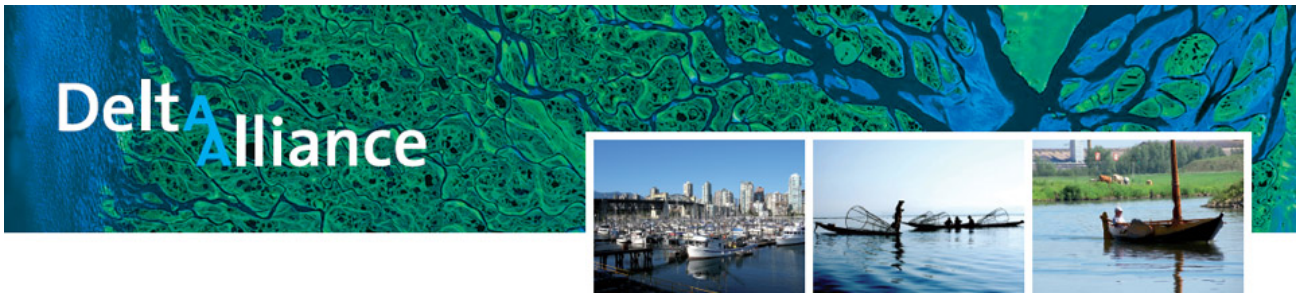

Proposal

Assessment of the vulnerability and resilience of the Irrawaddy Delta in Myanmar

Revised version, 23 May 2013

1. Introduction

This proposal responds to the recent request of Dr Chris O'Brien, the Regional Coordinator of the Bay of Bengal Large Marine Ecosystem Project (BOBLME), to realize a vulnerability and resilience assessment for the Irrawaddy Delta in Myanmar, comparable to the "Comparative Assessment of the Vulnerability and Resilience of 10 Deltas" executed in 2010/2011 for 10 other deltas in the world. This study was realized by a team from Deltares and Alterra in close cooperation with experts in each of the deltas.

With the opening up of the Myanmar society lots of activities will start up in the near future. The BOBLME project is interested in this delta assessment, as it provides a kind of baseline of the current state of the Irrawaddy Delta and it gives also the possibility to compare it to other deltas in the world. Apart from the vulnerability and resilience assessment presented among others in the form of a Scorecard, the study will also make an inventory of current adaptation measures and will identify knowledge gaps.

Also the Global Water Partnership (GWP) has shown a keen interest to undertake activities in Myanmar within the framework of the preparation of a joint Global Program of Action on Deltas of GWP and Delta Alliance. The Myanmar representatives and partners of GWP will play an active role in the realization of the assessment. Through their active participation in this project it is also envisaged to strengthen the GWP Country Water partnership in Myanmar.

2. Set up of the assessment

Since it is unknown how much data will be available and whether the right experts can be found to contribute to the project a two phase approach is being proposed:

1) Phase 1: Identification mission
2) Phase 2: Elaboration of Irrawaddy Delta description and assessment

This proposal concerns mainly the phase 1 activities. After phase 1 a go – no go decision has been built in on the basis of the possibilities and constraints identified during phase 1.

In case of a go-decision a more detailed proposal will be developed for phase 2 based on the findings of the identification mission.

3. Background

The Irrawaddy Delta or Ayeyarwady Delta lies in the Irrawaddy Division, the lowest expanse of land in Burma that fans out from the limit of tidal influence at Myan Aung to the Bay of Bengal and Andaman Sea, 290 km to the south at the mouth of the Ayeyarwady River. The delta region is densely populated, and plays a dominant role in the cultivation of rice in rich alluvial soil as low as just 3 meters above sea level, although it also includes fishing communities in a vast area full of rivers and streams (Wikipedia, 2012). It is mainly populated by farming and fishing communities in several villages besides market towns, mostly located along the main rivers. At 100 per km^2, it is one of the most densely populated regions in the country with a total population of 3.5 million (ASEAN Regional Centre for Biodiversity Conservation).

On 2 May 2008, the delta suffered a major disaster, devastated by Cyclone Nargis, which reportedly killed over at least 77,000 people with over 55,900 missing, and left about 2.5 million homeless (Reuters, 2008).

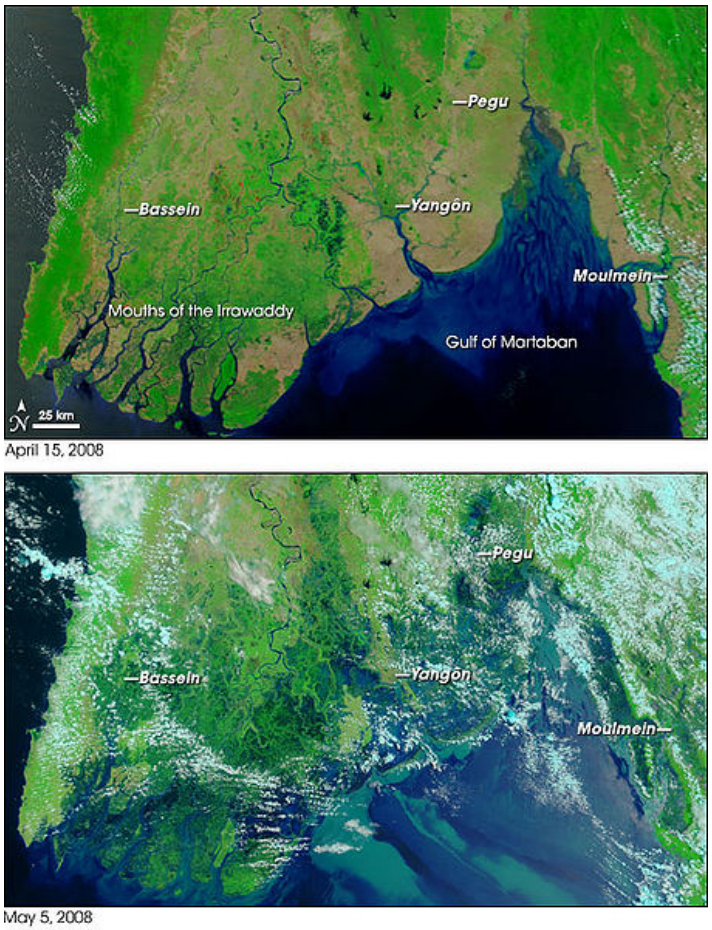

Figure 1. Overview of the Irrawaddy delta before and after by Cyclone Nargis, impacting severely around 50,400 km^2 of the low-lying delta *(NASA images courtesy the MODIS Rapid Response Team. Caption by Rebecca Lindsey)*

In general, river deltas regions may be considered some of the wealthiest places in the world, drawing large populations with their rich environmental resources and strong economic potentials; they are hubs of innovation, biodiversity, industrial and agricultural productivity, and home to some of the world's fastest growing cities. Delta regions are also some of the most highly stressed areas in the world, with great competition for land and water use, and experiencing impacts from all activities occurring in the river basin. Natural characteristics of river deltas make them vulnerable to complex problems such as flooding, subsidence, and salt water intrusion. Human impacts increase their vulnerability by reducing natural resilience, introducing additional problems, and potentially devastating vital ecosystems. Climate change is likely to increase the already existing important climate variability, having its impact on the water systems through increases risks of both flooding and droughts. Both natural and human-built capital are at risk in river delta regions, making their protection essential.

Following this flooding disaster there is a clear need for an assessment of vulnerability and resilience of the Irrawaddy delta.

This can be elaborated by the same 'Delta Assessment Approach' as implemented for the Delta Alliance study 'Comparative assessment of the vulnerability and resilience of 10 deltas' by the end of 2010. Moreover an additional comparative assessment can be made related to the other 10 deltas already studied.

4. Objectives

Phase 1

- Identify the possibilities and constraints of conducting an assessment of vulnerability and resilience of the Irrawaddy delta
- Prepare a plan for conducting a full assessment of vulnerability and resilience
- Preliminary description of Irrawaddy delta

Phase 2

- Elaborate an assessment of vulnerability and resilience of the Irrawaddy delta according to the delta assessment approach as applied in the Delta Alliance project 'Comparative Assessment of 10 deltas'
- Make a brief comparative analysis related to the other 10 deltas already studied

5. Activities and results

Phase 1 – Identification mission

- Identify the most important challenges in the Irrawaddy Delta
- Identify potential cooperation partners in the Irrawaddy Delta, that could contribute to the vulnerability assessment (and that could ultimately establish the Myanmar Wing of the Delta Alliance network)
- Further discuss the cooperation possibilities with the BOBLME project in order to prepare a detailed proposal and project plan the assessment of the Irrawaddy Delta

(For this purpose a stopover could be made in Bangkok at the start and/or the end of the mission)
- Make a brief inventory of accessible literature and data that can be used for the assessment (including Remote Sensing data, hydrological data, socio-economic data etc.), and
- Provide on the basis of this inventory a preliminary description of the Irrawaddy delta.

Result:
- Mission report describing the possibilities and constraints of conducting an assessment of vulnerability and resilience of the Irrawaddy delta.
- Plan for conducting a full assessment of vulnerability and resilience
- Preliminary description of the Irrawaddy delta

Phase 2 – Elaboration of Irrawaddy Delta description and assessment (to be refined after identification mission)
- Compile a comprehensive delta description according to the delta assessment approach, based on already available literature, data and on expert knowledge. This description involves:
    a. Description of all relevant aspects regarding drivers, occupation layer, network layer, base layer and governance
    b. Overview of adaptive measures currently applied in the Irrawaddy delta
    c. Overview of methods and tools to support delta management in the Irrawaddy delta
    d. Lesson learned on delta management
    e. Research gaps and related information needs
- Make 'summary blocks' of the main issues of the delta description
- Develop the Delta Scorecard for the Irrawaddy Delta including brief description
- Make a brief comparative analysis related to the 10 deltas assessment report

Result: Report with a comprehensive delta description and vulnerability assessment of the Irrawaddy delta, including a brief comparative analysis related to the 10 deltas assessment report.

6. Planning

Activities	May	June	July	Aug	Sept	Oct	Nov	Dec
Phase 1								
Preparation, literature study	xx							
Identification mission, incl. workshop		xx						
Reporting, first delta description, proposal for 2nd phase			M					
Go-no-go decision				X				
Phase 2								
Compile draft, more comprehensive delta description					xxxx			
Mission to elaborate delta description, including workshop						xx		
Make 'summary blocks'						xx		
Develop the Delta Scorecard							xx	
Make comparative analysis							xx	
Delivery draft report							D	
Comment round								xx
Delivery of final report								F

M: Report of identification mission will be delivered early in July
X: Based on the results of the identification mission will be decided by mid-July if and how to proceed in phase 2
D: The draft report will be delivered end November
F: The final report will be delivered end of December

7. Project team

Phase 1

- Deltares: Tjitte Nauta,
- Alterra Wageningen UR: Wim van Driel,
- BOBLME (Bay of Bengal Large Marine Ecosystem Project – FAO/GEF funded): Dr Chris O'Brien, has a considerable presence in Myanmar and is linked to the Fisheries and Environment ministries

The following GWP partners in Myanmar will be invited to participate in the project:

- Dr Ir. Khin Ni Ni Thein (expert, member of GWP Global Steering Committee)
- Mr. U Hla Baw (Chairperson GWP-SEA Regional Steering Committee)
- Dr. Zaw Lwin Tun (National representative GWP)

***Phase* 2** (final composition to be determined after identification mission)

- Deltares: Tjitte Nauta, Marcel Marchand, Tom Bucx, Cees van de Guchte
- Alterra Wageningen UR: Wim van Driel, Bart Makaske

- BOBLME (Bay of Bengal Large Marine Ecosystem Project – FAO/GEF funded): Dr Chris O'Brien and staff
- Experts from several Myanmar ministries / institutes (to be determined)

The following GWP partners in Myanmar will be invited to participate in the project:

- Dr Ir. Khin Ni Ni Thein (expert, member of GWP Global Steering Committee)
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Wageningen/Delft May 23, 2013