



DELTA IN TIMES OF CLIMATE CHANGE II INTERNATIONAL CONFERENCE

OPPORTUNITIES FOR PEOPLE, SCIENCE, CITIES AND BUSINESS
ROTTERDAM THE NETHERLANDS, 24-26 SEPTEMBER 2014

Deltas in Depth scientific sessions	
Deltas in Depth Theme 6. Rural development and food security	
DD 6.3 Strategies to increase food security (6.2 continued)	
Chair	Prof.dr. Adri van den Brink, Wageningen UR, the Netherlands
Presentations	<ul style="list-style-type: none">● Sally Brown, University of Southampton, United Kingdom● Judith de Bruijne, Euroconsult Mott MacDonald, the Netherlands● Masud Iqbal Md Shameem, University of Newcastle, Australia

All studies presented in this session deal with the deltaic areas of Bangladesh. Some general conclusions that can be drawn from these three presentations are that the deltaic region is a complex socio-ecological system and when looking at climatic stresses, vulnerability and coping strategies, it is important to take on a broad perspective. Understand the drivers of change as well as the impacts; do not look at an isolated area, but consider external factors that influence local processes; and lastly be aware of the time frame in which processes take place. Changes do not happen overnight. To understand changes and the impacts of adaptation strategies it is important to have a wide time horizon.

Sally Brown discussed the issue of land subsidence and development in the Ganges-Brahmaputra-Meghna delta. What is the rate of land subsidence and how does it influence development? There is no uniform rate of land subsidence. There are multiple causes of subsidence, natural as well as anthropogenic, it can occur locally as well as on a larger scale. To make it more complex, in some areas there are ongoing processes of land uplifting (sedimentation and tectonics) or both of uplifting and subsidence. There are multiple causes for this 'net subsidence' and these affect food security in different ways. A desk study shows that no consistent, good quality, well distributed measurements have been taken in the past. The quality of data in papers varies. It is difficult to balance the relevance and no clear spatial pattern shows from the figures. There is no understanding of possible future land subsidence changes. Furthermore, the potential climatic threats challenge local development and can have implications for food security, e.g. salinization. Decision making needs to consider the long-term outlook and wider development issues.

Judith de Bruijne studied the lessons learnt from a controlled flooding programme in the rural areas of Tangail Sandar Upazilla in Bangladesh that was performed in the 1990s. In the Compartmentalisation Pilot Project (CPP) a system of compartmentalisation with inlet and outlet structures was put in place to regulate flood water levels. For flood prone agricultural systems this might be an interesting climate adaptation measure. To know the longer term impacts on the area, Judith performed a post-evaluation of this CPP by looking at how land use, agriculture, aquaculture and livelihoods have changed. The results show that overall, many changes have occurred. However, can these changes be attributed to the CPP? Agricultural production and pond fish production have increased, but also the use of fertilisers and high yielding varieties has increased. The embanked areas protect inhabitants and their houses from uncontrolled seasonal floods. The population density has increased in these areas. Land prices have also increased. About a third of the systems is currently out of use. The construction of a bridge has reduced the amount of incoming flood water. Only a quarter of the water management committees in the sub-compartments is still involved in the





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decision making. Compartmentalisation serves as a flood protection measure, however it is costly and the impact on the area are not straightforward. Success is area and time specific. Cross-sectorial spatial planning of infrastructural developments and resilient solutions are vital. The impacts of controlled flooding should be carefully assessed and the wider context, both spatially and in terms of other developmental interventions, should be taken into account.

The coastal areas in the southwest of Bangladesh are vulnerable for hydro-climatic stress, e.g. cyclones hit the area almost every year and in the dry season about 60-70 % of the land is affected by salinization. Many poor people live in this area. The population growth in this area is relatively low because people move to other parts of the country. Masud Iqbal Md Shameen addressed the questions how households adapt their livelihood strategies in response to climate variability and change, and, more specifically, how shrimp farmers cope with short-term climatic disturbances. One of his key findings is that households diversify their sources of income to spread climate risk depending on their land size. The poor tend to depend on wage labour, while households with big land holdings change to shrimp ponds. In commercial aquaculture new shrimp species are introduced that are more salt tolerant. Shrimps are a good export product. Food security is affected by this current shift. The poor farmers sell their land to the big farmers. These farmers have the means to transform their livelihood strategies according to the environmental changes, such as salinization. This leaves clear winners and losers of adaptation strategies. To overcome this, adaptation strategies should be combined with strategies that address the causes of the vulnerability.

