

# Graduation Plan for aE Studio Students

## Personal Information

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## Studio

Name of studio: AR3AE015 - Architectural Engineering

Teachers:

Architecture Teacher - Emiel Lamers

Research Teacher - Monique Smit

Building technology Teacher - Engbert van der Zaag

## Title

**‘A Relief to be relieved’ by relieved Community**

A building learning centre

Promoting hurricane-proof building knowledge among communities on Sint Maarten

A way to optimised and self-efficient disaster relief on Sint Maarten (and beyond)

## Graduation Project

### Problem Statement

After the first research in the context of Sint Maarten, the *‘image’* of the *‘Caribbean paradise’* was not actually destroyed by the hurricane itself. Of course it had tremendous effects on the numerous issues but the island has been struggling with many problems (e.g. climate, politics, economics and many social issues) far before the hurricane happened.

Local population has been forced to deal with frequent hurricanes on a regular basis. A hurricane season seems to come back every year, with major destruction every six years and effects similar to Irma (2017) or Luis (1995) every 20-25 years. In addition, there could be observed rising sea levels, earthquakes, pollution and poor waste management, which do not improve the overall situation.

Political aspects of the island complicate the setting of Sint Maarten dramatically. Oligarchic system in the local politics, significant corruption and money laundering, disrupt after-hurricane recovery programme and increase poverty ratios in the country. The island’s economy, completely dependent on tourism is a threat to local development, especially after natural disasters such as hurricanes. Low export of goods and high import create a country completely dependent on others. Unemployment, poor variety of higher education system, poverty and lot of informal settlements with unregistered inhabitants do not seem to upgrade.

Furthermore, a low engagement of Sint Maarten's local population in the process and the execution of the relief programme after hurricane Irma is a key factor of its limited effectiveness (especially in the low income districts). There is a lack of efficiency and benefits on governmental level on both sides of the island Dutch - Sint Maarten and French - St. Martin. All of the above creates a low local collaboration to rebuild neighbourhoods due to poor knowledge of hurricane proof building methods among community members. This is also affected by lack of training and education programmes around long-term planning for more resilient environment against hurricanes.

## **Objective**

The intention of the graduation research and design project is to outline the most ideal methods, frameworks of relief programs, facilities and actors involved to relate and introduce them into Saint Maarten context. Through reference analysis, its practical aspects (case studies - involving communities in the building process) and general effectiveness of results. I want to find a way to introduce a new and most efficient relief program to incorporate it in design phase of the graduation project.

New method, design solution and knowledge of 'new craftsmanship' could help in creating communities, which could strengthen and speed up the recovery time after possible new disasters in Sint Maarten region and not only. In addition, 'new craftsmanship' and new rebuilding methods would generate more diverse income programme in the region as an opportunity to develop by traineeships as a way in which locals combine employment and training in order to gain certain qualification.

The design would be not only potential relief programme - A building learning centre - but also a way for diverse income generating solution for local communities in certain neighbourhoods as an opportunity to develop. Given method of implementation of such programmes would be also a traineeship as a way in which locals combine employment and training in order to gain a nationally recognised qualification.

Relief method by creating A building learning centre, merged with economic diversification program, would hopefully provide people with knowledge and experience in order to become more self-sufficient and less dependent on the outside help in often problematic contexts around the world, which does not provide help fast enough.

## **Overall design question**

*Is it possible to optimize the recovery period after future disasters on Sint Maarten by creating a building learning centre, which create hurricane-proof building knowledge among locals, to promote self-dependent communities on Sint Maarten?*

## **Thematic Research Question**

*What could be learned from post disaster community based projects in which architects are involved?*

## **Subquestions:**

Theoretical approach:

1. *What are the characteristics of a disaster relief?*
2. *What are the methods and key factors of existing disaster relief frameworks?*

Practical approach:

3. *What is the role of architects, communities and other parties involved in such case studies?*
4. *What is the role of the architects in relation to other stakeholders involved?*

## **Methodologies**

I started with a generic literature research. I described all these issues to underline the necessity of understanding the whole spectrum of complex situations. This includes not only research in the architectural domain but also politics, economy, society and culture embedded in the Sint Maarten/St. Martin context. Among others, I conducted literature study including theoretical aspects of the rebuilding with communities, search for methods, frameworks and how it relates to the Saint Maarten case. In addition, reference analysis, which was focusing on practical aspects (case studies) of projects involving communities in the building process, involvement of people, general effectiveness of the

result – studies and critical of each case studies on previously mentioned aspects. The overall research is meant to lead towards the research by exemplary design by trying to create a framework (checklist) for an efficient relief programme involving local population - reconstruction/relief hub.

When it comes to the research paper, it is divided into two parts. Firstly, I tried to answer theoretical aspects of the disaster relief, positioned on an overall tactics and tackles long term planning on the national level. Its whole research method is descriptive and based on broad literature studies. This particular approach explores methods, key factors of governing/planning/reconstruction by engaging local population in long term, large scale relief programs.

Second part is focusing on the practical approach of case studies and is developed in a more detailed way. Chosen case studies were based on the typological research of disaster relief programs from the first part and focus on one, which connected local population in the whole process of the project, through its plans of establishing, design and execution phase. The goal was not to research the architecture/ building itself but rather to investigate its background. It traces back all the actors involved, like architects, community, volunteers, consultants, NGO's, government members and parties, investors. Later on, the research is trying to outline the timeline which shows when and at which particular stage of the whole building process creation certain actors were involved.

All my 11 case studies were preceded by explaining wider view of the particular disaster and its context in which the project was built. After introducing the bigger scope of it and its generic overall background, I started to focus more on details with parallel, more personal approach. I included the opinions of architects involved based on interviews from the *Humanitarian Architecture: 15 stories of architects working after disaster* book and/or from the pieces of information which I gained from direct contact and/or interview with those architects.

## **Relevance**

More generic approach with a disaster reconstruction/relief hub design placed within a 'new center' in the context of Saint Maarten/St. Martin and island's masterplanning. Possible use of the discovered methodology in different relief programmes around the world by provided research of the method of its implementation. Engaging Local Populations as a possible main factor in humanitarian relief to more effective, faster and self-efficient disaster recovery (and not only?).

By research paper and its analysis I tried to create a framework (checklist) for an efficient relief programme involving local population. In this case, my graduation project is based on existing theoretical frameworks and analysed case studies to create effective humanitarian relief and to improve local community economical situation in problematic context of Sint Maarten/St.Martin.

Conducted research became a base for further design. Additionally, the masterplan and a design is enhancing economy diversification to create more optimised recovery time and more self-sufficient society on the island. The aim is to construct an environment which does not have to be entirely dependent on government and its many political controversies.

## Literature

Ali, Shahla F., *Governing Disasters: Engaging Local Populations in Humanitarian Relief*. (New York NY: Cambridge University Press, 2016)

Charlesworth, Esther, *Humanitarian Architecture: 15 stories of architects working after disaster*. (London, New York NY: Routledge Taylor & Francis Group, 2014)

Cahill, Kevin M. (Ed.), *A Framework for Survival: Health, Human Rights and Humanitarian Assistance in Conflicts and Disasters*. (London, New York NY: Routledge, 1999)

Schuller, Mark, *Humanitarian Aftershock in Haiti*. (New Brunswick, New Jersey, London: Rutgers University Press, 2016)

Aquilino, Marie J. (Ed.), *Beyond Shelter: Architecture for Crisis*. (London: Thames & Hudson, 2011)

Daly, Patrick (Ed.), Feener, Michael R. (Ed.), *Rebuilding Asia Following Natural Disasters - Approaches to Reconstruction in the Asia-Pacific Region*. (Cambridge: Cambridge University Press, 2016)

Zwitter, Andrzej (Ed.), Lamont, Christopher K. (Ed.), Heintze, Hans-Joachim (Ed.), Herman, Joost (Ed.), *Humanitarian Action: Global, Regional, Domestic Legal Responses*. (Cambridge: Cambridge University Press, 2015)

Hobson, Christopher (Ed.), Bacon, Paul (Ed.), Cameron, Robin (Ed.), *Human Security and Natural Disasters*. (London, New York: Routledge Taylor & Francis Group, 2014)

Speetjens, Jose, *St. Martin Yesterday and Today*. (Philipsburg, St. Maarten: Foundation History St. Martin, 2002)

NB. Part of the graduation (especially in the MSc 4) is the technical building design. Therefore a Building Technology teacher will be part of the tutoring team from the P2 presentation on. This should be taken into account when writing the Graduation Plan, in the time planning as well as in the relation to the content (e.g. statement, method and /or relevance).

## Planning

week	month	design
36	September	parallel: review and implementation of P2 comments, master-planning, conceptual design, technical design, climatic design
37		parallel: master-planning, conceptual design, technical design, climatic design
38		parallel: master-planning, architectural design, technical design, climatic design
39		P3 preparation
40	October	<b>P3</b>
41		parallel: review and implementation of P3 comments
42		parallel: master-planning, architectural design, technical design, climatic design
43		parallel: architectural design, technical design, climatic design
44		parallel: architectural design, technical design, climatic design, structural design
45	November	parallel: architecture design, technical design, climatic design, structural design
46		parallel: architecture design, technical design, climatic design, structural design, facade design
47		parallel: architecture design, technical design, climatic design, structural design, facade design
48		parallel: architecture design, technical design, climatic design, structural design, facade design
49	December	P4 preparation
50		<b>P4</b>
51		review and implementation of P4 comments
52		christmas holiday
1	January	parallel: final design corrections, posters, model making
2		parallel: posters, model making
3		P5 preparation
4		<b>P5</b>
5		<b>P5</b>