Post Disaster Redevelopment Strategies;

_A review, which aims to suggest improvements_

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Colophon

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Cover photo: Japan Tsunami, 2011, Conde Nast Traveller  
http://cdni.condenast.co.uk/646x430/d_f/earthquake_gl_15mar11_pa_b.jpg
Preface:

I hereby present to you the P2 graduation plan of my proposed graduation thesis. My graduation is taking place the laboratory of Urban Area Development. This is the second part of the graduation project towards obtaining my master’s degree in Real Estate & Housing from the Faculty of Architecture of the Delft University of Technology in the Netherlands. The graduation process takes approximately three quarters of a year.

This paper contains my draft research proposal and graduation plan for the master thesis project. It begins with my motivation and by the introduction (chapter 1). In chapter 2 you will find the problem statement, the research questions, the research results, the research methods and the research program that will form my draft research proposal. In chapter 3 I describe the ways of organizing my research, along with a planning and a time schedule leading to the final evaluation and the actual graduation (P5). Part two consists of the graduation plan and the theoretical framework required to conduct this research.

Theodore A. Klouvas
15 January 2013
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Motivation:

For my graduation topic I was looking for a topic in which I would feel I had a personal interest. Ever since I started studying architecture I wanted to focus on development projects. This is the reason why I decided to choose the post disaster urban redevelopment. Working on a topic that draws my preferences and includes my personal objectives is most important in order to have a fruitful and productive year. It was quite a long path before I came up with a clear choice for my topic of Post Disaster Urban Redevelopment (PDUR). I spoke to many professors and teachers about this specific topic and I find the complexity of it very interesting. I do realize that it is this complexity that will challenge my abilities in the upcoming months but I responsibly and gladly accept the challenge.

My personal interest lies with those vulnerable societies affected by disasters all over the world. In 2008 I visited South east India and saw with my own eyes the devastation that the Tsunami caused in the area. I undertake this graduation project as my chance to dig deeper, from my background point of view, to this topic and make an effort to map issues and make a proposal on how to improve post disaster redevelopment strategies.
Abbreviations:

PDUR: post disaster urban redevelopment
PDR: post disaster redevelopment
PDRS: post disaster redevelopment strategies
UR: urban redevelopment
NGO: non governmental organization
PD: post disaster
FEMA: federal emergency management agency
IFRCRCS: International Federation of Red Cross and Red Crescent Societies
1. Introduction:
This research proposal aims in exploring the application and implementation of Post Disaster Urban Redevelopment (PDUR) strategies in disaster affected areas within different social-cultural conditions. The specific research subject is post disaster redevelopment strategies and the goal is to discover how can the implementation of it can be improved. In this way, the case study of the Asian tsunami in 2004 and in particular the Indonesian case of Aceh is selected as a central case study for this research. Specific reasoning is developed later on, in the research methods part. First a general introduction to the topic follows and then a description of the disasters phases will be elaborated, in particular the third which is the main focus of this research.

1.1. Natural Disasters
In order to understand the topic, a short description of “What is a natural disaster” is required. In her book Natural Disasters Lesli Favor defines the topic as following: “A natural disaster is caused after a natural hazard has stricken a particular area. A natural hazard is a dangerous geophysical event (such as the Sumatra earthquake) or condition (such as drought in the horn of Africa) that could cause a natural disaster. The event or condition becomes a natural disaster when it causes human, economic, or environmental losses that exceed the affected area’s ability to cope without outside help”. Disasters can be distinguished in two types Natural and Human caused disasters. This distinction can be as obvious as the difference between a volcanic eruption and the explosion of a nuclear power plant. Complex circumstances from a variety of sources lead to natural disasters. For example, fertile land along river draws farmers close to flood-prone areas. Similarly, fishing villages grow up in coastal areas likely to be struck by typhoons, hurricanes, or tsunamis. Natural hazards that can cause disasters can be distinguished in several types: Hurricanes, Tornadoes, Drought, Floods, Earthquakes, Tsunamis, Volcanoes, Limnic Eruption, Landslides and Avalanches, Wildfires, Extreme weather and Plants and Animal diseases.

1.2. Facts & figures
The number of natural disasters around the world has increased by more than four times the last 20 years, according to a report released by the British NGO Oxfam. Oxfam analyzed data from the Red Cross, United Nations and from researchers at Louvain University in Belgium. It found that the earth is currently experiencing approximately 500 natural disasters per year. This is a much larger number in comparison to the 120

Figure 1. International Disaster Database.
http://ihrr.files.wordpress.com/2012/04/nat-disasters-reported.jpg
per year in the early 1980’s (Oxfam Climate Alarm, 2007). Figure 1 above gives an overview of the number of disasters occurred between 1900 and 2010. Looking at those figures and taking into account the whole process we can recognize that a continuous study in such events is crucial, not only in order to minimize the effects but also to improve the strategies used during such events in the future.

Figure 2, below gives an overall image of the economical and human impact that natural disasters caused the last 12 years.

![The Economic and Human Impact of Disasters* in the last 12 years](image)

Figure 2. United Nations International Strategy for Disaster Reduction, http://www.unisdr.org

### 1.3. Natural Disaster Response & the disaster management cycle

After a disaster event takes place a major operation is started in order to support the affected area. This whole process has been illustrated in a disaster management cycle, which is based on the work of Ian Davis from the Cranfield University. This cycle includes three main phases — pre-disaster, disaster response, and post-disaster — each of which has an appropriate range of activities. Important to mention is that those phases appear with different names in the literature. Pre-disaster is also called Preparedness phase. The response
phase is often also called relief phase and the third phase is also called rehabilitation and reconstruction phase. This cycle gives an overview of the key actions in each phase. Academics and practitioners in the field have identified those based on knowledge from previous disasters (Independent Evaluation Group, WorldBank, Natural Disaster Response, 2011). This cycle is important because it shows the interrelationship between the different phases associated with disaster and the types of assistance that are most effective in preparing for and responding to such events. Important to mention is that these phases do not have clear boundaries, but overlap chronologically, as well as in terms of the ongoing activities.

The post disaster urban redevelopment strategy is part of the third phase. The post disaster phases includes activities in the fields of recovery, rehabilitation and reconstruction. It also affords an opportunity to develop disaster risk reduction measures, which can be applied during the next phase the risk assessment and pre-disaster (that is phase 1). This third phase includes, according to the literature about “lessons from evaluation of the World Bank and others”, and also according to the “Hyogo framework of action 2005-2015” (UN ISDR, 2005) the following actions:

- Decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk.
- Restoring the basic services needed to enable life to move back towards “normality.”
- External support, such as loans to governments, technical assistance, resources for farmers, and help for businesses to restart.
- Rebuilding homes and industry, which is linked to restoration of social and economic development. It is important at this stage to design stronger buildings that are able to withstand future disasters.
- Activities focused on enabling communities to protect themselves. Such measures need to be particularly available to those at greatest risk—the poorest and most vulnerable in the community.

(Natural Disaster Response: Lessons from evaluations of the World Bank and Other, IEG et al. 2011)

This research will focus on the second part of the third phase of the disaster management cycle. Namely the post disaster response, part “B”. This part incorporates the Urban Redevelopment strategies that arise in

Figure 3. Disaster Management Cycle, [http://ieg.worldbankgroup.org](http://ieg.worldbankgroup.org)
order to bring the affected society back to function and normality. Furthermore this research will lay a focus on the restoration of the basic services that are required in order to enable life to move back towards normality. This is of course an interrelated part of the whole redevelopment process and involves many factors and actors in a bigger and broader integrated redevelopment plan. Questions such as what are the resources available to restore those basic services, what are the limitations by the local government, by the local context, what can NGO’s provide for that and how can this collaboration of actors be structured are just some to name. Those need to be taken into consideration during my further research upon that. I am hoping to discover the strategy used for this particular part. A list of elements that are forming the “basic services” still needs to be assessed and formulated though a draft definition is given below.

**Basic services/facilities** are those who are important for a community in order to start functioning as it did in its pre-disaster stage. Community facilities include schools, clinics, refuges, buildings for local government administration, and meeting spaces. Schools and clinics contribute to the resumption of normal life by providing space for social services. Local government buildings and meeting spaces allow local public services to resume and facilitate community planning and the reestablishment of local governance. Further infrastructural measurements are also important because they improve and upgrade the accessibility of the area in general (World Bank, 2010).

### 1.4. Post Disaster Urban Redevelopment

In order to understand the whole process the question of “what is a post disaster redevelopment strategy” who designs one, who is involved in it and why?

A post disaster redevelopment strategy is a strategy developed by the government (national & local) of the affected area in collaboration with the United Nations which assist during the formation of it. This is not always the case because governments sometimes refuse international help. This was the case in Burma where the government refused international aid after the cyclone Nargis had stricken the country causing at least 138,000 fatalities (Wikipedia: Cyclone Nargis, 2012). The aim of the strategy is to provide a coordination in the redevelopment phase.

Post disaster reconstruction and rehabilitation is a complex issue with several dimensions. Government, nongovernmental and international organizations have their own stakes in disaster recovery programs, and links are established among them, as well as with the community to ensure a proper redevelopment. In other words, post-disaster rehabilitation and recovery programs should be seen as opportunities to work with communities and serve local needs (Shaw, 2005). Beyond that, since many disasters occur every year, the new redevelopment strategies can build upon innovative solutions known – learned and developed from other disasters(Skinner et al. 2002). What derives from the literature review so far is the fact that Post Disaster Urban Development has been and is a hot topic for further improvement and research since it can significantly contribute to the improvement and or solve problems from the past (Jayasuriya et al., 2010). It is often seen as a “window to opportunity” because the affected area has the chance to “build back better”.

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Theodore A. Klouvas | MSc Real Estate & Housing | Delft University of Technology | 15-01-13
Accordingly, PDUR never stands alone but forms integral part of a broader context by influencing the city developments and structures and by contributing to the new social re-formation, since redevelopments are regenerating the affected city-area-region. However, the management of PDUR strategies was and is a complex decision-making process that involves many actors (national and international agencies, governments, multilateral donors, NGO’s and individuals) whose relationship might differ according to their objectives and to socio-cultural conditions. Finding a way to connect those objectives and maintain a structure in the process that incorporates all demands is crucial. Often it is proven that this is where all disaster coordination teams struggle with during the PDUR phase.

The post disaster phase:
During the recovery phase, as the third phase is also called, social and other infrastructure is restored and the economy has started to revitalize. The rehabilitation/reconstruction/redevelopment phase typically starts at the end of the response/relief phase and may last from several months to several years. The short-term plans for the recovery process are clearance of debris, building housing units, and restoration of lifelines and infrastructure, while the long-term objective is to build a safer and sustainable livelihood. Past experiences show that these efforts are sustainable only with community-government partnership, while the role of NGOs and international organizations is reduced after a certain period (Shaw, 2005).

To whom it may concern:
This research project is intended for (local) Emergency planners and disaster managers of various agencies, institutions and organizations active in the context of post disaster redevelopment. However, the purpose of this research is to suggest improvements in how to carry out post disaster redevelopment in a more efficient and effective way. A list of criteria of how to define what effective and efficient is will be formulated, then tested to the existing literature afterwards reviewed by experts on the field (see interviewers later on) and finally used in order to make suggestions in this research. The suggested improvements will derive from the analysis of the case study. Furthermore, it plans to contribute to the general academic research in this area by exploring the different strategies in PDUR. I should emphasize that this research is not going to be prepared with the aim of finding fault with the response to the 2004 tsunami, which will be the main research case study. Doubtless some mistakes were made then, and doubtless not every single one of the very large number of redevelopment programs was successful. Rather, my aim is going to be to review the overall redevelopment strategy following the 2004 tsunami disaster, analyze through literature review the existing approaches and consider what broad lessons for effective and efficient strategy might be drawn from this experience. This will happen after having set a list of criteria in order to framework the efficiency and effectiveness of the strategies. After all, the aim is to suggest a redevelopment strategy that takes those lessons into account.

All in all, to develop a thesis in Urban Area Development will not be an easy task. As I have mentioned earlier, it is a challenge, but I expect to upgrade through this, my professional background with the knowledge and
skills acquired in this master. My aspiration is to play a future role not only as a designer as I am now, but also as a consultant or even a disaster manager in redevelopment projects.

2. Research Proposal

2.1. Research Project
This research proposal is about analyzing and suggesting improvements in PDUR strategies in areas stricken by a disaster. This research is located in the third phase of the disaster management cycle and will focus on the “bringing back basic services” which is positioned in the second part of the third phase. In short the research proposal will study and state the “problems” of a specific case in Asia in order to discover issues in the current redevelopment strategies and suggest improvements in its future application.

2.2. Problem statement
Natural disasters of various kinds are an ever-present risk in most Asian countries. In recent years, a number of mega disasters have struck the Asian region and are unfortunately going to continue to do so in the future. Since it is a very complex process many issues occur which do not support a more “effective” redevelopment. In strategies with multi-actor relationships the issues occur most often because of the differences they have in:

- Objectives → short and long term results
- Budget → scale of the organization and fund they have available
- Social cultural conditions → Religion, racial, age etc.

Some other issues, that most often occur in this post disaster phase, are a lack of community drive participation in the redevelopment, an artificial inflation of material prices, little promotion of safety culture and awareness and exclusion of beneficiary choices such as for instance architectural aspects a lack in capacity and local experts etc. Those are just a few to name. Many others can be stated on different levels of the redevelopment phase (Joakim, 2010).

In the Indonesian case many good and bad stories have seen the light with respect to the effectiveness and efficiency of the redevelopment strategy. Although the first response in the Aceh region received many credits by the international community and seemed to have been a resounding success soon after the relieve operations began, problems with the relief reconstruction effort began coming to light. Those occurred mostly due to coordination failures (Jayasuriya, 2010). But this isn’t the only problem. Redevelopment strategies seem to find difficulties in connecting the involved actors. This is the case in most countries hit by a disaster (World Bank, 2011). In Indonesia according to the study of Telford in 2006 he observed that:

Some international agencies managed well; but many did not. . . . Local contexts, institutions and contributions were frequently neglected. Affected people’s will and capacity to move from reliance on handouts to rebuilding their lives were inadequately exploited . . . They were marginalized, even undermined, by an overwhelming flood of international agencies controlling immense resources.
It can be said that problems that the region of Aceh faced during the 2004 tsunami and for the period of 5 years after the event are similar to the problems other stricken areas are facing. This is not a conclusion but more an assumption aroused during a seminar about Urban Emergencies with redevelopment experts Jim Kennedy and Henk Meijerink\(^1\) on October 24\(^{th}\). A common problem that derives from a lack in efficient coordination between the local and international actors, in the redevelopment phase, is the implementation of the initiated redevelopment strategy, if at the end there is one. Although they are all aware of the “Master Plan”, personal objectives and a lack of communication with other actors and a lack in local knowledge constitute one of the major problems. Furthermore commitments of assistance from both domestic and international organizations are not always clear and local people have therefore unrealistic expectations. This situation leads to a misunderstanding of the actual task of PDUR and consequently missing opportunities for positive effects in the redevelopment phase (Collins, Disaster and Development, 2009).

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\(^1\) Jim Kennedy has been working in post disaster redevelopment projects for many years and was recently the coordinator of the Shelter program on behalf of the Care organization. He has working experience in Indonesia, Japan, United States and Europe. Henk Meijerink is an architect that has been active for the last 30 years in PDUR in many countries among them Haiti, Pakistan, Iran and Indonesia where he was in charge of the redevelopment and shelter program for the Cordaid organization.

Figure 4. Aceh before and after the tsunami struck the region.
2.3 Hierarchy of problems

Consequently after having read the problem statement a hierarchy of problems can be drawn. In this way we can distinguish the problems into internal and external, divided into three categories. In this way we can formulate a research question that will take into account current issues in post disaster urban redevelopment.

Figure 5. Hierarchy of problems in PDUR based on analytic hierarchy process and conjoint analysis.
2.4. Research Question

2.4.1. Main research question

What can be derived from the evaluation of the Aceh redevelopment strategy and how can the carrying out process be improved in PDUR strategies in order for it to enhance efficiency and effectiveness during implementation?

2.4.2. Sub-questions

The sub-questions are forming a step-by-step plan towards answering the main research question. By answering those, the answer of the main research question can be provided. Important to mention here is that those can differ in the further elaboration of the research since more detailed and in depth information will arise.

- What are the main issues in the Post Disaster Redevelopment phase?
- What are the main issues in the second part of Post Disaster Redevelopment phase?
- What are basic services and how important are those?
- What are the main issues when carrying out the redevelopment of basic services strategy?
- How can the coordination of the participating actors be enhanced and improved?
- In which way can the efficiency of the coordination in PDUR be improved, using existing theories and methods?
- In which way can the effectiveness of the PDUR strategy be improved in order to enhance the overall process?
- What kind of issues aroused in the Aceh case study and can be used for further improvement of the general redevelopment strategy?

2.5 Research Results

2.5.1 Research goals

The objective of this research is to understand the dynamics involved in the implementation of PDUR strategies in affected areas from both the internal as from the external actors participating in it. This will be done, by taking into account the changing context of the event. The goal is to suggest improvements that will contribute in the efficiency and effectiveness of the strategy when implemented and will empower the redevelopment of the area in general. By general I mean the local people (participation) and area (in terms of infrastructure and other basic needs such as water sanitation, education and public facilities etc.).

The challenge is to identify the issues occurring during implementation and application of the second part of the 3rd phase. Efficient and effective strategies do not exist; a compilation of findings from existing paradigms can contribute in the formation of a more improved strategy. Taking in mind that this must be thoroughly
investigated in order to understand what has gone wrong, what are good practices so far and how to incorporate those lessons learned from the past is important in order to incorporate them into one more generic redevelopment strategy.

2.5.2 Expected results
This research points out to make recommendations for improvement in Post Disaster Urban Redevelopment strategies in disaster-affected areas at two levels:

- First to give specific advice in how to improve the government approach during the formation and during the implementation of their PDUR strategy;
- And second, to give general recommendations for improvements of the NGO application and implementation of PDUR strategies.

2.6 Research methods
After having the main and sub research questions defined, the next step is to select the research methods and the appropriate techniques to collect and analyze data in order to reach the intended results. Therefore, this research will use two kinds of methods: case study supported by literature review. Beyond that interviews will be taken and a field visit will be made in order to test findings arisen from the research so far. But first the choice of the case study is imperative.

2.6.1 Case study
This research method is used to investigate the contemporary tsunami event within the Indonesian context related to the post disaster redevelopment process in general. A single case study is chosen because it will provide more in depth knowledge and understanding of the situation. Accordingly the research will start by analyzing the Aceh case with a final goal to understand the process and gain knowledge on this specific topic with regards to the strategy used, the implementation of it and the participation of the different actors. Below follows reasoning of the choice of Aceh as the case study.

Indonesia was the most affected country by the tsunami in 2004. In particular the city of Aceh was almost completely devastated. Due to the impact of the tsunami mayor actions have taken place in that region in order to bring the society back to normality. An unprecedented response came from all over the world resulting in a huge amount of funds available for projects with regards to urban redevelopment. Many redevelopment projects of different scales have taken place there and a Master Plan was created as anchor strategy for the redevelopment. After all, the second reason for choosing Aceh is the fact that there is a large amount of information and literature concerning the redevelopment phase there. It is therefore that this region is well suited to be used as a case study for further investigation with respect to its redevelopment strategy.
The case study approach includes historical and descriptive analysis of data, reviews of developments related to PDUR in general terms and review on specific redevelopment plans within the selected case study. Furthermore, an evaluation of the Aceh master plan will be carried out, by using an observation approach of the actors who were active. Finally, interviews with experts in redevelopment will be used to learn from the real practice and from their experience and by pointing out the obstacles they faced during the implementation of the overall redevelopment strategy. The data collected will be then analyzed most probably in a data-matrix in order to provide “answers”, to the problem statement. This will result in a streamline of their concerns (Swanborn, 2008).

Persons to be interviewed:

- **Henk Meijerink**, active in post disaster redevelopments among others in Pakistan, Haiti, Indonesia and Iran
- **Jim P. Kennedy**, responsible for the shelter program provided by the Care organization in Haiti
- **Wim Piels**, independent NGO consultant, was active in Indonesia, Pakistan, Georgia, Haiti, USA etc.

### 2.6.2 Literature review

This research method will provide input for the empirical outcomes that will derive from the previous research approach. Hereby the reflection of the case study will be frame worked in the existing knowledge and literature concerning post disaster strategies. The aim of this method is to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to this particular topic. The literature review will start will a more holistic approach, thereafter will focus on a national level and the differences that appear on that level and will then investigate the local experience.
2.6.3 Field visit

During the field visit the intention is to see and investigate the current situation. Test is the findings aroused by the literature review are indeed so and if not why? Furthermore speak with local experts and visit the University of Jakarta and its disaster preparedness center. Some contacts are already laid with the ministry of planning in Indonesia. After all, the field visit can help me test my thoughts and suggestions so far into the real case. Questioning experts there will provide me with a more solid understanding of the post disaster redevelopment process and its issues.
3. Research Organization

3.1 Research design

The research is organized by following the structure of Baarda et al. about research methods. Accordingly, the research consists of several components, which will be approached in the following sequence:

- Research Proposal Design
- Start of general literature review

- Designing and selecting Literature review
- Reading of Literature
- Reading of literature – Reflecting and reporting
- Reflecting and reporting

- Case study research
- Finalizing description of the case
- Formulate first findings
- Preparing interview – contacts Indonesia
- Field visit

- Analysis and reporting
- Reflection and interpretation of inputs
- Report and evaluate
- Recommendation of case study
- Recommendation on theory
- Synthesis and reporting

- Evaluation of outcomes
- Adjustments and conclusions
- Conclusions and reporting
- Suggest further research
Chapter 2

Theoretical Framework
2.1 The complexity of Urban Redevelopment

First of all in order to eliminate possible misunderstandings in the plethora of phrases such as: urban regeneration, revitalization, renewal and renaissance, that have come to characterize the key themes of this research and are being used by the media, governments and even academics, it is stated that they all are interchangeable terms that are essentially relating to the same process. Urban Redevelopment is according to the Oxford dictionary of Geography part of urban regeneration. There have been arguments in the past about the different use, meaning and connotation of each term but currently regeneration remains the most recognized and widely used term by professionals and academics alike (Tallon, 2010, p.5).

Before starting analyzing Post Disaster Urban Redevelopment (PDUR) it is pertinent to begin with a discussion of what urban regeneration means and encompasses. This is reasonable because PDUR has a lot in common when it comes to the essence of it, which is the actual redevelopment of a certain area. The urge and emergency of the Post disaster urban situation is the most significant difference with Urban Redevelopment. At a more abstract level, regeneration has come to be associated with any development that is taking place in the urban environment. This research will take ‘the urban’ to mean ‘relating to towns and cities’. But what is an urban area? Urban areas are complex and dynamic systems and reflect the many processes that drive economic, social, physical and environmental transition (table 1). Subsequently, urban regeneration can be seen as the outcome of the interplay between these many processes, and is also a response to the opportunities and challenges that are presented by urban regeneration (Robberts; Sykes, 2000). The definition of urban regeneration Robbert et al. (2000, p.7) gives says:

A comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change.

What is important to add, as a comment to this definition, is that it is discutable if regeneration is comprehensive says Tallon (2010), and it can be the case that the urban problems addressed are not resolved in practice because they can be amongst the most intractable and complex problems in society. In Tallon we can find three distinctive features of contemporary urban regeneration:

1. It is intended to change the nature of a place and in the process to involve community and other actors with a stake in its future.
2. It embraces multiple objectives and activities that cut across the main functional responsibilities of central government, depending on the area’s particular problems and potential.
3. It usually involves some form of partnership working amongst different stakeholders although the form of a partnership can vary.
Urban regeneration can be classified in a number of ways, but for the purpose of this research Tallon’s categorization of ‘people’, ‘business’ and ‘place’ appears appropriate. In terms of people, regeneration aims to enhance skills, capacities and aspirations to enable them to participate in and benefit from opportunities. Regeneration also aims to improve economic competitiveness in terms of business performance to create more local jobs and prosperity. To attract both people and business, regeneration aims to improve the general appeal of a place. A balance of all those three elements can ensure a sustainable future (Tallon, 2010, p.5).

Urban sustainability has become a key word in regeneration nowadays and will be described more thoroughly later on. The complexity of an urban regeneration is hereby clearly visible. Each category requires special attention and planning. The dimensions of urban regeneration are: economic, social and cultural, physical and environmental, and governance related in nature (table 1). All can vary of course according to the local context, the political and civil support and according to geographies. All four dimensions are exclusive but interconnected. Important to mention is that short-term, fragmented, ad hoc and project-based approaches to regeneration without an overall strategic framework for citywide development are weak (Tallon, 2010, p.5).

Table 1 Approaches to urban regeneration

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>Job creation, income, employment, skills, employability, development</td>
</tr>
<tr>
<td>Social &amp; Cultural</td>
<td>Quality of life, health, education, crime, housing, quality of public services</td>
</tr>
<tr>
<td>Physical &amp; Environmental</td>
<td>Infrastructure, built and natural environment, transport and communications</td>
</tr>
<tr>
<td>Governance</td>
<td>Nature of local decision-making, engagement of local community, involvement of other groups, style of leadership</td>
</tr>
</tbody>
</table>

Due to its nature and practice, urban regeneration is far from being a completely fixed set of guiding principles and practices, and does not have a proven or well-established track record of success. Urban regeneration strategies are aware, according to Tallon, of the difficulties arising from ‘one size fits all’ approaches and of the complicated local context and geographies. Urban regeneration has a major impact to a wide range of actors and stakeholders including local communities; city, regional and national government; property owners and investors; business; environmental organizations; residents; and visitors at all levels from the local to the global level. Its goes without saying that such complex actions require excellent resources, planning and preparation in order to, at least have a progress towards the desired end result that will improve the previous situation and will allow the community to benefit from the new redevelopment.
2.1.1 Urban Redevelopment in Post Disaster Context

In order to understand and depict urban developments (UR) in a Post Disaster Context, first a simplified definition of UR is required: Urban redevelopment is a process in which city planners are determining and drawing up plans for the future physical arrangement and condition of a community, in order to make it more attractive and self-sufficient. Today, urban redevelopment is strongly associated with sustainability, which forms an integral part of the redevelopment due to higher demands, new legislation and due to a larger consideration of our nature. Some of the key elements of new urban development plans are: livability, vitality and equity based on the protection and maintenance of natural systems. Conceptually, as the basis for developing future communities, sustainability is not just achieving a balance across environmental, social and economic considerations, but rather is about achieving the integration of these issues within the natural environment, to the long-term benefit of all (Muñoz Gielen, 2011; FWR group, 2012; Collins, 2009, p. 88-92).

Following, in a situation where a disaster has taken place and has earnestly stricken a particular area, region or city, authorities are forced to take immediate actions in order to bring the society back to normalcy. Those actions include all the above-mentioned in urban regeneration but also incorporate a thorough look into the ‘old’ situation in order to gain insight the dysfunctions of the urban fabric in the past and incorporate them in the formation of the post disaster redevelopment strategy. Furthermore, time is a major constrain since the actions and projects intended to support a community that could be or is totally devastated by the disaster can last from several months to several years (figure 6). Decisions are taken in a shorter time span than they would have done in ‘normal’ circumstances. This requires excellent organization and a solid redevelopment strategy. Budgets can also become an issue. Depending strongly on the (international) response financial means are becoming available for the redevelopment.

![figure 6. Disaster phases, Lutheran partners in disaster response.](image)

2.2. The complexity of PDUR

In contrast to urban regeneration, PDUR encompasses preventive measurements, with a different nature than in urban regeneration. Those are aiming to ensure a more resilient future. Those can vary from rigorous measures, such as strengthening a coastline and allocating villages towards higher areas, up to enforcing the
foundation of buildings and providing more disaster resistant shelters. Actions, which are not always necessary in a ‘normal’ redevelopment but do demand unprecedented operations. By normal we refer to a situation that hasn’t been affected by a disaster. In general a Post-Disaster Redevelopment Strategy (PDRS) has to identify policies, operational strategies, and roles and responsibilities for implementation that will guide decisions that affect long-term recovery and redevelopment of the community after a disaster. It is undoubtedly an even more complex process in comparison to UR due to the emergency that has occurred by the disaster. The strategy now emphasizes more in seizing opportunities for hazard mitigation and community improvement consistent with the goals of the local comprehensive strategy and with full participation of the citizens. This should be the ideal case. But what derives from documentation and discussions about the topic is that the process and consequently the result vary strongly depending on the attitude of the (local) authorities and the international response (Jayasuriya et al. 2010, p.8). Recovery actions addressed in the strategy often include business resumption and economic redevelopment, housing repair and reconstruction, infrastructure restoration and mitigation, short-term recovery actions that affect long-term redevelopment, sustainable land use, environmental restoration, and financial considerations as well as other long-term recovery issues identified by the community (Florida PDRP Focus Group, 2007). It can be said that all actions are interrelated to each other; they do not have clear boundaries but do influence each activity. This can also be seen in the Disaster Management Cycle, which is described in detail in the first chapter. The scale and context of all the above mentioned is considerably different from UR. Additionally, another major difference with a ‘normal’ regeneration is the international involvement. Various NGO’s, organizations, agencies and even individuals’ response to the disaster and offer their immediate support. This requires a tremendous operation in order to be able to facilitate them and designate projects and actions they can undertake. The multifactorial decision making process has hereby become even more complicated. This is also because they represent different interests; objectives and they all have an opinion or approach, which at the end can enhance the complexity of the execution of a PDUR strategy. Additionally donors and major actors have real and nominal objectives. Their nominal objectives are the goals that they publicly proclaim. But the real objectives of policy may, and indeed often do, encompass both humanitarian objectives and other important goals, which will be described later on. Furthermore if an affected area is situated in a disaster prone location, the threat of a new disaster is always present. This is a possibility that needs to be beared in mind constantly since not all disasters can be predicted.

2.2.1 Challenges in PDUR

There are many challenges that appear in PDUR and one could devote a whole research into defining the challenges of PDUR. In this part a few prominent challenges will be addressed, such as coordination, collaboration, funding gaps and mismatches but also political situation in the disaster affected area/nation. What can be seen is that PDRP have a strong correlation with disaster management. One could argue that the biggest challenge of a disaster is to implement, coordinate and facilitate an adequate PDUR strategy (PDURS).
The paradox about disasters according to David Alexander in his book: *Principles of emergency planning and management* is that:

“on the one hand they are extraordinary events that require special organization and resources to tackle the damage, casualties and disruption that they cause, and on the other hand they are sufficiently frequent and similar to each other to be normal, not abnormal, events. Although emergency powers and special measures are needed when disaster strikes, the requirements and exigencies are predictable enough to be planned for.”

What can derive from this is that no matter what kind of emergency occurs there is always a need for good coordination and planning during the aftermath of each event. Many modern countries have, especially the last decennium, developed an emergency plan for future disasters. This is not always the case in less developed countries according to the World Bank (2011). The challenges therefore are much larger in number.

From the earliest stages of the Disaster management cycle, the often relatively large scale of international aid programs and the involvement of numerous actors raise difficult coordination challenges. **Coordination** can be difficult not simply because of the number of actors of various types but also because they have a multiplicity of objectives and modes of operation, as shortly explained previously. This is a recurring theme that runs throughout several discussions and literature; actors in the international aid and redevelopment arena have multiple, and often quite complex, objectives. There is an aspect that is called *donor aid policy* which is tactfully left unmentioned in the international post disaster redevelopment literature according to Jayasuriya and McCawley. Donors, agencies and organizations are driven by various motives for providing help in each case. Those motives can be formulated by public response to the disaster, (geo)political interests and bilateral agreements.

Another challenge is the collaboration of the involved parties. When talking about **collaboration** what derives from the literature is that even when donors, international organizations and agencies say that they are committed to cooperate closely with each other, they often have specific agendas, which make it difficult to coordinate the aid efforts and maximize the effectiveness of the delivery of aid. These difficulties of coordination and collaboration apply just as much to the activities of NGO’s as to the programs of governments.

The challenge to meet the real and actual needs is always big. Donors often tend to be supply-oriented rather than demand responsive. As was the case in various housing projects in Haiti (Oxfam, 2012,; World Bank, 201 the tendency of donors to deliver their preferred form of aid raises particularly difficult issues when the different agencies and donors do not meet the needs of the local customs, requirements and cultural sensitivities. The mismatches between donor and community views require special attention since they can lead to friction, and sometimes even open conflict.

When implementing a PDURS it is important to calculate the inflation in construction prices that will occur due to high demand in construction materials etc. in order to eliminate funding gaps that can possibly occur. This was the case in Sri Lanka after the 2004 tsunami were construction costs nearly doubled and resulted in funding gaps; significantly, this phenomenon was not an important issue in Thailand where there were fewer
supply constraints. There is, according to Jayasuriya et al. (2010) a potential trade off between the pace of reconstruction and the effective use of funds. Consequently a prioritization of construction activities when problems of this kind arise is needed.

The political situation and the attitude of the government after the disaster are a crucial determinant and a major challenge in PDUR. A clear example was the mega disaster caused by the tropical cyclone Nagris in Burma where approximately 100,000 casualties were encountered. The international response was entirely different. In contrast to the 14 billion US$ provided to the tsunami affected countries, Burma received less than 500 million US$ after the cyclone Nagris. The reason was that the government of Burma was not cooperative with the international donor community in receiving aid. But this was not the only reason donor countries and agencies linked offered to specific condition that were likely to be rejected. What can be concluded from this case is that a open attitude of the affected government is important for the international community to respond.

2.2.2. Opportunities in PDUR

After a disaster has stricken a particular area and impacts a community many opportunities occur after the catastrophic event takes place. The international attention, the financial resources that are becoming available, the extreme stress that comes along with the disaster event and puts pressure to the involved actors together with the community’s will to improve and prevent future casualties are some important factors that create a ‘window to opportunity’ for the redevelopment of the affected area/city or nation. Long-term recovery after a disaster is always challenging, even if a community has planned for a worst-case scenario; however, by proactively creating a process to make smart post-disaster decisions and prepare for recovery needs, the community can do more than simply react. A disaster, while tragic, can also create opportunity. With a PDURS, a local government has a better chance of moving the community farther down the road to resiliency. PDURS enables communities to integrate and advance their previous planning efforts to achieve a more sustainable and resilient community after a disaster. An example was, the astounding international response to the Asian disaster event in 2004, which led to increased interest in recovery operations. Through response and recovery efforts, a new approach to disaster recovery was popularized, particularly by government institutions and non-government organizations (NGOs), through the concept of „build back better“ (Lloyd-Jones, 2007; Kennedy et al., 2008). This approach builds on vulnerability research and the theory that a ‘window of opportunity’ for disaster risk reduction and improved re-development is created during the post-disaster recovery period. During this period, local citizens may have increased awareness of disasters risks and place pressure on government and organizations to use reconstruction funds to remedy the weaknesses in developmental policies, infrastructure and institutional arrangements (Christopoulos, 2006; Clinton, 2006; UNISDR, 2005).

Although many organizations and institutions have adopted the term “building back better” to define their reconstruction and recovery activities, defining what building back better encompasses has been difficult.
Alexander Rajan (2006) argues that in order for the concept of “build back better” to be effective, it must be operationalized under a holistic framework that offers a comprehensive vision of the future. While this comprehensive framework in the recovery literature is lacking, Clinton (2006) outlines ten key propositions for building back better including:

**Proposition 1:** Governments, donors, and aid agencies must recognize that families and communities drive their own recovery.

**Proposition 2:** Recovery must promote fairness and equity.

**Proposition 3:** Governments must enhance preparedness for future disasters.

**Proposition 4:** Local governments must be empowered to manage recovery efforts, and donors must devote greater resources to strengthening government recovery institutions, especially at the local level.

**Proposition 5:** Good recovery planning and effective coordination depend on good information.

**Proposition 6:** The United Nations, World Bank, and other multilateral agencies must clarify their roles and relationships, especially in addressing the early stage of a recovery process.

**Proposition 7:** The expanding role of non-governmental organizations (NGOs) and the Red Cross/Red Crescent Movement carries greater responsibilities for quality in recovery efforts.

**Proposition 8:** From the start of recovery operations, governments and aid agencies must create the conditions for entrepreneurs to flourish and enhance herewith the (local) economy.

**Proposition 9:** Beneficiaries deserve the kind of agency partnerships that move beyond rivalry and unhealthy competition.

**Proposition 10:** Good recovery must leave communities safer by reducing risks and building resilience (Clinton, 2006, p. 3).

Many governmental institutions and aid organisations become involved with the recovery process, often with the stated goal of returning the community to its pre-disaster form. In recent years, this goal has evolved into an approach, termed building back better. Situations that often where causing problems in the past, urban plans that were not functioning well, poor infrastructure etc. can now be rebuild- rearranged back better. There is no such thing as “internationally accepted term” for this. It is a matter of fact that when something is rebuild- regenerated, new developments and malfunctions from the past are taken into consideration and were possible eliminated when designing for the future. Although disasters can destroy almost an entire city, the “dysfunctions” and positives of an area- city are in most of the cases known. The whole functioning (urban operation) of a area, in other words, is known. Disaster responders are often those who have the opportunity and are required to contribute to a better future planning and redevelopment of the affected area/city. Furthermore a disaster brings temporary changes to the affected society/ area. People think about problems the normally do not consider- the risks they face from hazards, the quality of local housing, ways in which the society could be better planned and constructed, the local scenic and other natural resources, liveability. At the same time, public officials have the media attention that enables them to garner support to innovative ideas. A disaster forces a society to make seemingly endless series of decisions, some large, some
small, some easy, and some quite difficult. Technical and expert advice becomes available from public and private sources. Financial assistance flows into the society, enabling it to tackle more ambitious projects that would normally be the case. These changes can be viewed as opportunities to rebuild in a better way, instead of succumbing to the natural desire to put things back the way they were as soon as possible. They can provide a change for a community to implement forward-looking activities that for one reason or another (usually financial or political) have not been undertaken. Some of those activities are:

1. Improvements of lifestyle
2. Safety
3. Economic opportunity
4. Environment

The scheme “matrix of opportunities” in page 29 gives a more extended overview of opportunities that disaster recovery can bring to a society. Jacquelyn Monday has developed this framework, which she calls a “holistic recovery” because it incorporates the six principles of community sustainability that can help an affected society to ensure that its local, economic and environmental systems are well integrated and will endure. What is important to mention with those principles is that although they are useful, each of them has the potential to overlap and inter-relate with some or all of others. In general when a community or society wants to pursue sustainability then it will try to:

1. Maintain and, if possible, enhance, peoples quality of life: exploration of the impacts of structure and agency in increasing individual, household and community access to various resources to increase their quality of life.
2. Enhance local economic vitality and recognize that those are essential.
3. Promote social and intergenerational equity: leading to fair and equal distribution of resources and hazards across the population, including different regions, genders, ethnic groups and cultures.
4. Maintain and if possible enhance, the quality of the environment: as a fundamental element of the sustainable development concept, hazard mitigation efforts should be linked to efforts to reduce environmental degradation.
5. Incorporate disaster resilience and mitigation into its decisions and actions when designing for the future. Particularly during the recovery period where political pressure to increase safety and build community coping capacity is high.
6. Adopt a consensus-building approach, beginning at the local scale through the process of local participation.

This research will lay a focus on some points of the above mentioned emphasize the research upon them in order to connect those with the urban redevelopment aspect in the affected area.
### What is a holistic recovery?

Definition: A holistic recovery from a disaster is one in which the stricken locality systematically considers each of the principles of sustainability in every decision it makes about reconstruction and redevelopment (Monday, 2002).

---

### Matrix of Opportunities

(x = an opportunity to devise a recovery strategy that furthers sustainability)

#### Some Situations a Community Could Face during Disaster Recovery

<table>
<thead>
<tr>
<th>The Principles of Sustainability &amp; Some Options for Applying Them</th>
<th>DAMAGED TRANSPORT</th>
<th>DAMAGED PUBLIC FACILITIES</th>
<th>DAMAGED UTILITIES</th>
<th>DAMAGED HOUSING</th>
<th>ECONOMIC DISRUPTION</th>
<th>ENVIRONMENTAL DAMAGE</th>
<th>DISRUPTION TO HEALTH &amp; SAFETY</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 Maintain &amp; Enhance Quality of Life</strong></td>
<td></td>
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<tr>
<td>Main housing available/affordable/lower</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Provide education opportunities</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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<tr>
<td>Ensure mobility</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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<td>Provide health &amp; other services</td>
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<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Provide employment opportunities</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td></td>
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<tr>
<td>Provide for recreation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Maintain safe/healthy environment</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Have opportunities for civic engagement</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Others</td>
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<td><strong>2 Enhance Economic Vitality</strong></td>
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<tr>
<td>Support area redevelopment &amp; revitalization</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Attain economic viability</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Attract/maintain workforce</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Enhance economic functionality</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Develop/redevelop recreational, historic, scenic attractions</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td></td>
<td>X</td>
<td>X</td>
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<td>Others</td>
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<tr>
<td><strong>3 Ensure Social Intergenerational Equity</strong></td>
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<tr>
<td>Preserve/restore natural, cultural, historical resources</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Adopt a longer-term focus for all planning</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Avoid/mitigate disproportionate impacts on groups</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td></td>
<td>X</td>
<td>X</td>
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<tr>
<td>Consider future generations’ quality of life</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
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<tr>
<td>Value diversity</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Preserve social connections in and among groups</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Others</td>
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<tr>
<td><strong>4 Enhance Environmental Quality</strong></td>
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<tr>
<td>Preserve/restore/restore natural resources</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Protect open space</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Manage stormwater</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
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<tr>
<td>Prevent/mediate pollution</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Others</td>
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<td><strong>5 Incorporate Disaster Resilience/Mitigation</strong></td>
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<tr>
<td>Mosaic buildings &amp; infrastructure</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Avoid development in hazardous areas</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Manage stormwater</td>
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<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Protect natural areas</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
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<tr>
<td>Promote &amp; obtain hazard &amp; other insurance</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tbody>
</table>
2.3. Formulating a strategy in Post Disaster Urban Redevelopment

In order to provide judgments concerning a Post Disaster Redevelopment Strategy (PDRS) we first need to understand when and why a PDRS is formulated. A PDRS can already exist if the country or in smaller scale the community affected by it, has in the past created such a plan in order to be (better) prepared when the next natural disaster occurs. This is more often the case in modern countries. In the United states, and more specific in the eastern coastal areas, where hurricanes, floods and other disasters are not a strange phenomenon, the state of Florida has required to all counties to develop such a PDRS to ensure a more resilient future (Florida Division of Emergency Management, 2011). In countries where resources are limited, such a strategy is most often formulated shortly after the disaster has taken place. If it already exists it is either outdated or very poor in content. Having a PDRS allows the opportunity to rebuild communities better than they were before. Without a guiding vision in the process, short-term decisions may inadvertently restrict long-term, sustainable redevelopment and overlook opportunities to surpass the status quo. A PDRS strengthens the recovery process, and communities benefit from assessing their risk levels and crafting a long-term redevelopment strategy under non-disaster conditions.

The development of such a strategy is done, in most cases, by (local) government officials and if present emergency departments of the government. But again this is not always the case in developing countries. If not, the government can request support from others. In that case it is created/developed and some times also coordinated in collaboration with multilateral organizations such as the United Nations and the Red Cross (International Federation of Red Cross and Red Crescent Societies, 2012). It could also appear that the plan is created with the support of neighboring countries, states or counties. This depends on the magnitude of the disaster and the decisions taken by the national government (Drabek, T.E., 2003; CREW, 2007). An example is, the case of the Izmit earthquake in Turkey in 1999 where the national Turkish government requested help from outside. Greece responded immediately after the event, providing aid and support to its neighboring country (Karkatsoulis, 2004).

But why is it important to develop a PDRS? Although an entire research could focus on this question, there are several reasons we can distinguish why each vulnerable to disasters country should develop a PDRS to address long-term post-disaster recovery and redevelopments: 1) to reduce community vulnerability to disasters; 2) it should be required for coastal communities and encouraged for all other communities; and 3) the PDRS will allow for a more successful community recovery from disaster impacts. According to the report of the CREW in 2007 “developing a PDRS provides a valuable communication and educational process for local officials, staff, and community stakeholders to understand the complexity of decisions that will need to be made in order for the community to redevelop after a major disaster and agree to start making such decisions before something catastrophic happens.” Consequently what derives from the previous part is that the process of formulating a PDRS involves many actors and it is that process that can contribute and lead towards a more sustainable and resilient environment and future.
Key ingredients that need to be incorporated during the formation of PDRS are: 1) community participation in the decision making process, to ensure that their demands and visions are translated into the redevelopment plan, 2) a clear commitment from the organization’s involved in the redevelopment, herewith a division of tasks and responsibilities coupled to a timeline can be generated and 3) a solve oriented attitude of the (local) government to surpass policy and legislation issues that may occur in order to accelerate the redevelopment procedures.

2.3.1. Type of strategies

As mentioned before in this research there is no such thing as ‘best practice’ or ‘one size fits all’ in PDRS. Conditions are always context dependent and a strategy should always be developed according to the (local) needs of the affected area and community. But, lessons learned from previous disasters have resulted several strategies for PDR. Though, these strategies also strongly depend on the leadership (governance attitude), the participation (community involvement) and commitment of the involved stakeholders. Top-level and grassroots support is important to ensure that the strategy will be the guiding document for long-term redevelopment after the disaster. Different approaches to plan development strategies are:

• Adopt a Post-Disaster Redevelopment Ordinance
• Integrate Post-Disaster Redevelopment into the Local Comprehensive Plan
• Integrate Post-Disaster Redevelopment into the Local Mitigation Strategy
• Expand the Recovery Annex of the Comprehensive Emergency Management Plan to address Post-Disaster Recovery Issues
• Stand-Alone PDRS integrated with Other Local Plans

Those approaches have been applied mostly in developed countries, the United States of America and several Caribbean and Latin countries (Florida Division of Emergency Management, 2011, FEMA, 2010,). Those could also be applicable in other disaster prone countries. As David Alexander says ‘disasters are sufficiently frequent and similar to each other to be normal, not abnormal, events. Although emergency powers and special measures are needed when disaster strikes, the requirements and exigencies are predictable enough to be planned for’. What derives from the previous quotation is that strategies are applicable globally if and only if they encounter the local circumstances and conditions.
2.4. What is the impact of PDUR

Developing a PDRS provides local government officials, residents, and businesses the opportunity to determine long-term redevelopment goals and develop policies and procedures that will guide redevelopment and will increase the impact of the redevelopment in a positive way. While outside resources are needed and welcomed in a major or catastrophic disaster, a locally developed strategy will best channel those resources to effectively meet the community’s specific needs and goals. This will consequently increase the impact of the end result. When a redevelopment has come to the final point of completion and normalcy has returned in the affected area we can start measuring the impact that the PDUR had. The urban context, for instance, of a city could have change significantly if the magnitude of the disaster was of a large scale. Furthermore if the redevelopment plans have allocated a community to a different area, then again the impact can be big because the community needs to integrate into its new environment; a situation that will require a long time in order to draw conclusions with regards to the impact. The impact of PDR can be approached from several perspectives. The environment changes according to the magnitude of the disaster. It could be severely damaged or destroyed. Rehabilitation of natural systems can take years to be restored. Therefore the physical appearance can strongly diverse from the previous situation. Additionally the functions of a city can be benefited from the new developments and therefore the public life could be improved yet changed. To sum up, the impact of a PDUR is strongly related to the scale of the disaster and the physical geography of the affected area. Furthermore if the available financial resources are large then the amount of changes can be different to, which can influence indirectly the impact.

2.4.1 The Process in PDR

As mentioned earlier in this research the process of PDUR is very complex, due to the involvement of many parties, it has to deal with major challenges but does also deal with opportunities for improvement. Parties that are involved in it have different stakes and responsibilities. The process of PDR can last from several months up to several years depending on the scale of the disaster. Creating a process to make smart post-disaster decisions and prepare for long-term recovery requirements enables a community to do more than react, prompting post disaster action rather than time-consuming debate. In developing countries, that time-consuming debate appears to be often

![Figure 7: Time span Post disaster](image-url)
a delaying factor (Skinner et al., 2002). By identifying appropriate planning mechanisms, financial assistance, and agency roles and responsibilities beforehand, a community begins the road to recovery more quickly. Due to the stressful circumstances a disaster brings along, time is a crucial element during the whole process. Furthermore there are several topics that constitute the PDR process. Each of them encounters different actions conducted by different parties, which are interrelated to each other and due to the circumstances they are requiring close collaboration (Skinner et al. 2002, Florida PDRP, 2010). Those topics are:

- **Land use**, which encompasses the following: 1) Phased reconstruction and streamlined permitting, 2) Reducing disaster vulnerability through voluntary mitigation programs and 3) Prioritizing areas in order to focus the redevelopment actions.

- **Housing** encompasses: 1) Temporary housing and the siting criteria required for it, 2) Transitioning residents back to permanent housing and 3) Rebuilding affordable and adequate housing for the affected community.

- **Economic redevelopment** encompasses: 1) Resumption and retention of major employers, 2) Tourism renewal to start generating a source of income and employment and 3) opportunities to sustainably restore the economic vitality of the community.

- **Infrastructure and public facilities** encompasses: 1) The infrastructure for the temporary recovery operations, 2) Financing the repair of the infrastructure and the public facilities and 3) relocating vulnerable infrastructure and public facilities to more resilient locations.

- **Health and social services** encompasses: 1) The health facility restoration, 2) the coordination and assistance for NGO’s and volunteers and 3) reopening (permanent) schools and higher education to start the process of normality for the children and students.

- **Environment** encompasses: 1) restore the beaches and the damaged dunes, if present, 2) conduct an environmental and historic review of the temporary sites and 3) enhance green rebuilding.

The scheme below gives an overview of the structure of a Post disaster redevelopment process (PDRP). It starts with:

1) Initiating the process
2) Organizing the stakeholder participation
3) Conduct research and analysis to support the actions and planning process
4) Facilitating the imput
5) Create the first draft strategy and adopt the comments of the stakeholders

What is important to pinpoint in this schematic structure is the position of public participation. No plan will succeed without encountering the citizens of the affected community. It is position in the middle and interrelates in each step of the process. Feedback and involvement of the public in the whole process strengthens the acceptance of the plan. Furthermore it will most likely start functioning faster due to the
personal involvement citizen’s feel they have with the redevelopment of their community. Each step has certain actions that need to be taken in order to formulate a strong strategy for the redevelopment.

Figure 9. Post Disaster Redevelopment planning process (www.floridadisaster.org).
2.4.2 The Results of PDUR

When a community has reached a state where we no longer speak about redevelopment then the evaluation of the results can be conducted. This is done in order to ascertain if the initiated actions are taken, aspirations are achieved and if the community has benefited from the redevelopments and the desired goals are realized. In this research the following three situations (damaged transport, damaged public facilities and damaged housing) are going to be further investigated during the case study research, which is the next step, supplemented by findings and interviews most probably during the field visit. Out of the seven situations Jaqueline Monday describes (page 29), those three are chosen from an urban consideration point of view. This is where the core of the graduation lad is. Furthermore because this research arises to suggest improvements, yet not find fault, in PDUR strategies with respect to the urban context.

The list next will function as a guiding checklist during the case study research and the field visits, resulting in a thorough understanding of the context of the case and the process followed by the involved stakeholders. Because what remains after a PDR has completed its programs and actions is the end result. If the process has been coordinated and executed by having all constraints in mind then the final result can be characterized as effective and successful, certainly if the community benefits the most out of it and the new situation is improved in comparison to its pre-disaster state.
2.4.3 How to evaluate the process? In terms of efficiency and effectiveness

A big part of the research will investigate the process, how where things realized from the different actors point of view, and what are the results of this process chosen, again from the perspective of the different actors. The aim of this research approach is to evaluate both aspects and categorize the participation of the actors in the process and their contribution to the end result. Furthermore herewith the carrying out process will depict the operation of PDUR and accordingly certain findings such as impacts can be visualized.

There are significant benefits for developing a PDURS Collins says in his book *Disaster and Development*. Having a PDRS is key to a faster and more efficient recovery. A successful process is one that enhances efficiency in the progress of the redevelopment programs and supports an effective collaboration of the stakeholders (Collins, 2009, p.46). Those two variables, efficiency and effectiveness are key elements while evaluating the process of PDR. But in order to formulate a holistic evaluation of PDR we need to subdivide it in several categories and investigate each one of them separately during the case study research. Those categories will be:

1) What were the **goals** the post disaster responders and (local) government wanted to achieve?
2) Different **stakeholders** (market parties, government, NGO’s, multilateral organizations, individuals donors). Evaluate their stake in the process and test in terms of effectiveness in collaboration and efficiency in progress.

What is important to understand when researching PDUR in general is that, a triangulation of the findings needs to be outlined. Since disasters redevelopments are a complex decision making process, which has a multi-actoral involvement with enormous financial means that are becoming available, and with different objectives being represented we need to test the findings and approach them from different perspectives. Those perspectives are: academic, governmental and NGO.
During the literature review so far we can distinguish different approaches with regards to evaluation. They all have different roles and responsibilities in PDUR and they always report with different interests in their back of their mind. A government tries in most of the cases, to present its actions as successful and will not emphasize in the parts of the PDUR where they did not perform as expected. The same counts for the numerous organisations, which again represent and have different aims and interests. Discussions on the topic show that a coherent image derived from literature is not always the case (Wisner et al., 2012).
2.5 Steps towards P3

Working towards the next step of this research, which is the P3 presentation, the following data needs to be collected and the following steps need to be taken to ensure a solid and substantiated progress towards P4.

Data related to the case study and associated with the process of the PDR there, the strategy used, the involved parties and their stake and finally the lessons that can be learned from this case.

**Step 1:** Start analyzing the case, which is the city of Aceh in Indonesia. Read the available literature in order to determine the process followed after the catastrophic event in 2004. But it is also to find out which were the involved parties in the PDUR and what was their stake.

**Step 2:** Then, supported by the structure scheme (page tade) the next step is to find out if the process is similar to what is depicted in the scheme. If not why, and what was the alternative method they used there? What can derive from this research?

**Step 3:** Start defining the case and use the findings from that research to start reflecting and interpreting the inputs.

**Step 4:** Conduct the first interviews with experts in the PDR field (see page 17) and test the findings that have derived so far from the general literature review and the case study. Reflect and report the outcomes draw new conclusions and adjust, if needed the definition of the case.

**Step 5:** Do a field visit to the area of the case. Test the real case with the definition that has been formulated earlier. During the field visit new interviews will be conducted and again reflected and reported. A visit to the office of the ‘Association of South East Asian Nations, Disaster center’ in Jakarta and the Indonesian National Board fro Disaster Management will be paid in order to test their opinion from their perspective. Then the findings will be adjusted to the new inputs. The current situation will be visited and herewith the actual results can be evaluated.

**Step 6:** Start writing recommendations on the case study, with respect to the research question and objectives, and start writing general recommendation on the general theory of the topic. Those recommendations will derive from the evaluation of all the inputs that are collected during the field visit.

**Step 7:** Start synthesizing and reporting.
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