Session S27: Adaptation practice and experience in deltas in the global south

Organised by	Katharine Vincent, Kulima Integrated Development Solutions
Partners	Delft University of Technology, Netherlands Delta Alliance
Chair	Robert Nicholls, University of Southampton, United Kingdom
Rapporteur	Peter van Veelen, Delft University of Technology, Netherlands
Speakers	Katharine Vincent, Kulima Integrated Development Solutions, South Africa Documenting observed adaptations in deltaic Ghana, India and Bangladesh Ricardo Safra de Campos, University of Exeter, United Kingdom Migration as an adaptation Ken Kinney, Coordinator Delta Alliance Ghana Wing Enhancing environmental quality, reducing vulnerability: The Volta delta case Mohamed Soliman, Coordinator Delta Alliance Egypt Wing, Coastal Research Institute, National Water Research Center, Egypt, Adaptation of low-laying land of the Nile delta to climate change, SLR and extreme events
Panel / facilitators	Katharine Vincent, Kulima Integrated Development Solutions, South Africa Ricardo Safra de Campos, University of Exeter, United Kingdom Ken Kinney, Coordinator Delta Alliance Ghana Wing Mohamad Soliman, Coordinator Delta Alliance Egypt Wing, Coastal Research Institute, National Water Research Center, Egypt

At the Adaptation Futures 2018 Conference the Delta Alliance and DECCMA research project held a session on Adaptation Practice and Experience in Deltas in the Global South.

Deltas in the global South face a variety of stressors, including climate change, high-populations, poverty and dependence on agriculture combined with environmental factors such as subsidence, saline intrusion, coastal erosion, flooding and extreme events such as cyclones. The result of this is a highly vulnerable population. Various research projects and networks of delta researchers are looking at adaptation needs and practice in deltas, but there have been few opportunities to date to synthesize these findings through south-south learning. The session aimed to bring together researchers, experts and practitioners in delta practice to share practical experience in adaptation planning, discuss knowledge needs and ways forward to more resilient deltas.

The DEltas, vulnerability and Climate Change: Migration and Adaptation (DECCMA) project presented two research projects focusing on understanding immigration and household adaptation. The DECCMA project is a large four-year project that aims to understand how vulnerable deltaic populations respond to multiple stresses. The project has collected data from sources including households and policy makers in three deltas: the Volta in Ghana; the Mahanadi in India; and the West Bengal/Ganges Brahmaputra shared by India and Bangladesh. Taking a systemic and multi-scale analytical perspective, the DECCMA project aims to understand gendered vulnerability and adaptation in deltas under a changing climate.

Robert Nicholls of Southampton University and research leader of the DECCMA project chaired the session. Katherine Vincent, director of Kulima Integrated Development Solutions presented research on observed adaptations in deltaic Ghana, India and Bangladesh and Ricardo Safra De Campos, University of Exeter presented the first research findings of the DECCMA project on “Migration as an adaptation”. The key lesson of both presentations is that households in

deltas develop a wide range of adaptation measures to face the effects of climate change, including migration. Surprisingly, households tend to migrate mostly because of economic reasons not because of environmental pressure, such as flooding or droughts. Although environmental pressure directly affects livelihoods, it is important to understand that economic pressure and the economic opportunities that city-life offers, are main reasons for inland immigration and people moving towards urban centres.

The Delta Alliance Egypt and Ghana wing coordinators presented experiences in delta planning and management. Prof. Mohamed Soliman, Delta Alliance Egypt wing coordinator and director of the Coastal Research Institute presented innovative ways to create natural flood defenses and sand dunes along Alexandria's coast to stop recurrent coastal flooding. He showed that the flood defense improved the living conditions for local communities and agriculture but also pointed to the problem that improved flood protection would stimulate urbanization, and thus increase vulnerability. Ken Kinney, Delta Alliance Ghana wing coordinator and director of the Development Institute, presented the challenges of the Volta Delta and the process of establishing a network of knowledge institutes, governments and local communities to work on integral land use planning of the Volta Delta. The Volta Delta is suffering from severe coastal erosion, affecting the villages and livelihood of coastal communities. The engineered solutions that have been developed to stop coastal erosion are effective but displace erosion to other non-protected areas. Both presentations showed that a holistic coastal management plan is needed that integrates coastal management with economic and land use planning.

After the presentations the plenary discussion focused on ethical issues of using or understanding immigration as an instrument for adaptation. Particularly when land use planning or proper government structures are lacking, infrastructure development and planning can be effective instruments to pull people away from the most vulnerable areas. The question is, however, whether immigration (mostly towards urban centers) can and should be controlled, given the fact that inland migration and urbanization are mostly driven by pull factors such as the wish to improve living standards, rather than push factors as changing environmental conditions due to climate change.

Recommended reading in the peer-reviewed literature

Brown, S., Nicholls, R.J., Lázár, A.N. et al. 2018. What are the implications of sea-level rise for a 1.5, 2 and 3 °C rise in global mean temperatures in the Ganges-Brahmaputra-Meghna and other vulnerable deltas? Regional Environmental Change https://doi.org/10.1007/s10113-018-1311-0

Cazcarro, I., Arto, I., Hazra, S., Bhattacharya, R.N., Adjei, P.O-W., Ofori-Danson, P.K., Asenso, J.K., Amponsah, S.K., Khondker, B., Reihan, S. and Hosser, Z. 2018. Biophysical and socioeconomic state and links of deltaic areas vulnerable to climate change: Volta (Ghana), Mahanadi (India) and Ganges-Brahmaputra-Meghna (India and Bangladesh). Sustainability 10(3), 893.

Suckall, N., Tompkins, E.L., Nicholls, R.J., Kebede, A.S., Lázár, A.N., Vincent, K., Allan, A., Chapman, A., Rahman, R., Ghosh, T., Hutton, C. and Mensah, A. 2018. A framework for identifying and selecting long term adaptation policy directions for deltas. Science of the Total Environment 633, 946-957.

Links to other literature that should be reviewed by the IPCC

Tompkins, E.L., Suckall, N., Vincent, K., Rahman, R., Mensah, A., Ghosh, T, and Hazra, S. 2017. Observed adaptation in deltas. DECCMA Working Paper, Deltas, Vulnerability and Climate Change: Migration and Adaptation, IDRC Project Number 107642. Available online at: www.deccma.com, accessed 14th July 2018.

Nicholls, R.J., Hutton, C.W., Adger, W.N., Hanson, S.E., Rahman, M.M., Salehin, M. 2018. Ecosystem Services for Well-Being in Deltas: Integrated Assessment for Policy Analysis. Springer. Free download at https://link.springer.com/book/10.1007%2F978-3-319-71093-8

Three takeaway points

1. There is a growing body of literature highlighting the potential future of deltas under climate change, taking into account sea level rise and sediment flux, among others.
2. Hard adaptations such as embankments are critical to protect infrastructure, lives and livelihoods in deltas.
3. There is evidence of a variety of household adaptations in deltas, which include in situ adaptations and migration.