Designing Capacity Development for Disaster Risk Reduction: A Logical Framework Approach

Becker, Per; Abrahamsson, Marcus

2012

Swedish Civil Contingencies Agency

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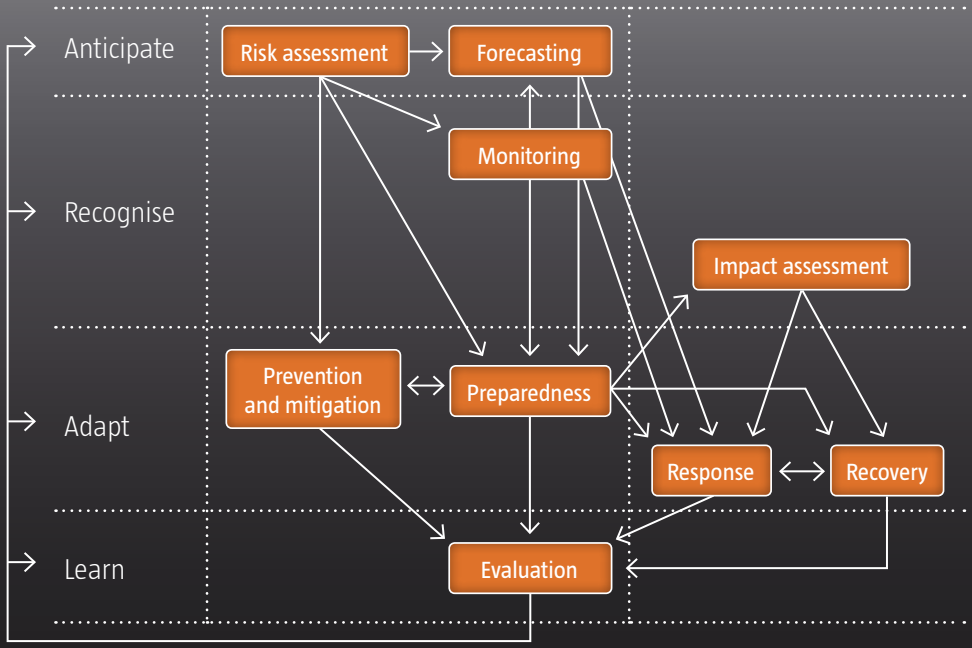

Designing Capacity Development for Disaster Risk Management:
A Logical Framework Approach

Swedish Civil Contingencies Agency (MSB)

Year of publication: 2012

Authors:
Per Becker and Marcus Abrahamsson

Layout: Advant Produktionsbyrå AB
Print: DanagårdLiTHO

Order No. MSB503 - December 2012
ISBN 978-91-7383-299-1

Table of contents

Introduction

The impacts of disasters are not evenly distributed in the world. Most of the death and devastation occur in developing countries[1,2], posing a major threat to sustainable development and to the Millennium Development Goals[1,3]. The international community urges wealthier countries and international organisations to assist these countries in developing their capacities for disaster risk management[4], and donor agencies are designing policies for how to further integrate disaster risk reduction into their official development assistance[5,6]. In other words, to support the development of resilient societies and communities.

While the importance of capacity for disaster risk management is widely recognised as a requisite for resilience, it is less clear for many how to assess, develop, evaluate and sustain it. There are increasing numbers of methods and tools available for capacity development, but lessons from past projects point to many inappropriate approaches with short-lived impacts[7]. This is especially challenging as most methods and tools are general and not tailored to the specific context of disaster risk management[8,9].

Most of the challenges for capacity development are however not new and particular to the context of disaster risk management, but have been challenging for international development cooperation for decades. In 1969 USAID commissioned a study that found common challenges in their projects, concerning vague planning, unclear responsibilities and difficult evaluation, which triggered the development of the Logical Framework Approach[10]. Versions of the Logical Framework Approach has since then spread to most donors of international development cooperation, such as SIDA[11], NORAD[12], CIDA[13], AUSAID[14], GTZ[15]. Even if the Logical Framework Approach has received criticism over the years[16,17], it is a pragmatic methodology for the design, monitoring and evaluation of projects and is often required to qualify for funding.

The purpose of this book is to present a framework for the design of capacity development projects, which builds on the strengths of the Logical Framework Approach, while tailoring it to suit the specific context of disaster risk management. The utility is however not only the design of capacity development projects, since an appropriate design also facilitates project follow-up, management and evaluation. The framework builds particularly upon Sida's guidelines for Logical Framework Approach[11] and on research at Lund University Centre for Risk Assessment and Management (LUCRAM), funded by MSB.

This book is not intended to be seen in any way as an alternative to Logical Framework Approach, as commonly applied in the context of capacity development for disaster risk management. On the contrary, it is important that the Logical Framework Approach is kept flexible, as different contexts may require adaptations in the methodology to meet the needs of the stakeholders in each situation[11]. The book is instead intended to assist stakeholders wanting to engage in capacity development for disaster risk management, by giving contextualised guidelines for how they can reach the intention of each step of the Logical Framework Approach for their specific area of interest.

The book is primarily targeting members of project teams and other potential stakeholders of capacity development projects for disaster risk management. However, since the book is a popular scientific description of a methodology designing capacity development for disaster risk management, the readership can be expanded to include everybody with an interest in the topic. A project team is here referred to a group of stakeholders with a common interest in addressing specific challenges in some context by actively engaging in the design, implementation and evaluation of a project. In the context of capacity development for disaster risk management, the project team normally consists of representatives from different organisations.

First of all, it is crucial that the project team includes people from the organisations with a responsibility for disaster risk

management in the setting for the potential project. These are sometimes referred to as internal partners and could be people from national, regional and local authorities, a Red Cross or Red Crescent Society, an NGO, etc. Secondly, in capacity development project there are often people involved from stakeholders that are external to the setting of the project. For example, from authorities on higher administrative levels, international organisations, consultancy companies, etc, which sometimes referred to as external partners.

The rationale of the Logical Framework Approach is that there is a current situation that contains some challenges that are deemed undesirable but possible to resolve through purposeful activities. In other words, that there is a current situation that can be turned into a desired situation through the design and implementation of a capacity development project for disaster risk management (Figure 1).

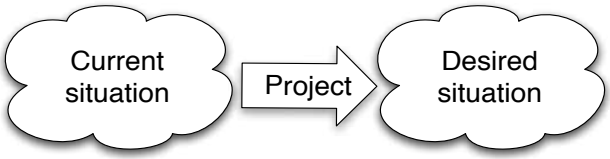

Figure 1. The rationale of Logical Framework Approach.

The version of Logical Framework Approach used in this book is divided into nine steps, three focused on the current situation, one focused on the desired situation and five focused on the project (Figure 2). These steps are however not strictly sequential in the sense of going through a linear nine step process, but dependent on each other in such a way that they often require going back and forth between the steps to revise throughout the process[11]. For example, new information may surface while discussing internal project risks, which is important for the situation analysis.

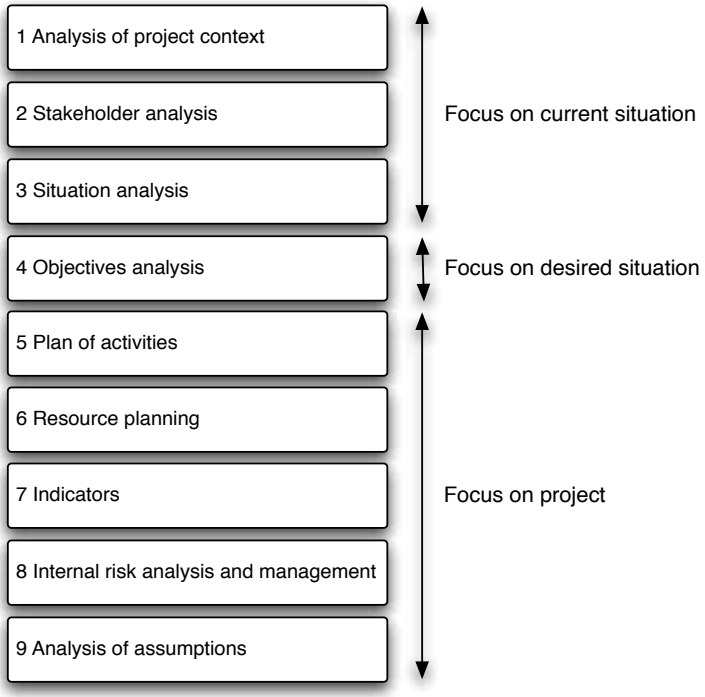

Figure 2. The steps and focus of LFA.

The outline of this book follows the nine steps of the methodology, which are preceded by this introduction and succeeded by some final remarks. For each chapter describing the steps of this Logical Framework Approach, one or a few overarching questions are presented (in *italics*) in conjunction with the chapter title to illuminate the main purpose of that step[11]. Thereafter follows more detailed questions to answer for each step, as well as methods and sources to use when answering them.

1.Analysis of project context

What is the general rationale and context for the project?

When involved in designing a capacity development project for disaster risk management, it is crucial to start the process by contemplating and formulating the general rationale for the project. In other words, we need to describe in short why the project is necessary in the first place. Being explicit and transparent about the reasons for the potential project, as well as for engaging in the process of designing it, is fundamental for building trust among stakeholders, for creating commitment, and ultimately for project effectiveness. The output of such dialogue will then be used as input to the coming steps.

Figure 3. Step 1 in LFA

In this initial phase of the project design process it is also important to consider that the notion of "development", in the concept of capacity development, may carry different meanings to different people. What is considered an improvement for one stakeholder may not be considered an improvement by another[18]. For example, a governmental authority in charge of disaster preparedness may view better capacity to distribute donated clothes to disaster affected communities as development, while women involved in local clothing production loose their livelihood if their market is flooded with free foreign clothes and may not view that change as development at all. It is thus essential to think about and present what is to be considered "development" in the particular project.

Finally, it is necessary to identify what contextual factors that may have an effect on the project[11]. Although this initial part of the project design process is restricted to the identification of general factors, there may be a broad range of physical, environmental, political, economical, social and cultural factors to include in the analysis. A common tool to use for such analysis is SWOT analysis, which stands for strengths, weaknesses, opportunities and threats. This acronym is sometimes changed to SWOC, as the idea of challenges may appear less intimidating than that of threats in the original form. The methodology itself is however unchanged and results in the creation of a 2x2 matrix by filling in four fields (Figure 4).

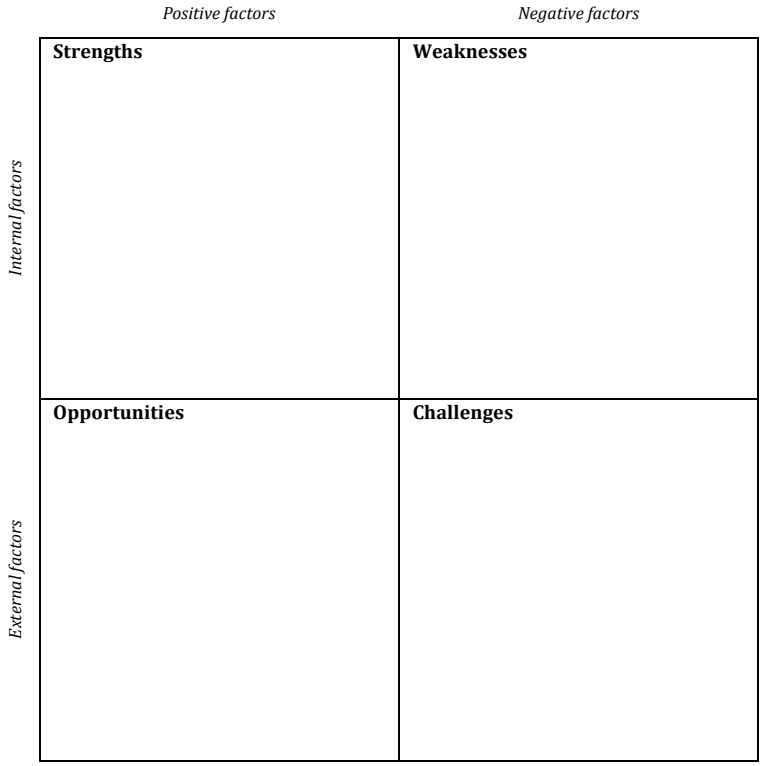

Figure 4. The SWOC-matrix (adapted SWOT).

The SWOC analysis is done by as broad group of stakeholders as possible in such initial stage of the project design process. Although it may be difficult to influence who will participate, as this is a joint responsibility of the project team, it is vital to consistently advocate for broad participation of women and men, geographically central and peripheral organisations, ethnic minorities and majorities, etc.

Being gathered together, the stakeholders brainstorm what general physical, environmental, political, economical, social and cultural factors that can have an effect on the project. This process is known to also bring out rather specific factors that contain important information that may not be possible to fully elaborate on during the SWOC analysis itself, but which are particularly valuable input to the coming steps of the Logical Framework Approach.

The four fields of the SWOC matrix guide the brainstorm, as they represent four different categories of factors: positive/internal (Strengths), negative/internal (Weaknesses), positive/external (Opportunities) and negative/external (Challenges). Internal factors are what the stakeholders have and can influence in their own system for disaster risk management, such as human resources, system for coordinating between stakeholders, etc. while external factors lay outside their normal range, such as global financial situation, political stability, etc.

When utilising brainstorming as a participatory technique to bring out vital information from stakeholders, it is important to make sure that all stakeholders can contribute. Various norms and power relations may hinder some participants, reducing them to a mere audience if not actively facilitating their involvement. There are several ways of doing this, ranging from the facilitators making sure that the word is passed around to everybody, to structuring the process in order to make sure that everybody is allowed to contribute.

An example of the latter is to structure the session as a three-stage process. First, allowing the participants to work individually

for ten minutes, identifying the strengths, weaknesses, opportunities and challenges by themselves. Then group the participants to compare notes and identify in dialogue the five most important in each category by comparing and contrasting their individual ideas. Ideally, someone from the project team facilitates the group work to make sure that everybody is allowed to contribute. Finally, each group present their twenty factors for the other groups in plenum, which are compared and contrasted with the contributions of the other groups and aggregated into one comprehensive SWOC matrix.

Regardless of methodology, it is important that the identified factors during the SWOC analysis are captured in such a way that they are visible to the stakeholders. In addition, it is important that they also can be stored in a way that facilitates easy access for the reminder of the project design process and the future. There are several ways to do this, such as using and aggregating post-it notes on a whiteboard and photographing the results, capture them digitally and projecting the resulting matrix on a wall, etc.

The analysis of project context is summarised as the answer to three questions:

1. **What is the general rationale for the development of capacities for disaster risk management in the particular context?**
2. **What different visions of "development" are considered, and how are they reconciled?**
3. **What are the general physical, environmental, political, economical, social and cultural factors that could affect the project?**

2.Stakeholder analysis

Who are directly or indirectly influenced by and exert an influence on what takes place in the project?

The second step of the Logical Framework Approach is the stakeholder analysis. In this analysis the project team identify and analyse who are directly or indirectly influenced by or influencing the potential capacity development project for disaster risk management. These stakeholders can be divided into four main categories[11]: (1) a beneficiary is a stakeholder whose interests are served by the project, (2) a decision-maker is a stakeholder in a position to change it, (3) an implementer is realising its activities, results, purpose and goal, and (4) a financier is funding the project.

Figure 5. Step 2 in LFA

It is important to note that one stakeholder can belong to multiple categories in a project. For example, a national authority responsible for disaster risk management in a country may be decision-maker, since a key stakeholder directly involved in the project team should have a substantial say in what is decided in the project. The same stakeholder may also be an implementer, being responsible for implementing a considerable part of the project activities, and a financier, as the national authority may co-fund the project.

Stakeholder analysis is critical to the success of every capacity development project, as all categories of stakeholders have important information for the future project, and is the first step in engaging the right stakeholders in the right way. If this is not

done with care, problems are almost certain to occur in the implementation of the project. There are many examples of projects in which influential stakeholders were not sufficiently involved in the design process, resulting in severe disturbances during the implementation.

In the stakeholder analysis it is also important to think about and decide who is to be considered an expert in the project. That is to say what knowledge is considered relevant. Not only formal expertise is vital here as the educated common sense of the stakeholders can be rather effective in this process and render some degree of moral force and political influence to the results[19]. For example, if the members of a disaster-prone community are invited to share their knowledge and experiences, this does not only serve as a way of bringing local knowledge of the issues at hand to the table. In seeing how their input influence the design of the project, they are much more likely to buy in, support, participate and feel ownership of it while implemented.

Having argued for the broad participation of various stakeholders, it is important to emphasise the importance of identifying and communicating to all involved where they can seek some guarantee that improvement will be achieved by the project. This responsibility needs to be assigned to one of, or an organised group of, the more influential stakeholders. Regardless how important this is for accountability, it is sometimes forgotten and often implicit. Either way, the consequence is that the overall responsibility for the project is blurred.

Finally, and for legitimacy, it is also important to attempt to directly involve some stakeholder who argues the case of those who cannot speak for themselves, e.g. marginalised groups, future generations, the environment, etc, and who seeks the empowerment of those affected but not involved. Hence, stakeholder analysis involves four main categories of stakeholders and three particular roles (Figure 6).

Beneficiaries:	Decision-makers:	Implementers:	Financiers:
Experts:			
Guarantor of success:			
Advocate for those affected but not involved:			

Figure 6. A tool with four stakeholder categories and three particular roles.

The stakeholder analysis often needs to be revised as the capacity development project for disaster risk management is developed. The simple reason for this is that it is difficult to have a full picture of who is influenced by or influencing the potential project from the start. Although the project team should attempt to get as complete picture as possible in the initial stakeholder analysis, it is wise to include a session revising the stakeholder analysis in a goal-oriented project planning workshop[11], which is further described in the two following chapters.

The stakeholder analysis is summarised as the answer to four questions:

1. **Who are the beneficiary, decision-maker, implementer and financier?**
2. **Who is considered an expert and what counts (should count) as relevant knowledge?**
3. **What or who is assumed to be the guarantor of success?**
4. **Who is advocate for the interests of those affected but not involved and for securing their emancipation?**

3.Situation analysis

What is the current situation? What are the problems in this situation? What are the causes of these problems? What are the effects of these problems?

The situation analysis for capacity development projects is an identification and analysis of the problem to be resolved by the project, and thus the detailed description of the reason for its existence. Situation analysis is in other words a fundamental requisite for any capacity development project as it is impossible to define goal, purpose, results and activities without first describing the current situation which the project is intended to address. Such description is generally guided by questions about what the problems are in the current situation as well as their causes and effects[11].

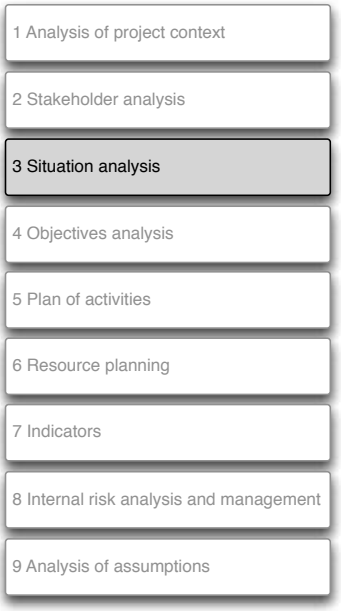

Figure 7. Step 3 in LFA

Similarly, the more recently emerged process of capacity assessment emphasises the importance of analysing current capacities and capacity needs[8,9,20]. The challenge is still to translate these general approaches to the specific context of capacity development for disaster risk management, and the Logical Framework Approach offers a more thorough methodology that is often required by donors.

If the goal of disaster risk management is to reduce disaster risk and the goal of capacity development in this context is for individuals, organisations and societies to obtain, strengthen and maintain capacities to do just that[9], two clear areas for analysis of the current situation emerge. Firstly, what current and future risk that the individuals, organisations and societies are up against,

and secondly, what capacities they currently have to manage it. The situation analysis for capacity development for disaster risk management involves in other words the analysis of risk and the analysis of capacity to manage risk.

3.1. Analysis of risk

There are many methodologies for analysing risk available in the world, and it is not uncommon that there are already some kinds of risk analyses done for the intended context of the capacity development project. It is therefore important to approach this part of the situation analysis in a flexible manner, utilising what is already there while making sure to meet the purpose of the situation analysis.

Even if an available risk analysis has flaws and may not be fully adequate to use as input to the situation analysis, it is important to utilise it as much as possible. Nevertheless, if the risk analysis is totally insufficient, or no risk analysis is available, the project team must analyse risk for the situation analysis. Although the project team is free to choose any risk analysis methodology that they deem adequate, there are some methodological criteria that would be beneficial to the situation analysis.

Firstly, effective disaster risk management projects require common and mutually understood goals among stakeholders[21,22]. Hence, it is vital that all stakeholders share objectives, and the first step is to have an explicit discussion of what is to be considered valuable and important to protect[21]. Without such discussion, there is a risk that stakeholders have difficulties collaborating or even unintentionally impeding each other's efforts by pursuing different objectives. Such explicit discussion is not only vital for the formulation of common goals, but is likely to generate a richer picture of what is valuable in that particular context.

This explicit discussion should not have the initial objective of listing and selecting individual aspects, but instead of trying to use what is expressed by different stakeholders to build a system

of what is valuable by asking why each aspect is valuable as well as what else is necessary to secure that aspect. This way of eliciting what stakeholders together view as valuable is likely to facilitate consensus among stakeholders as most of what each express individually may be included in the system. The final result of the discussion can then be used as a tool for guiding the rest of any disaster risk management initiative, as it visualizes and specifies in practice what is important in that particular context and thus what the initiatives should focus on protecting[21]. *The first criterion* of the risk analysis methodology is thus that it can accommodate different stakeholders' values (multi-value).

Secondly, the more common contemporary approach to analyse risk starts with identifying and selecting a set of hazards[23]. This hazard analysis is determined by what each stakeholder view as valuable and important to protect, which is why it should be preceded by the discussion described above. Having identified a hazard, it is important to analyse the factors that contribute to it. It is essential to note that a specific hazard can impact on contributing factors for other hazards, creating secondary risks in disaster situations, e.g. earthquakes or heavy rain may trigger landslides.

It is vital to include a wide range of hazards in the analysis[24]. More dramatic, and sometimes sudden, hazards may give rise to disasters. However, the human predisposition for the spectacular should not make us forget the many smaller events, which on their own may seem relatively trivial, but which cumulative impact on society in many ways vastly surpasses the few and dramatic. For instance, in 2004, the Indian Ocean tsunami raised the total global death toll in disasters to around 250,000 people[25], while it is estimated that almost 900.000 people died from malaria, 1.2 million in road traffic accidents, 1.5 million from tuberculosis, 2 million from HIV/AIDS and 2.2 million from diarrhoeal diseases that same year[26]. All such less significant events may impact on what human beings value like water drops eroding stone. *The second criterion* for the risk analysis methodology is thus that it should be able to incorporate a wide

range of hazards that may impact what stakeholders value (multi-hazard).

Thirdly, regardless of whether a hazard derives from natural, technological or antagonistic processes, it will not result in a disaster unless it occurs in a conducive setting[27]. Such a setting is determined by factors from all spheres of society[23,27,28], and is primarily a result of human activity[29,30]. This further explains the idea that most disasters stem from unresolved development issues[31]. Disasters, set off by any type of hazard, are therefore not discrete, unfortunate and detached from ordinary societal processes, but are products of everyday human-environment relations over time[29,30]. Hence, *the third criterion* is that the risk analysis methodology facilitates the integration of a multitude of factors and processes contributing to the vulnerability of what stakeholders' value to the impact of the hazards (multi-susceptive).

Furthermore, the complexity of risk in this context requires the integrated knowledge and effort of stakeholders from most functional sectors and all administrative levels of society[32]. Unfortunately, efforts in the past have had a tendency to reduce the problem at hand into parts that fit functional sectors and organisational mandates[33]. Geographical borders have also been obstructing effective disaster risk management, as their delimitations are geopolitical, impeding collaboration between stakeholders to various degrees, but rarely limiting the geographical spread of disasters[32]. The fourth criterion is thus that the methodology should facilitate the involvement of various stakeholders across functional, administrative and geographical borders (multi-stakeholder).

Finally, as a result of the complexity of risk and of the functional, administrative and geographical disjointedness of stakeholders, various stakeholders often perform multiple risk analyses, with various purposes. For instance, there may be several municipal risk analyses and a detailed risk analysis of a chemical plant in a province, all with different purposes and based on different

assumptions, which the provincial administration needs to combine to make an overall analysis of risk for their jurisdiction. Hence, the *fifth* criterion is that the methodology should facilitate integration of the results of several risk analyses performed by different groups of stakeholders (multi-analysis).

Establish what is valuable and important to protect	1. What is valuable and important to protect? 2. Why is it valuable? 3. Which other elements are valuable in securing that valuable element?
Establish which events can have a negative impact on these valuable elements	4. Which events may happen that can have an impact on what human beings value? 5. Which factors contribute to these events occurring? 6. How likely is each event to occur?
Establish how susceptible these valuable elements are to the impact of the events, including the capability to act to reduce the impact where relevant	7. What can happen to what human beings value, given a specific event, considering actors performing tasks that may influence the outcome where relevant? 8. Which factors contribute to their susceptibility? 9. How likely is that to occur? 10. If it happens, what are the consequences for what human beings value?

Table 1. Ten questions to answer as the workflow of an example method for risk analysis[32].

Risk analysis methodologies that meet these five criteria would be ideal to use for this part of the situation analysis, see table 1 for a workflow for an example methodology that does. However, there are many methodologies that do not meet all five criteria, but which may be sufficient for the purposes of a specific situation analysis. To facilitate the bridge between the risk analysis of the situation analysis and the evaluation of risk and formulation of objectives of the objectives analysis, it is suggested

to use a scenario-based methodology. In other words, it is advised to use a risk analysis methodology that can answer the three following questions:

1. What can happen?
2. How likely is that to happen?
3. If it happens, what are the consequences?

This approach to risk analysis is also used in the eighth step of this Logical Framework Approach, Project risk analysis and management, which is described later in this book.

3.2. Analysis of capacity to manage risk

With a clear picture of what risks the system for disaster risk management is up against, it is time to analyse the current capacities of the system for managing those risks. The concept of capacity is generally defined as "[t]he combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals"[34]. However, to be able to systematically analyse the current capacities for disaster risk management, it is vital to concretise what strengths, attributes and resources that contribute to what goal, as well as how to do it.

The purpose of the system for disaster risk management is to protect what human beings value, now and in the future, and for doing that the system needs to perform a set of functions[35]. These functions are general for all such systems in the world, but how, by who, with what resources, etc, the functions are done are contextual and varies from country to country. To be resilient and to protect what human beings value, the system for disaster risk management must be able to anticipate, recognise, adapt to and learn from threats, accidents, disasters and other disturbances to society[35]. The functions for anticipating such events before they happen are risk assessment and forecasting, and for recognising when they are about to happen, or has happened, are monitoring and impact assessment. To adapt society to protect what human

beings value, we utilise the proactive functions of prevention/mitigation and preparedness, as well as the reactive functions of response to and recovery from actual disasters. Last, but not least, to continuously learn and build an increasingly safe and sustainable society, we need to utilise the function of evaluation and use its results for increasing the effectiveness of the system. These nine functions are not only crucial in themselves, but also largely dependent on each other in such a way that the performance of one function requires the output from another function, e.g. to respond by warning the public to take shelter for a coming cyclone necessitates information from forecasting or monitoring the weather. See Figure 8 for an overview of functions and their relations.

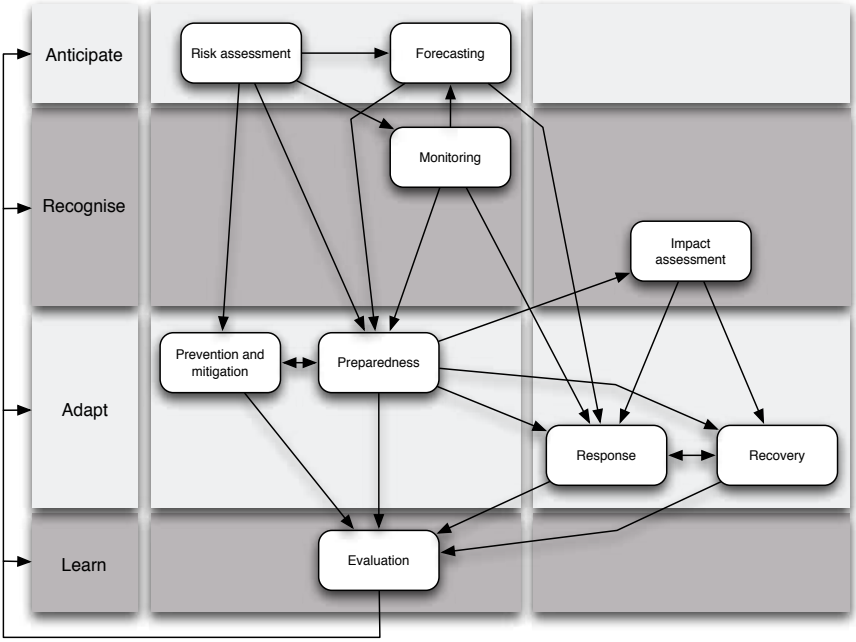

Figure 8. The functions of systems for disaster risk management .

These nine functions are required for any system for disaster risk management in the world (Figure 8). Analysing the capacity for each function in a specific context, however, entails analysing

what actually exists in that context in order for each function to work. These factors can generally be categorised under (A) legal and institutional frameworks, (B) system of organisations, (C) organisation or (D) human and material resources[36]. Although there are a large number of potential questions that could be useful to identify and analyse these factors, this methodology specifies 22 guiding questions that needs answering for each function (Figure 9).

These guiding questions are not necessarily asked straight out, but needs answering in some manner for a comprehensive analysis of capacities for disaster risk management.

	Levels of factors determining capacity			
Functions	A. Legal and institutional framework	B. System of organisations	C. Organisation	D. Resources
Anticipate **Risk assessment** **Forecasting** **Recognise** **Monitoring** **Impact assessment** **Adapt** **Prevention & mitigation** **Preparedness** **Response** **Recovery** **Learn** **Evaluation**	**A.1) Are there any legislation or policy requiring [function]?** **A.2) Is the utility for [function] stated in legislation or policy?** **A.3) What stakeholders are identified in legislation or policy as involved in [function]?** **A.4) Are the legislation or policy stating to whom and how the results of [function] should be disseminated?** **A.5) Are funds earmarked by legislation or policy for [function]?** **A.6) Are the legislation or policy implemented?** **A.7) Are there any values, attitudes, traditions, power situation, beliefs or behaviour influencing [function]?**	**B.1) What stakeholders and administrative levels are involved in [function]?** **B.2) Are the responsibilities of stakeholders and administrative levels clearly defined for [function]?** **B.3) Are interfaces for communication and coordination between stakeholders and administrative levels regarding [function] in place and functioning?** **B.4) Are interfaces for dissemination, communication, and integration of the output of [function] to stakeholders involved in other functions that depend on the output in place and functioning?** **B.5) Are interfaces for facilitating coordination between functions in place and functioning?**	**C.1) What parts of each organisation are involved in [function]?** **C.2) Are the responsibilities for [function] clearly defined for each involved organisational part?** **C.3) Are systems for effective collaboration in [function] between the involved organisational parts in place and functioning?** **C.4) Are there any internal policies for [function] in each involved organisation?** **C.5) Are these internal policies implemented?** **C.6) Are interfaces for dissemination, communication, and integration of the output of [function] to parts of the organisation involved in other functions that depend on the output in place and functioning?**	**D.1) What knowledge and skills on individual level does each involved organisation have for [function]?** **D.2) What equipment and other material resources does each involved organisation have for [function]?** **D.3) What funds do each involved organisation have for [function]?** **D.4) What knowledge, skills and material resources do members of the public have for [function]?**

Figure 9. Examples of guiding questions for capacity analysis of systems for disaster risk management.

3.3. The process of the situation analysis

The process of the situation analysis has two parts: a descriptive analytical part and a mobilising concluding part. The former part is intended to collect a wide range of data and the latter is intended to sum up the data to one agreed picture of the current challenges for the targeted system of disaster risk management.

The analytical part of the situation analysis, as described earlier in this chapter, focuses on analysing risk and analysing the current capacities of the system to manage risk. This is done in a series of workshops on all administrative levels and meetings with key stakeholders, and by studying available documentation. The documentation could be legislation, policies, risk assessment reports, documentation from past or current projects, etc.

The output of this process is a holistic and systematic overview of challenges to use as a basis for prioritising key challenges, or focal problems, to address in a capacity development project. To be able to do this prioritisation, as well as to mobilise support for the project, it is important that the stakeholders share some common views on the challenges and the potential project. This is facilitated by a goal-oriented project planning workshop, in which the concluding part of the situation analysis constitutes the first part. These workshops are commonly also referred to as LFA workshops, but this book deliberately call them goal-oriented project planning workshops to single them out from all the other workshops used in the different steps of this Logical Framework Approach.

The goal-oriented project planning workshop can be organised in different ways, from its simplest form of a brief session with colleagues if the project focus on one specific department, to a full multi-day workshop if the context of the project is complex[12]. Considering the complexity of capacity development for disaster risk management it is likely that a more comprehensive workshop is needed.

It is important that all the most important stakeholders are participating[12], although for practical reasons and to allow active participation of everyone, the number of persons attending should be limited to 25 persons[11]. The workshop should if possible be held in the project area[12], or at least as close as practically feasible.

Having all key stakeholders in the same room is not only opening up for learning about the current situation in an efficient manner in relation to time and money. It also gives the opportunity for dialogue concerning the results on the risk analysis and capacity analysis, which the stakeholders have contributed to earlier in the situation analysis. This facilitates the stakeholders seeing the whole picture of the challenges that the capacity development project is intended to address. Also, integrating the individual views of the stakeholders, each of which giving a limited perspective on the world, into one shared view, is vital for creating a common understanding of the challenges at hand[37]. This process is important for creating consensus, avoiding future conflict in the project and facilitating ownership[11]

The result of this part of the goal-oriented project planning workshop is commonly referred to as a problem tree, a visual representation of how causes, problems and effects are linked to each other (Figure 10).

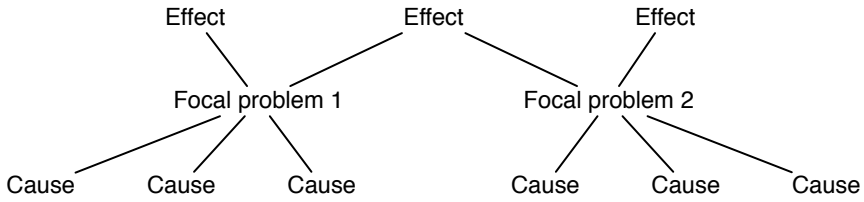

Figure 10. A problem tree.

It is important to note that a problem tree is likely to be full of links other than linear relationships between a particular cause, problem and its effects. That is to say that one effect of a

particular problem may be the cause of another problem, which effect may be the cause of a third problem, etc. Grasping such dependencies and including them in the situation analysis is crucial, as implementing a set of activities is futile if the intended result also is dependent on other activities not included in the project.

Facilitating goal-oriented project planning workshops is demanding, difficult and should be done by someone with extensive training to do so. Such professional facilitators are responsible for guiding the process during the workshop and should be independent in relation to the future project and its stakeholders. When basing the workshop on a thorough analysis of risk and current capacities to manage risk, the facilitator is not required to have expertise in disaster risk management. However, the facilitator must be knowledgeable in the Logical Framework Approach and in facilitating such workshops.

The situation analysis is summarised as the answer to six questions:

1. **What can happen?**
2. **How likely is that to happen?**
3. **If it happens, what are the consequences?**
4. **What function is necessary to perform in order to manage the analysed risks?**
5. **Why is that function necessary to manage the analysed risks and what other functions are necessary to be able to perform that function?**
6. **What is available in terms of legal and institutional framework, system of organisations, organisation and resources to facilitate the performance of all identified functions?**

4. Objectives analysis

What is the desired situation? What are the long-term changes needed to reach that situation? What are the direct effects of the project? What are the direct effects of the activities that are implemented within the framework of the project?

The fourth step of this Logical Framework Approach is the objectives analysis, which includes an evaluation of current risks, based on the risk analysis, an evaluation of current capacities to manage risk, based on the capacity analysis, and the formulation of clear project objectives. It is in other words time to describe the preferred situation in relation to disaster risks and the capacities to manage them (Figure 1). Based on this preferred situation, it is also time to define what changes that the capacity development project should generate. Hence, when earlier steps focus on how things are, the objectives analysis focuses on how they should be.

Figure 11. Step 4 in LFA

The evaluation of risk, in this context, includes a statement of the desired level of risk, or at least of the intention to reduce the current level. Similarly, the evaluation of current capacities to manage risk includes a statement of the desired level of performance, or at least of the intention to increase the level of performance in order to manage the risks at the desired level. By explicitly describing this preferred situation in relation to disaster risk management, the step between the current situation described in the situation analysis and the formulation of objectives becomes more transparent.

The formulation of objectives entails formulating an overall goal, purposes and expected results. These three levels of objectives must be connected to each other in such a way that expected results together fulfil a purpose, which in combination with other purposes leads to the fulfilment of the overall goal. In other words, the achievement of objectives at each level necessitates the achievement of all related objectives on the level below. This can be depicted as an objectives tree (Figure 12).

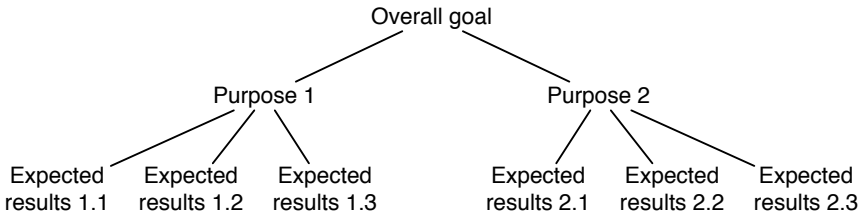

Figure 12. An objectives tree.

The overall goal of the project states what long-term effects the project is intended to have. For example, an overall goal could be the "reduced consequences of coastal flooding on the lives and livelihoods of people in X". Such overall goal is difficult to achieve in one isolated project and should instead be seen as the general direction of the project and vision of the project team[11]. This is particularly the case when the full effects of project activities may take time to materialise, such as the risk reduction effects of mangroves that are relatively slow growing and take years to create a barrier for strong winds, waves and erosion. It is also important to note that the achievement of an overall goal is often dependent on a range of external factors that the stakeholders in the project have little or no influence over, which is particularly essential for the three final steps of this Logical Framework Approach.

The purposes of the project express its direct effects if implemented successfully. While the overall objective has a time span up to a decade, a project purpose should normally be achieved as an immediate consequence of the realisation of the

related expected results or after up to three years[11]. The project purposes typically correspond with the focal problems that have been identified in the situation analysis. For example, a purpose of a three year project starting 2013 could be "30 percent reduction of the yearly number of flooded days of the communities in X in 2018".

Finally, the expected results of the project are the direct, real and concrete effects of the project activities. This is the most concrete level of objectives and should normally be achieved immediately as the project activities are implemented. Several activities are however often required to achieve one particular expected result. For example, the expected result of "100 percent increase in the extent of mangrove coverage in X in 2018" would entail a whole range of activities from behavioural change activities for community members to stop cutting down existing mangroves, to training volunteers in nursing and planting new mangroves.

As mentioned earlier, the set of objectives for a project is often pictured as an objectives tree (Figure 12), which is often seen as the "inverted" problem tree from the situation analysis. Consequently, it is important to note that also the objectives tree is likely to be full of links between objectives other than the linear relationships between an overall goal, its related purposes and their related expected results. Acknowledging these connections is vital when prioritising what to focus on in the project, as it becomes impossible to achieve an objective if not all other objectives that it depends on is equally addressed. For example, only buying mangrove plants is not sufficient to increase the extent of a mangrove forest. The plants need to be planted, communities need to stop cutting down the mangroves, etc. It is in other words crucial to acknowledge the dependencies between objectives in the same way as the dependencies between the problems of the situation analysis.

When designing objectives it is important to make sure that they are Specific, Measurable, Attainable, Relevant and Time-bound[38]. The objectives of the project should in other words be SMART, as

the resulting acronym spells out. As hinted earlier, it is not generally feasible with a SMART overall goal, but it is nonetheless vital for the project purposes and expected results[11].

The first requirement for a SMART objective is that it is specific. This means that it should be precise in what it set out to accomplish, in contrast to a general objective that only spell out a broad direction. It should be clear and explicit, without ambiguities. In short, for an objective to be specific it must describe exactly what is expected.

The second requirement for a SMART objective is that it is measurable. If an objective is not measurable, it is impossible to monitor the progress of achieving the objective and thus also to steer the project towards its successful conclusion in our constantly changing and dynamic world. Being able to measure the achievement of the objectives is also fundamental for being able to evaluate if a project is successful or not. In addition, having measurable objectives is also likely to spur motivation and commitment, as it becomes possible to get a sense of progress during the project and the satisfaction of seeing the intended results. In short, for an objective to be measurable it must be possible to monitor and evaluate in either quantitative or qualitative ways.

The third requirement for a SMART objective is that it is attainable. This means that the objective should be realistic in relation to the capacities of the stakeholders. If an objective is too demanding, it will not be met and consequently risk eroding the motivation and commitment of increasingly disillusioned stakeholders. If an objective is too easy, on the other hand, it is likely to be met but may erode the motivation and commitment of stakeholders as it may be considered boring, below their standards and pointless. In short, for an objective to be attainable it must be realistic but challenging.

The forth requirement for a SMART objective is that it is relevant for the stakeholders of the project. This means that the objective should matter to them, as without such sense of importance for

each and every one of the stakeholders, the project will not be able to mobilise their commitment, participation and ownership. This is not to say that all stakeholders must view every single objective as relevant to them in isolation. As long as the objectives of a project are linked to and support the achievement of other objectives, the relevance of all objectives are instead inferred from the selection of objectives that each stakeholder view as relevant. This way it is possible to design objectives that mobilise a wide range of stakeholders from various functional sectors, different administrative levels and over geographical borders. In short, for an objective to be relevant it must matter to the stakeholders or be linked to objectives that do.

The fifth and final requirement for a SMART objective is that it is time-bound. That means that an objective should have a set timeframe for when it is to be achieved. Setting a target date for each objective is essential for monitoring and evaluation as it is impossible to do either if not knowing when to expect what. Commitment to a deadline is also generating a sense of urgency that facilitates the creation and maintenance of motivation and focus, which is crucial when other tasks and problems outside the project are also attracting the attention of the stakeholders. In short, for an objective to be time-bound it must be defined in relation to a set target time.

The objectives analysis is ideally done in the same goal-oriented project planning workshop as the revision of the stakeholder analysis and the concluding part of the situation analysis presented earlier. It is important that the same wide group of stakeholders participates in both the situation analysis and the objectives analysis, as the shared understanding of the problems to address is vital for designing objectives that mobilise commitment, participation and ownership. Involving all stakeholders in a dialogue concerning the preferred situation in relation to risks and capacities to manage risk also facilitates the process, since it links the description of the current situation in the situation analysis with the formulation of objectives in the objectives analysis. The same goal-oriented project planning

workshop may also include proposing initial ideas for activities and indicators, as well as a first identification of risks and assumptions[11]. The focus of this workshop is to clarify *why* the project is needed and *what* it should involve[11], which then informs the work of the project team to specify *how* in the coming steps of this Logical Framework Approach. The main focus of the goal-oriented project planning workshop is in other words on the situation analysis and objectives analysis.

There are many guidelines for how to run goal-oriented project planning workshops. However, aside of the general suggestions on how to facilitate active participation presented earlier, this book do not present such guidelines. Facilitating this type of workshops is demanding and should be done by a professional facilitator, with adequate training to do so. Ideally, for legitimacy of the results, the facilitator should not even come from any of the potential key stakeholders in the project team, but be neutral in the project. The reason for this is that the person facilitating has influence over the process and could bias it towards the interests of a particular stakeholder. With a neutral, or at least to the furthest possible extent neutral facilitator this potential problem is eliminated even before it can come up on the agenda.

The objectives analysis is summarised as the answer to four questions:

1. **What is a desired level of risk and level of capacity to manage risk?**
2. **What is the goal? That is, what are the long-term effects of the project?**
3. **What are the purposes? That is, what are the direct effects of the project?**
4. **What are the expected results? That is, what are the direct effects of the project activities?**

5. Plan of activities

What are the activities needed to generate the results required to reach the purposes and goal of the project?

The fifth step of this Logical Framework Approach is the plan of activities needed to generate the expected results required to fulfil the defined purposes and overall goal that are prioritised in the project. These activities are in other words no ends in themselves, but the means to reach the desired ends as specified in the objectives analysis. That is to say that the plan of activities must include all the activities necessary to produce the expected results, and only the activities necessary to produce the expected results. Clear connections between the activities and the project objectives are thus fundamental.

Figure 13. Step 5 in LFA

It is important to note that projects for capacity development for disaster risk management often need to comprise of a mix of activities. The ground rule is that the mix of activities must address all challenges necessary to produce the expected result, as falling short on one may jeopardise an entire project purpose. The mix of activities may thus span over a wide range of activities targeting everything from human resources to policy, and from organisational development to legislation. Here the necessity of a comprehensive situation analysis becomes evident and the list of questions for capacity analysis of systems for disaster risk management in Figure 9 offers support to the generation of a broad mix of activities. This process may also involve mixing long-term activities with short-term activities that provide early

wins, and gives a positive tone to the project promoting further investments[39].

Furthermore, it is important to note that also project activities are often connected to each other in such a way that one activity depend on the successful implementation of others in order to generate the required results. The plan of activities is thus not only a list of activities, but instead a plan specifying when and in what order the activities must to be implemented.

The plan of activities is based on the outcome of the goal-oriented project planning workshop and may, as indicated earlier, have been initiated during it. However, the plan of activities in itself is normally developed and finalised by the project team. The reason for this is that it is unfeasible to involve all stakeholders in the more operational work of translating the agreed objectives into actual activities.

The plan of activities is summarised as the answer to three questions:

1. **What activities are needed to generate the results required to fulfil the purposes to reach the goal of the project?**
2. **How are the identified activities dependent on each other?**
2. **In what internal order are the activities implemented**

6.Resource planning

What are the resources needed to implement the project activities?

When having a plan of activities to implement, in order to generate the necessary results to reach the purposes and goal of the project, the next step is resource planning. This entails producing a detailed plan of what resources that need to be allocated when in order to implement the activities. These resources can include funding, venues, equipment, expertise, etc, and can be in cash or in kind. In kind contributions refer usually to contributions of goods or services other than an actual money transaction, which make it possible to contribute with the complete range of resources that the stakeholders have available.

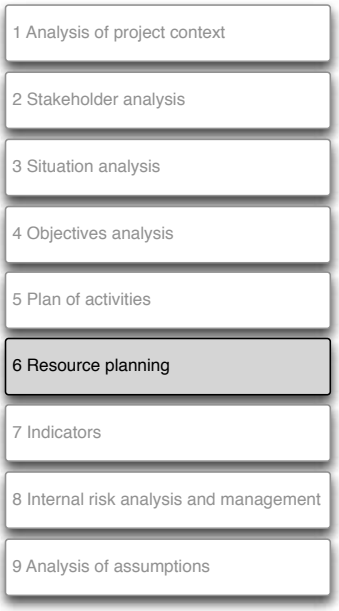

Figure 14. Step 6 in LFA

Including both cash and in kind contribution in the resource planning means that the co-financing between stakeholders can include other things than direct monetary contributions, such as covering salary costs of own personnel, making own buildings available as venues for activities, etc. Such contributions often cover a substantial part of the necessary resources, but are at times not explicitly stated in the resource planning. Forgetting to include these vital contributions in project proposals undermine the impression that all stakeholders chip in what they can, which generally lowers the chances of the project to secure funding from institutional donors.

When working with resource planning it is not only fundamental to specify in detail all contributions, but also which stakeholders

control what resources. Otherwise, unclear or ambiguous division of responsibilities are likely to hamper effective implementation of the project. This is particularly important when there are many stakeholders contributing with resources, as well as when the successful implementation of the project depends on timely allocation of them.

The resource planning is directly dependent on the plan of activities in such a way that a clear and well thought through plan of activities makes the resource planning easy. On the other hand, a vague and sketchy plan of activities makes the resource planning very difficult. The resource planning is normally done by the project team.

The resource planning is summarised as the answer to two questions:

1. **What resources are necessary for the implementation of the project activities?**
2. **What resources are controlled by which stakeholder?**

7.Indicators

How can the success of each activity, result, purpose and goal be verifiably measured?

Effective capacity development projects for disaster risk management require, as all development projects, the possibility to measure its success. The way this is done is to identify indicators that are possible to measure for all levels of objectives in the objectives analysis, as well as for all activities in the plan of activities. There should in other words be at least as many indicators as there are activities, results, purposes and goals in the project, although it is strongly suggested to attempt to find several indicators to measure each project result and purpose[11].

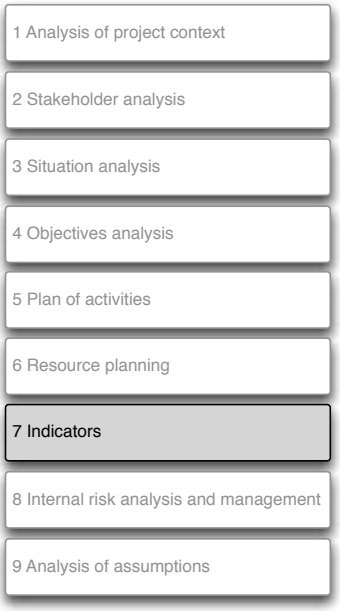

Figure 15. Step 7 in LFA

These indicators can be measuring quantity and/or quality of what the project intends to achieve, and they must be measured in relation to a specific period of time during which the improvements are intended to take place. To be able to determine if improvements have taken place, it is often necessary to have baseline data to compare with. However, external factors determine to great extent the achievement of overall goals, which suggests not using indicators for this level of objectives [11].

A good indicator is substantial (i.e. reflecting a vital aspect of an objective or activity in specific terms), independent (i.e. not used for more than one objective or activity at the same level), factual (i.e. based on verifiable data and not subjective impression), plausible (i.e. recorded improvements can be directly attributed

to the project), and based on obtainable data (i.e. based on data that is readily available or that can be collected with reasonable extra effort)[12].

There are several approaches to formulating indicators. One of these entails combining five elements, directly related to the SMART objective or activity that the indicators are intended to measure. First, you need to describe what you must measure (e.g. increased preparedness to manage drought). Secondly, you need to specify target group (e.g. male and female subsistence farmers). The third element is to describe the intended change in quantitative and/or qualitative terms (e.g. access to emergency water and animal feed for 5000 farmers for three cattle each during six months). The fourth element is to specify the timeframe for the objective or activity (e.g. from January 2013 to December 2016). Finally, you need to specify the location (e.g. Karatu district). The resulting example indicator for increased preparedness to manage drought is:

The access to emergency water and animal feed for 5000 male and female subsistence farmers in Karatu District for 3 cattle each during six months, before December 2016.

Another approach is more stringent in terms of clarifying how indicator, means of verification and expected result relate to each other, reducing the sense of overlap between these elements in the former approach. Here, the indicator is what is measured (e.g. degrees Celsius), means of verification is how it is measured (e.g. a thermometer) and expected result is the target to be achieved (e.g. 37 degrees). Going back to the example above, this triplet of terms would say:

Expected result: *The access to emergency water and animal feed for 5000 male and female subsistence farmers in Karatu District for 3 cattle each during six months, before December 2016.*

Indicator: *The number of male and female subsistence farmers in Karatu District with access to emergency water and animal feed for 3 cattle each during six months.*

Means of verification: *Assessment of water levels in reservoirs and feed availability in stock, in combination with gender sensitive household survey in Karatu District at the end of December 2016.*

Having indicators is not only central for making it possible to measure project effectiveness by following up on its intended improvements, but also as establishing indicators necessitates that project results and purposes and goal are specific, measurable, attainable, relevant and time-bound. In other words, a check that the project has SMART objectives.

Although the initial ideas concerning indicators may have been included in the goal-oriented project planning workshop, as indicated earlier, the work of designing indicators are normally done by the project team. Similarly to the plan of activities, the reason of this is that it is unfeasible to involve all stakeholders in such operational work.

The step developing indicators is summarised as the answer to five questions:

1. What is the measure of improvement for each project activity, result, purpose and goal?
2. Who is the target group for the improvement?
3. What is the intended change in terms of quality and/or quantity?
4. When is the improvement intended to have taken place?
5. Where is the improvement intended to take place?

8. Project risk analysis and management

What are the potential external and internal factors that may limit the success of the project and how can these be mitigated?

Capacity development projects for disaster risk management often span over several years. Regardless of how well planned a project is, there may be various factors that can negatively impact its effectiveness. These factors can either be external to the project and difficult or impossible for the stakeholders to reduce, e.g. budget cuts or global economic crisis. They can also be internal to the project and possible to reduce through systematic risk analysis and management, e.g. low local commitment or staff turnover. This step is crucial for the viability of any project and must be taken seriously.

Figure 16. Step 8 in LFA

There are many ways to analyse and manage project risk. It is however suggested for project teams to think in scenarios when identifying and analysing risk in their projects. Using such an approach reduces a procedure often perceived as complicated and cumbersome to the answer of three simple questions:

1. What can happen that can have a negative impact on the project?
2. How likely is that to happen?
3. If it happens, what are the consequences for the project?

There are yet again many methodologies to use to answer the three questions, which is one of the strengths with this method. However, one efficient way of doing it is to use a brainstorm technique that builds on a similar approach as often used in Logical Framework Approach workshops. First, allowing each member of the project team to work individually for ten minutes, identifying what can happen that can have a negative impact on the project, writing each identified event on one note. Then get everybody to stick all their notes onto a whiteboard while presenting them to each other. The project team then compare the notes and identify in dialogue which notes can be grouped together and represented by individual scenarios.

After having categorised the notes into a set of scenarios, the project team brainstorm again how likely each scenario is to happen, write notes, have a dialogue about their estimations, and assign an agreed likelihood to each scenario. These expressions of likelihoods can either be quantitative, i.e. a numerical expression such as "1 time per 2 years", or qualitative, i.e. a narrative statement such as "very likely". It is however important to note that for any qualitative expression to make sense, each narrative category of likelihood must be clearly defined and described. This is particularly important for capacity development projects for disaster risk management, as without such explicit definitions different stakeholders are likely to assign different meanings to the categories. Thus undermining the mutual understanding necessary for effective collaboration in managing the project risks.

When having assigned agreed likelihoods to all identified scenarios that can have a negative impact on the project, it is time to analyse what the consequences would be if they would happen. Again, the project team brainstorm, produce individual notes, share and discuss, and come up with one agreed description of the consequences for each scenario. Here it is particularly important to not only consider direct consequences, but also secondary consequences that may follow. For example, the loss of a key staff for the implementation of some activities may not only

result in difficulties to meet project deadlines, but in turn also the erosion of community commitment as expectations are not met, etc. The total consequences could then either be described in detail or categorised under a narrative statement similar to the narrative statements for likelihood. Examples of such consequence categories are “minor”, “serious”, “catastrophic”, etc.

Answering the three questions would then have produced a list of scenarios, clearly described and with assigned likelihoods and consequences. If the risk is not considered negligible, the project team now need to come up with risk reduction measures for each of the scenarios. These could involve prevention activities (reducing the likelihood of the scenario happening), mitigation activities (reducing the consequences on beforehand if the scenario happens), and/or preparedness activities (developing effective response and recovery if the scenario happens).

If a project risk is substantial and nothing can be done to reduce the likelihood of it or the potential consequences, it becomes a project assumption and is transferred to the last step of this Logical Framework Approach.

The project risk analysis and management is summarised as the answer to four questions:

1. **What can happen that can have a negative impact on the project?**
2. **How likely is that to happen?**
3. **If it happens, what are the consequences for the project?**
4. **What can be done to reduce the likelihood of it happening and/or its consequences?**

9.Analysis of assumptions

What are the factors influencing the fulfilment of each result, purpose or goal, which the project has limited direct control over but are possible to forecast?

Regardless of how well a project team is analysing and managing project risks, there are always physical, environmental, political, economical, social and cultural factors that may affect the project that the project team can do nothing about. These factors are called project assumptions and need also to be analysed. The viability of the project depends on the feasibility of the assumptions that the stakeholders make concerning the future state of these factors in relation to the project results, purposes and goal. This analysis forms the concluding step of this Logical Framework Approach and is called analysis of assumptions.

Figure 17. Step 9 in LFA

It is often confusing what the actual differences are between project risks and assumptions. Different answers to this are available in literature, where one explanation states that an assumption is a positive statement of a condition required for the project objectives to be achieved, while a risk is a negative statement of a condition that might prevent the project's objectives from being achieved. This Logical Framework Approach view assumptions as substantial risks that cannot be sufficiently managed by the project team, but which threatens the viability of the project. These should therefore already have been identified in the project risk analysis and management, which make this last step of the Logical Framework Approach into a

reformulation exercise. This does however not mean that the analysis of assumptions is irrelevant. On the contrary, this step is crucial as it highlights key requisites, which assist both the overall assessment of the viability of the project and present the only legitimate reasons for failure. This assessment of the viability of the project is done by looking at the likelihood that the assumptions will hold throughout the project. If these assumptions are deemed feasible for all stakeholders, including the donors, and turn out not to hold, the project team should not be blamed. That is in other words an important difference between project risks, which the project team can manage, and project assumptions.

The analysis of assumptions is summarised as the answer to one question:

1. **What are the central assumptions that may influence the project results, purposes and goal?**

Final remarks

Logical Framework Approach is a weathered and pragmatic methodology for project design, follow-up, management, and evaluation. It gives guidance throughout the project design process, and if all the nine steps are done as intended in the methodology, a stable foundation has been laid for any development project. What this book offers in addition is a contextualisation of the Logical Framework Approach to suit the particular context of capacity development for disaster risk management.

It is important to view this Logical Framework Approach as a platform and not a ceiling. That is to say that the methodology must be kept flexible and adapted to the needs of each situation, although this book would still provide scaffolding for the construction of the modified methodology. It is however suggested not to skip any of the nine-steps as such, but to adapt how they are implemented in practice to suit the context and the resources available.

Building on Logical Framework Approach, the methodology facilitates:

1. Comprehensible planning (clear connections between goal, purpose, expected results and activities)
2. Holistic project design (address dependencies)
3. Dialogue between stakeholders
4. Clear division of responsibilities (explicit assignment of roles)
5. Local ownership (address locally experienced challenges through local participation)
6. Monitoring and evaluation (clear indicators)

A product of going through the steps of this Logical Framework Approach is a logframe, a matrix in which all necessary information from the process is summarised. It is important to

emphasise that there are no shortcuts to reach this product. If jumping straight to filling it in, without the process described in this book, the end result will not reach hardly any of the benefits of the actual Logical Framework Approach.

There is a variety of logframes out there, and it is not so very important which version that is used. The important thing is the process in which it is created and that all stakeholders have the same logframe as a visualisation of its results. An example template of a logframe is presented below (Figure 18).

Objectives	Indicators	Means of verification	Assumptions
Goal: "The overall goal of the project"	"the indicators of the overall goal, if any"	"the sources of data for the indicators"	"The assumptions for the overall goal"
Purpose 1: "One of the purposes of the project"	"the indicators for measuring the fulfilment of the purpose"	"the sources of data for the indicators"	"The assumptions for the purpose"
Result 1.1: "An expected result required to meet Purpose 1" **Result 1.2:** "An other expected result required to meet Purpose 1" **Result X.X...**	"the indicators for measuring the fulfilment of each expected result"	"the sources of data for the indicators"	"The assumptions for each of the expected results"
Activities 1.1.1 "An activity necessary to generate Result 1.1" 1.1.2 "An other activity necessary to generate Result 1.1" 1.2.1 "An activity necessary to generate Result 1.2"	**Resources** 1.1.1-1.1.2: "All resources necessary for activities 1.1.1-1.1.2" 1.2.1: "All resources necessary for activity 1.2.1"	**Costs & sources** "Total cost" ("all sources for the funding")	"The assumptions for each of the activities"

Figure 18. Example template for a logframe (LFA matrix).

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Swedish Civil Contingencies Agency (MSB)
S-651 81 Karlstad Phone +46 (0)771-240 240 www.msb.se/en
Order No. MSB503 - December 2012 ISBN 978-91-7383-299-1