpose of analysis, data that is relevant to objectives must be taken in consideration. Analysis of output indicators will be then used to determine activities that occur according to the schedule and budget every week, month and quarterly. In this way variances and deviations can be monitored as an ongoing process.

Furthermore, there can be performed also analyses for outcome indicators used to determine intermediate and long term impacts, these are however not as frequent analysed and measured. Moreover, outcome indicators refer to a wider audience.

There has to be a balance between data collection and data analysis. A common mistake is leaving to much time for data collection which can lead to data overload and disregard data analysis. It is important to note that data analysis is not an isolated event at the end of data collection but is an ongoing process during monitoring and evaluation.

The person who is in charge of data collection should have the responsibility over data analysis, which in this case is the contractor and client advisor. However, involving multiple stakeholders in data analysis can result in benefits such as cross checking data accuracy and improving critical reflection and having different perspectives on the same issue. This will make the M&E plan accepted and regarded as credible.

- ***Follow the key data analysis*** stages: Data preparation, data analysis, data validation, data presentation, recommendations and action planning. Data preparation or data reduction refers to cleaning, editing, coding and organising the raw quantitative and qualitative data, and checking for its validity.

Steps in quantitative data preparation are suggested as followed:

- Nominating a person and setting a procedure to ensure the quality of data entry
- Entering numerical variables in spreadsheet or database
- Entering continuous variable data on spreadsheets
- Coding and labelling variables
- Dealing with missing values
- Data cleaning methods.

Regarding the qualitative data, preparation can be done through documentation such as photos, questionnaires, maps, videos etc. Key points can be then subtracted from this data, and can be further coded categorised and subcategorised with observations for further analysis. It is a good idea to organise data already from collection phase.

Data analysis can be descriptive while describing key findings, conditions and circumstances, focusing on what happened; and interpretive where conclusions can be drawn to provide meaning, explanation or causal relationship from the findings, focusing on why it has occurred. Both descriptive and interpreting data are useful in information reporting. Data analysis uses the following comparisons: planned versus actual comparison, demographic comparison looking at gender, age or ethnicity, geographical comparison looking at neighbourhood or urban versus rural and thematic comparison using data to describe donor driven results versus owner driven intervention. Next stage in data analysis is data validation. It refers to the fact that is necessary to verify findings. This can be done through additional interviews or focus groups discussions to clarify findings.

Data presentation is used to highlight key findings and conclusions. Data must be relevant, as to tell why it is important, furthermore it must be sufficiently demonstrated, clear and simple in order to be

easily understood. Unnecessary detail must be avoided and data presentation must be directed towards the targeted audience. Data can be presented in written description, by use of matrices, graphs, tables, also mapping, diagrams , casual flow diagrams and many other options, no matter the case it must be highlighted clearly.

Last stage in data analysis, the recommendations and action planning uses data as evidence for justification within proposed actions. Recommendations should be specific using the SMART criteria. Recommendation and action planning need to be used in connection to data analysis, outputs, findings and conclusions.

Term	Definition	Examples
Finding	A factual statement based on primary and secondary data	→ Community members reported daily income is below 1 US dollar per day → Participants in community focus group discussions expressed that they want jobs
Conclusion	A synthesized (combined) interpretation of findings	→ Community members are materially poor due to lack of income-generating opportunities
Recommendation	A prescription based on conclusions	→ Introduce micro-finance and micro-enterprise opportunities for community members to start up culturally appropriate and economically viable income-generating business
Action	A specific prescription of action to address a recommendation	→ By December 2011, form six pilot solidarity groups to identify potential micro-enterprise ideas and loan recipients → By January 2011, conduct a market study to determine the economic viability of potential micro-enterprise options → Etc.

Figure 43 Comparing data analysis terms: findings, conclusions, recommendation and action Source: (Societies 58)

6.1.4. PLANNING FOR NECESSARY CONDITIONS AND CAPACITY

What is needed to ensure our M&E system actually works? The results of the Monitoring and Evaluation system answers to the scope and purpose of this investigation, also formulated in problem statement.

The answer for the question above regards the insufficient capacity. Capacity refers to human ability, knowledge and skills but as stated in the problem formulation besides human capital, there is also the time and financial factor. "*An effective M&E system requires capable people to support it."* (Guide)

For meeting the human capacity is required to:

- Acquire the right people
- Ensure capacity of good quality by being clear of what are the outcomes, keeping track of staff performance through regular evaluations, finding a highly qualified person to coordinate M&E.

For meeting the finances and resources to do the job it is required to:

- Tracking Budget and Utilization of Research Funds
- Tracking Research Process: The focus is to ensure that the research is carried out as planned and that the intended milestones are attained along the way. This may require review of progress reports on research and occasional field verification.

Within this section is important to plan for human resources and capacity. The following questions that should be answered, are: how does the M&E expertise fulfils the M&E needs of the project? Moreover, is there M&E support from the organization implementing the project? Is there a technical unit or individual assigned with M&E responsibilities to advice and support the staff? What is their availability concerning the project? Do other members and project partners have experience in M&E?

Answering these questions, the expertise fulfils the M&E demands, as the total contractor was selected in the tender based on his ability to conduct Monitoring and Evaluation for subsidised buildings. Byggeriets Evaluering Center provides all the necessary templates that the contractor and advisor are assessed after and there is a possibility to undertake a voluntary customer satisfaction evaluation during the project to help improve the project before delivery. There is constantly quality assurance of the work done by the contractors themselves and eventually checked by Christian Hannesbo and his assistant. Quality control is documented in Ajour System Program, where the project manager sets the criteria's for quality that needs to be monitored, further on it specifies, how much and how many times it should be checked; it has been further mentioned by the assistant that the contractors have also their own quality procedures in order to make sure everything is done accordingly.

Stakeholders must actively participate in all processes and decision making, participation timeline is presented in the image below, where it can be seen participation is continuum.

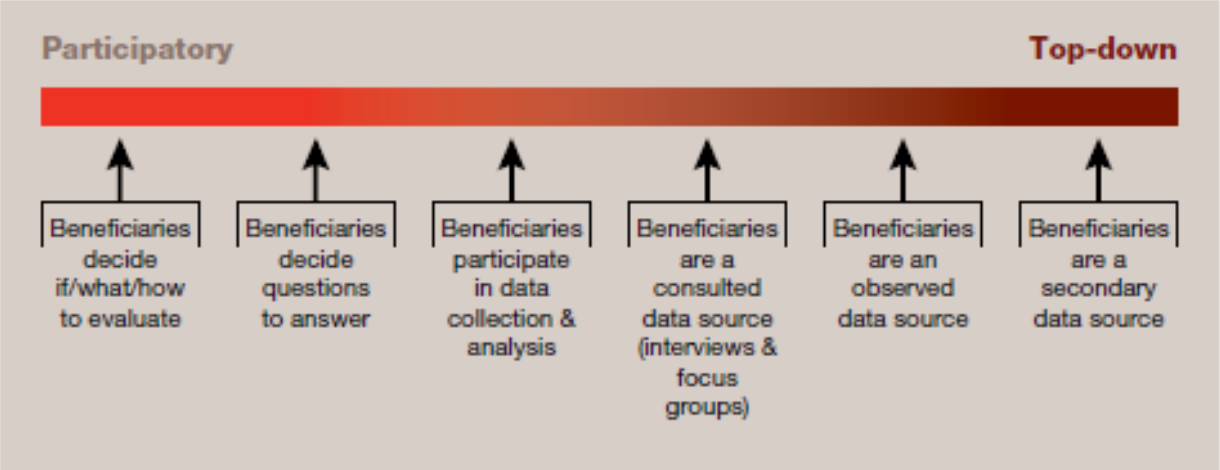

Figure 44 Participatory continuum

M&E participation includes the assessment and involvement of local representatives in the project and identification of indicators, participatory monitoring for electing of key monitoring indicators, self-evaluations, sharing monitoring and evaluation findings and the utilisation of feedback.

Among the advantages of participatory Monitoring and Evaluation is that it decentralises power and empowers the rest of beneficiaries to be active rather than passive. Collaboration is strengthened and there can be achieved a consensus level between beneficiaries, local staff, partners and senior management. Accountability is reinforced as there are more perspectives proving the reliability of the M&E process. Money and time in data collection is reduced compared to using an external evaluator and relevant information is provided from the field for management decision making to execute corrective actions.

Regarding potential disadvantages, there may be lack of experienced staff within M&E and training could be costly. Moreover, the quality of collected data can be jeopardised due to local politics and projects may not use traditional indicators for reporting findings.

Outside expertise can be requested, and this might be consultants with technical expertise, objectivity and credibility. Other roles and responsibilities for M&E must be defined for each level of the M&E system but most important is to decide who has the overall responsibility for deployment of M&E.

It is important to adhere to a human resources codes and standards. A proposal of code ethics is provided also in Evaluation steps subchapter. IFRC ME guide stated the following: *"Managing human resources effectively has been identified as a considerable challenge in the humanitarian sector, where deployments of the right people with the right skills, to the right place at the right time is critical for successful operations.*

To facilitate this, the organization People in Aid's Code of Good Practice seeks *to "improve agencies' support and management of their staff and volunteers,"* which is critical to the success of delivering our work. The code has seven principles, around HR strategy, policies and practice;

monitoring progress against its application seeks to, *"enable employers to become clearer about their responsibilities and accountabilities, and help them become better managers of people, and therefore better providers of quality assistance."*

The M&E capacity building requirements and opportunities, training could be an option after responsibilities have been divided. Informal training could be performed at the work place, where guidance is offered on-the-job for completing checklists and commenting on reports or guidance and formal training through registration of courses and workshops regarding project design (log frame), M&E planning, data collection, management, analysis and reporting etc.

6.1.5 PLANNING FOR COMMUNICATION AND REPORTING M&E FINDINGS

Within communication is important to define who the evaluation audience is and to whom should the evaluation findings be reported. Evaluation audience and reporting are defined by Valerie Stetson as:

"Evaluation audience is those individuals who receive information about the evaluation and its findings. Audiences include, but are not limited to stakeholders, (e.g., staff from other private voluntary organizations [PVOs] who would benefit from information about a particular program).

Evaluation audience in this context is the client and municipality. The client required in the tendering offer as quality to be the most important demand and it is also a governmental order to report findings for subsidised constructions.

"Communicating/communication can be defined as "a linear transmission of information from a sender, through a channel to a receiver" to "a process by which information is exchanged between individuals."

"Reporting is the presentation of information resulting from an evaluative activity. Evidence-based reporting is an approach to report writing in which statements made about the progress of a project are supported by verifiable information. Some reports have strong statements about progress made but little supporting evidence to justify the claim."

Timely and Frequent Contact	From the start, plan for effective communicating and reporting and assign a budget for these tasks. During the evaluation, report and communicate on evaluation progress. Towards the end of the evaluation, communicate and report preliminary evaluation findings and negotiate recommendations. Frequent and ongoing communication is one way of showing respect. Negative evaluation findings are much harder to accept and to use constructively if they come as a surprise.

It's the Users!	All reporting and communicating formats must be tailored to what the audience needs to know. Evaluators need to understand how different stakeholder individuals and groups learn and process information. Avoid producing overly-long, academic-style reports for busy decision makers or neglecting illiterate or less powerful evaluation stakeholders.
Variety is the Spice of Life	A variety of reporting formats helps ensure understanding. These range from the final evaluation report and executive summary to working sessions, and drama or poster sessions. Table 6, below, provides a more complete list of reporting format options.
Keep Content Clear and Simple	Written formats such as reports, executive summaries, and fact sheets must use clear, jargon-free language and include visuals such as graphs, charts, tables, and illustrations to quickly communicate information and findings. Quantitative data should be presented alongside qualitative data. Recommendations should be prioritized, concrete, specific, and feasible

Table 6 Effective practices of communication Source (Stetson)

As the final stage of M&E system the findings must be shared, corrective measures must be taken and lessons learned must be documented. The findings should be clear and concise, accurate and logical and it should be appropriate to its purpose and audience. (Centre)

6.1.6 PREPARE M&E BUDGET

Monitoring and evaluation should be prepared early in the project design process to allocate adequate funds for M&E Activities. The planning of the budget comprises: M&E budget needs; M&E costs incorporated into the project, reviewing donor budget requirements and contributions and planning for cost contingency.

Budget items usually include:

- ***Human resources.*** Budget for staffing, including full-time staff, external consultants, capacity building/training and other related expenses, e.g. translation, data entry for baseline surveys, etc.
- ***Capital expenses.*** Budget for facility costs, office equipment and supplies, any travel and accommodation, computer hardware and software, printing, publishing and distributing M&E documents.

Expenses should be documented to prevent unexpected costs there must be considered adding up costs such as for surveys as an example, development and testing of questionnaires, translation, training in data collection, data collectors and field supervisors rates, travel and accommodation costs for administering the survey, data analysis and so on.

Monitor and evaluation costs must be incorporated into the project as, project related costs and doing different by adding M&E costs as administrative or organisational costs can suggest inefficiencies in the project. A separate budget fpr M&E may be appropriate.

Monitoring expenses include: support for information management system, field transportation and vehicle, printing and publishing of M&E documents/tools. Costs should not be omitted even if they appear before the M&E system such as baseline study or external evaluation, and must be included in the project budget. A finance unit or officer should be consulted to ensure budget is prepared in an appropriate way.

Contingency costs refer to unexpected costs that arise during the implementation of the M&E System in this case. As mentioned before costs allocated to M&E Plan should be between 3 and 10 %of the project budget. These costs should not be too small to compromise the accuracy and credibility of the results.

The table on the next page represents the cost assumption for M&E plan:

Activities For 1st phase	Price for 1 qt	Frequency	Total estimated budget
Monthly Monitoring	450 kr	12	5.400 kr
Quarterly Monitoring	600 kr	4	2.400 kr
Six Monthly Monitoring	700 kr	2	1.400 kr
Midterm Evaluation (Process evaluation)	750 kr (BEC)	1	750 kr
Final Evaluation	900 kr	1	900
Post Evaluation	1000 kr	1	1000
Ajour Reports Documentation & Data collection	200kr/h	10 h /w for documentation. Total no of weeks: 44w	88. 000 kr
Risk Management	200kr/h	1h/w 44w	8.800 kr
Surveys	200 pcs	4	800
Support for information management system	Company licence/year	-	6000 kr
Printing and publishing		1	800 kr
Contingency costs	8% 27.480.750 kr	-	2.198,460
Stakeholder complaint and feedback system	200/h	10	2000 kr
Reporting findings (BEC)		1	5000 kr
			2 321 810 kr

6.3 STAGE 6 EVALUATIONS AND AUDIT

The purpose of the evaluation is to: *"Make an assessment, as systematic and objective as possible, of an ongoing or completed project, programme or policy, its design, implementation and results. The aim is to determine the relevance and fulfilment of objectives, developmental efficiency, effectiveness, impact and sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision-making process of both recipients and donors."* (OCSE/DAC)

Due to the stage of the construction project, evaluation information has not been made available yet; however a description of procedures will be given with regard to this topic and possible suggestions. The structure of this chapter will explain evaluation stages, and guidelines offered by Byggeriets Evaluerings Center (BEC) as it has been mentioned in the interviews with Michael Gabba that they are following BEC guidelines. An explanation of Ajour System will follow, as this is a program used by Christian Hannesbo to make the necessary documentation for evaluation purposes. Evaluations steps are:

1. Describing the purpose of evaluation
2. Identifying end products
3. Considering budgets and timeline

Thinking: what do you want to get out of the evaluation?

4. Defining objectives
5. Establishing Evaluation purposes
6. Identifying the information required

Planning: by developing an evaluation plan that guides all evaluation activities

7. Reviewing the evaluation plan
8. Identify or create the data sources
9. Overlay your timelines and budget
10. Consider Privacy and ethical issues

Collecting: all the information needed to develop budget and timeline

Utilising findings → **Communicating to ensure evaluation results are used**

Thinking: steps 1, 2, 3

The purpose of this evaluation is to report achievements and as mentioned in the begging of this report using the summative evaluation to report results obtained at the end of the project to assess, determine the overall impact and estimate the relative costs of the intervention.

The evaluation is relevant for the municipality to comply with the regulations for subsidized construction and for the client deliver good KPI's, also it has to be within the governmental order.

Planning: steps 4, 5, 6

Evaluation Plan			
Objectives	Questions	Information required	Data Source
Nordjylland Housing Association benefits of 20 new homes creating Støvring as an attractive place to live.	*Are benefits likely to be maintained for an extended period after assistance ends?* *Were there any unintended, unplanned changes?* *What changes did the project bring?*	*End users satisfaction surveys*	Interviews Stakeholder analysis
Deliver the construction within the quality imposed by Norjylland Housing Association.	*Were the operation objectives consistent with customer specifications?*	*No. of cosmetic defects* *No. of serious defects* *No. of serious critical defects* *No of detects that need to be looked more closely.* *Economic value of defects* *Accidents frequency Client's satisfaction regarding the building process* *Client's loyalty*	Interviews
By 1st August 2016 Apartments will be ready for handing in to end users.	*Were the operation objectives achieved?*	*Budgets* *Plans* *Communication* *Collaboration*	Interviews

Step 7: Reviewing the plan

In the beginning of this report Evaluation has been presented from the relevance, efficiency, effectiveness, impact and sustainability criteria's. Each of these criteria's can be connected to the log frame (result chain) as shown in the figure above. It all starts with the current situation of the project, namely in this case: how to make quality transparent for the beneficiaries; it could be a problematic situation if quality is not monitored, reported and evaluated accordingly making the delivery of the project not complying with what has been demanded. There will be a description of each criteria in connection with the log frame, then questions will be formulated to assess the

project overall. The criteria's are connected to each component of the result chain as in the figure below:

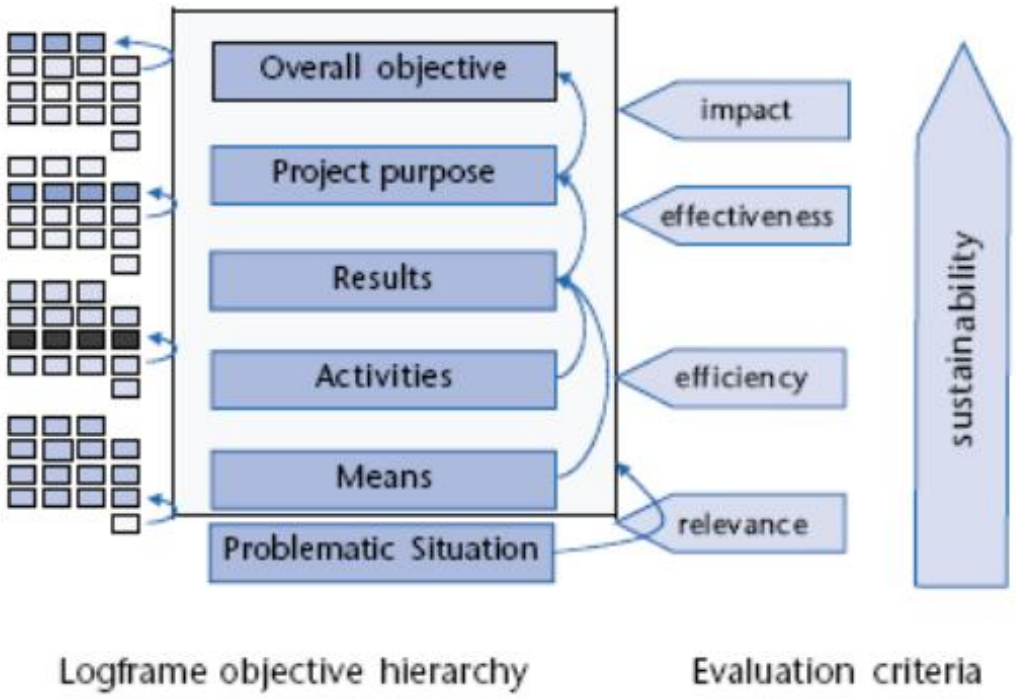

Figure 45 Link between Evaluation Criteria and Log frame Source: (EuropeAid, 2004, s. 49)

- ***Relevance*** will refer to how appropriate objectives (formulated in Analysis chapter, Objective tree) are to the beneficiaries.
- ***Efficiency*** will look at the means that objectives will reach results within the planned resources. Put in other words using resources at their maximum capability such as: good planning, good financing and qualified workers, will get the project to produce the expected results delivering the construction as agreed.
- ***Effectiveness*** will then measure how well results (objectives) have been fulfilled through indicators and sources of verification, contributing to the project purpose.
- ***Impact*** is seen in the wider context, as how the project purpose has contributed to the long term objective, as already specified, the municipality would like to make Støvring an attractive place to live. Støvring Bytorv will in this case contribute among other projects in having an impact to make this city an attractive place to live.
- Lastly, ***sustainability*** measures the ability of the project to continue producing benefits even after the project is completed.

Evaluation Questions

- **Relevance:** Was the original problem analysis comprehensive enough and it still is relevant? Is the project purpose relevant and it will solve the problem? Are stakeholders relevant to the problems, objectives and long term sustainability?
- **Efficiency:** Is the project providing value for money and efficient use of other resources?
- **Effectiveness:** Is the project able to achieve results on time and with the appropriate target groups?
- **Feasibility:** Is the project feasible in terms of skills, resources and operating systems to achieve objectives? Are assumptions being achieved? Is the activity schedule feasible?Do partners have the capacity to achieve the project?
- **Outcome evaluation:** Are project outputs being utilized and what is the impact of this in solving the original problem?
- **Impact evaluation:** Is the data collected designed to measure impact? What is the effect of the project and its contributions to wider policy or sector objectives?
- **Sustainability:** Will the benefits of the project continue once the project completes? Can the benefits of the project be mainstreamed by appropriate and permanent bodies during the project implementation and afterwards? (Spreckley)

Collecting: ***Steps 8, 9, 10***

As mentioned previously data collection was done through: interviews, literature Reviews, data sources, Indicators, questionaries' and case study. By overlaying timeline and budget, it can be subtracted costs from data collection indicating when each evaluation activity occurs and the staff involved. Cost to producing reports and workshops must be included too. By considering the privacy and ethical issues, there is a legal obligation to ensure that evaluation is conducted in an ethical way.

According to the National Statement on Ethical Conduct in Human Research there are five important principles:

1. ***Respect for individuals and groups:*** As an ethical rule, this refers on the treatment towards others. Autonomy to make decisions for themselves, respecting others beliefs, respecting cultural practices, privacy and confidentiality are some of the most important traits towards others. Documents such as Information Privacy Act, Common Wealth privacy act and Health record acts if relevant must be applied.
2. ***Benefits must justify any risk :*** The research must be done in such a way that is improved by maximizing benefits and minimizing risks. Risk include: physical or psychological harm, devaluation in personal worth, social, economic, or legal harms, discomfort or inconveniences.
3. ***Justice and equality:*** It is important to establish equal benefits for everyone. It is considered injustice if for example a certain group is "over researched" due to its accessibility while others are rarely researched because they are easy to access. Ensuring that everyone is treated fairly is an ethical way of practice.
4. ***Integrity:*** The research must be legitimate and must follow principles of conduct, performed by qualified and competent professionals.

5. ***Research Merit:*** The research should contribute to knowledge and there should be respect for the wellbeing and dignity of people. (Development)

Communicating

Step 11: Utilising findings

Utilizing findings are important to be reported to the identified audience in thinking stage. The following questions should be considered by the evaluator in this stage:

- If there has been determined a process for examining results internally?
- If there has been determined a process for promoting results externally?
- If it has been considered ways results are held so others can use them into the future?

6.3.1 BYGGERIETS EVALUERINGS CENTERS FOND (BENCHMARK CENTRE FOR DANISH CONSTRUCTION SECTOR)

"The Benchmark Centre for the Danish Construction Sector (Byggeriets Evaluerings Centers Fond) is a business foundation, established in 2002 by a wide range of the players within the Danish construction sector in order to promote the quality and the efficiency within the sector.

The Benchmark System:

BECs benchmarking system is designed in such a way that the population can be evaluated for cause/effect links using general statistical tests. The data structure is hierarchical and permits analysis at contract level, project level and sector level.

Since 2004 the use of the benchmarking system has been mandatory in government construction and social housing projects in Denmark. The system is used by Clients as a tool for selecting contractors and consultants. Specialties: Benchmarking, KPIs, Rating, Analysis. " (Byggeriets Evaluerings Centers Fond)

Bygge Rating	Gennemsnit
A	Fra 4 til og med 5
B	Fra 3 til og med 4
C	Fra 2 til og med 3
D	Fra 1 til og med 2
E	1

Table 7 Building rating legend

The BEC for Client advisor includes services such as: Construction Rating, Process evaluation, Access to BEC Database (a service with access grant only for members) and the Building Rating Report.

The consultant's Building Rating is derived by calculating the average grades for 15 questions in the customer satisfaction. The questions from 1 to 13 represent 50% of grading while questions 14and 15 represent 25%. In the table, A represents: much better than the average, B better than the average C as the average, D worse than the average and E much worse than the average.

6.3.1.1 CONSTRUCTION RATING

Building rating is both for the company or individual cases. For the company average is calculated for the last 3 years. Moreover, Building Rating reflects the company's position on the market in relation to the average, which is the level that the customer usually expects. Client advisors get building ratings such as A, B, C, D and E, while contractors get the ratings as AAAA or ACCB, depending on what they have scored in the four segments: Deadlines, Defects, Accidents and Customer Satisfaction. The building rating for Kuben Management is A and for TL Byg in Annex D, within the document Evaluering a catalogue with the company's rating is attached for 3 previous projects that have been evaluated.

- AUB BIOTEK, has registered ABCA, where A stands for meeting deadlines, B stands for what the company has missed to include in the work, C for accidents and A for customer satisfaction.
- Hasseris Gymnasium the rating is ABAA.
- Musikken Hus the rating is ABAB.

An explanatory customer satisfaction table is included in the catalogue, where 8 questions are graded and an average of the total grades is subtracted. The questions are as following:

- The contractor's ability to assist constructively in the review process or in the planning of the initial phase.
- The contractor's ability to find solutions regarding the tender material demands and furthermore to meet the clients demands with regard to the agreed work.
- The contractor's ability to meet time plans and deliver the project in time
- The contractor's ability to engage in dialogue on additional services and prices.
- The contractor's ability to maintain a constructive dialogue and to collaborate with stakeholders.
- The contractor's ability to take in consideration existing surroundings such as neighbours, residents, other staff, and users of the construction.
- The contractor's ability to help implement a satisfactory delivery
- The contractor's ability to deliver information on activities and maintenance regarding the tender material.
- The Building Rating is therefore a great way for the client to request a certain rating that reflects the qualifications of the client/contractor. Furthermore a Building Rating for contractor and client advisor project is included in Annex D.
- The Building Rating for the client advisor regarding a specific project, grades the following subtasks:
- The client advisor ability to make realistic budgets
- The client advisor ability to make realistic time plans
- The client advisor ability to illustrate it's proposals
- The client advisor ability to lead a constructive dialog
- The client advisor contribution to a constructive collaboration between stakeholders
- The client advisor contribution to achieve a satisfactory aesthetic solution
- The client advisor contribution to achieve a satisfactory functional solution.
- The client advisor contribution to achieve a good indoor climate
- The client advisor contribution to achieve an environmental reasonable solution
- The client advisor contribution to achieve a solution with reasonable operating costs
- The client advisor ability to deliver the agreed quality in the project material.
- The client advisor handling of processes with residents, tenants and neighbours
- The client advisor contribution to carry out a satisfactory implementation/delivery.

There is a grading also for the client satisfaction regarding the consultancy services and loyalty meaning that the client advisor will not use the consultancy information to similar projects. After a grade will be given to each subtask, loyalty and satisfaction an average is calculated corresponding to one of the ratings A, B, C, D or E.

Using this system the developer has the opportunity to choose the most qualified organisation to build the project. As mentioned for the project in Støvring the information is not yet available with regard to evaluation as the evaluation status is displayed when the process is completed.

The Building Rating for the contractor regarding a specific project, grades the following indicators:

- ***For deadlines***: actual execution time compared to schedules execution time adjusted for deadline extensions, the result in this case should be expressed in percentage.
- ***Moreover for defects:*** cosmetic defects, less serious defects, serious and critical defects, and conditions that should be investigated more closely, economic value of defects and if there has been defects obstructing or actually prevented the intended use of significant parts of the building? Defects are measures as 0.000 pr. Mio.kr
- ***Within safety on the building site***, it is evaluated if there were serious accidents measured in a category from 1 to 3, where 3 is highest and also the frequency of accidents. These indicators are measured financially as 0, 0 mia.kr
- ***Client satisfaction*** is measured through a scale from 1 to 5, where 5 is the highest, and satisfaction is measured during the construction process and client loyalty.

The following sheets must be submitted to BEC. These sheets report key figures, and are used in connection with pre-qualifications: The following sheets are listed below and included in Appendix:

- Information corresponding to KPI
- Measuring for customer satisfaction/client advisor
- Measuring for customer satisfaction/contractor
- Defect list: Facilitates reporting. In this sheet defects are listed.
- Information regarding calculation of KPI: The developer should report this to BEC; however he can complete it with help of the contractor so it is easier.
- The voluntary contractor's evaluation
- The voluntary client's advisor evaluation (Byggeriets Evaluerings Centers Fond)

6.3.1.2 PROCESS EVALUATION (INTERIM EVALUATION)

The Process Evaluation should be carried out during the construction. The client can be appointed to fill out a customer satisfaction survey and provide marks for cooperation. There can be written concrete suggestions for improvement, criticism and praising.

Through Process Evaluation it is possible to rectify problems before completing the project, and these problems could be fixed before growing bigger. Process evaluation is however voluntary, but helpful to give criticism or feedback whether the project is on the right track. It offers a basis for communication with the client, and to improve areas if he/she is not satisfied.

The evaluation process is identical to the customer satisfaction survey that is used in the context of the evaluation itself. The process evaluation is not included in the company's report card, as mentioned is only a self-project assessment before problems buckle up.

In Appendix 6 two sheets with process evaluation are included, one for the contractor and one for the client. Both comprise questions, around 10, where it is asked to answer by giving a mark from 1 to 5. Moreover, evaluation price list from BEC can be found in Appendix 6.

(Byggeriets Evaluerings Centers Fond)

6.3.1.3 AJOUR SYSTEM A/S

From the questionnaires with the project manager from TL Byg, it has been mentioned that the way data is collected for evaluation purposes is done through Ajour System A/S. Unfortunately, the information regarding the project inserted in Ajour, has not been made available as it is still being processed. At the end of the project, reports will be subtracted. However, a description and understanding of the program will follow as it is part of quality control and procedures.

Ajour is a Danish enterprise established in 2010 with its own system developers, support and consultants. The system developed web based software solutions for companies in construction, manufacturing and property management. The idea was to providing effective and efficient business procedures and processes in the solutions offered. The system enables to keep track of quality control, supervision and scope of work performed. The collection of data is done digitally with a smartphone or tablet to make the documentation easier right on the building site rather than standing in the office. In this way unnecessary paper work is eliminated, also wasting time is minimised. A better structure overview is created and a higher quality registration of work is done. Lean production is used within the program in order to optimize the work process and bring value in terms of time, money and quality. (System)

Figure 46 Ajour Quality Stamp

Ajour quality stamp is used to market the idea that quality assurance is central to the way the company performs the work and that all requirements are met. Ajour D&V (digital delivery) is a planning tool to create the overview of the ongoing operations, management and documentation of tasks. Through this option it is possible to process control and quality of data with standard building components cards. There can be seen also the status of ongoing, future or completed operations. The data inserted in the D&V can be used to prepare activities and operational plans for the preparation of maintenance necessary throughout the warranty period. Ajour works with: project and supervision notes, technical queries, subcontractor notes, lists for documentation and management of defects, 1 to 5 years inspection while making photo documentation accessible in any of these segments.

Registration is done for documentation in connection with inspection of tender processes, also building reports and for making improvements.

Pre-registration is used for documenting existing conditions before starting a task and by doing so the project manager can precede with others tasks making sure everything is registered.

Project Memo is used for technical purposes before initiation or during construction in order to obtain the necessary authorisations. In this way it is possible to document and answer ambiguities.

Supervision Memo is used to document technical supervision during implementation phase, in connection to health and safety work.

Submission is used register documentation delivery and management of the processes regarding defects and the 1 – 5 year inspection. Other processes that need to be handled are: the technical delivery, the design review and end users review. Ajour allows categorizing dividing these processes so that they can be managed together or separately.

6.3.1.4 AUDIT REPORTS

The difference between evaluation and audit is that, evaluation assesses the efficiency, effectiveness, impact, relevance and sustainability of the project while the audit has a more financial focus assessing the legality of the project expenditure and income, also if funds have been used efficiently and effectively for the purposes intended. In the table below the main differences are highlighted between what a research, evaluation and audit is designed for, what does it measure and what kind of analyses are used.

Research	Evaluation	Audit
The attempt to derive generalizable new knowledge including studies that aim to generate hypotheses as well as studies that aim to test them.	Designed and conducted solely to define or judge current service or any other service.	Designed and conducted to produce information to inform delivery of best service.
Quantitative – designed to test a hypothesis. Qualitative research – identifies/explores themes. Follows established methodology.	Designed to answer: 'What standard does this service achieve?'	Designed to answer: 'Does this service reach a predetermined standard?'
Addresses clearly defined questions, aims and objectives.	Measures current service without reference to a standard.	Measures against a standard.
Usually involves collecting data that are additional to routine care.	Usually involves analysis of existing data but may include administration of interview, questionnaire, or focus groups.	Usually involves analysis of existing data but may include the administration of a simple interview or questionnaire.
Normally requires Research Ethics Committee review. Some studies using only secondary data may not.	Does not normally require Research Ethics Committee review.	Does not require Research Ethics Committee review.

Table 8 Differentiating audit, evaluation and research Source: (2009)

This research paper looks at Monitoring and Evaluation therefore further deepening of Audit Reports will be excluded.

6.3.1.5 DISSCUSSION

After conducting this research it can be stated that by making a Monitoring and Evaluation Plan to manage time, budgets and human resources it is an appropriate way to ensure quality of work.

There has been calculated an approximate price of the Monitoring and Evaluation activities which will not go over approximately 2.4 mil kr. Even though Monitoring and Evaluation can be costly, mostly because of contingency costs and collection of data which is a complex process, detecting failures too late in the process or making rectification can costs even more.

Regarding the project in Støvring at the final evaluation will be assessed if the quality of worked performed has been achieved, meaning that it has achieved its intended purpose. If the project manages to utilise its resources and convert them into activities objectives and goals as a benefit of the M&E System, then it will contribute in improving other projects in the future through lessons learned.

Besides the applicability of Monitoring and Evaluation within Construction projects, a major focus has been directed towards managerial philosophies, techniques and approaches in order to understand how these have evolved and management thinking has changed over time.

Moreover, conducting this research with two project managers from the client advisor side and from the total contractor has been an interesting process to see what are the differences and what are the interests.

6.3.1.6 CONCLUSION

This investigation is perceived from the client perspective, on how quality can be ensured during project life cycle of a construction project. The context of Monitoring and Evaluation has been studied for this purpose, as it gives the opportunity to make a transparent process for the client. Transparency in Monitoring can be achieved through collection of data, which can be used later on as documentation and performance is achieved through techniques where actual results versus planned ones can be discussed for improvements with stakeholders in monthly, quarterly and six monthly monitoring.

Furthermore stakeholders are involved in the process and decision making continuously where they decide what to evaluate and how, involving them in data collection and analysis, consulting them through interviews or asking for feedback. All these participatory actions help developing the objectives of the project and ensure its achievement throughout the project cycle.. Moreover, there is the possibility for certified customer surveys used to understand better the client perspective and if necessary rectify problems before completing the project.

The core problem of this report has been formulated around the idea on how resources can be used at their maximum capacity. The time factor, budgeting and human capabilities can be allocated and managed always with the scope of improving the performance of the project. In this context Monitoring and Evaluation helps identifying the most valuable and efficient use of resources and provides the basis to plan, design and implement the project. As analysed, utilization of resources if efficiently implemented contributes to the quality of activities. Monitoring and Evaluation can demonstrate this if the project efforts had a measurable impact on the expected outcomes and have been efficiently implemented.

For a successful implementation of M&E, the result based monitoring and evaluation cycle is suggested that helps in defining project objectives and provides a basis for objective implementation through monitoring of performance indicators. Involving stakeholders in analysis phase of the project is very important to make sure project objectives are well defined. Through methodologies such as Result Based Management it has been presented in the analysis how objectives can be achieved through managerial techniques. The analysis have shown how important it is to focus on project results that are relevant to the client and how monitoring and evaluation must be ensured throughout project life cycle.

The contractual organisation form in this research paper had a strong impact in the Implementation chapter, where there has been made a clarification on how advisor and total contractor are assessed in the context of Monitoring and Evaluation. Based on this it has been found out about the benchmark system which is mandatory in public subsidised projects. In this research paper is investigated how the consultant and contractor are evaluated as two different performances. Both the contractor and consultant will be evaluated on their performance providing a fair recognition of their work. The benchmark system creates value for all parties and can be applied in pre-qualification tenders where the client can select the best contractors and consultants based on their performance.

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LIST OF FIGURES

LIST OF TABLES