

## SUMMARY REPORT

### PARADES Workshop Series 2021

Accra – Kumasi - Bolgatanga

*Flood disaster risk management in Ghana's flood hot spots:  
Comparing location-specific characteristics,  
adaptation/response measures and their impact on  
flood-related disaster and cascading risks*

Held in May and June 2021

jointly organized by  
**WRC, NADMO, WASCAL, and University of Bonn**

SUMMARY of Final Report  
prepared and written by B. Höllermann

## Introduction and aims of the workshop

The PARADES project ([www.parades.info](http://www.parades.info)) aims to contribute towards enhancing Ghana's national flood disaster risk reduction and management strategy by investigating key mechanisms (drivers, pressure, state, impacts, response), existing flood risk and disaster management, governance-policy, human-water interaction, development of scenarios, action plans and feasible and sustainable measures. This will be carried out using innovative socio-technical and participatory approaches and tools. Thus, the recent workshop series presents a key pillar in reaching the project's aims.

The workshops were jointly hosted by the University of Bonn (Germany), Water Resources Commission (WRC), National Disaster Management Organization (NADMO), and West African Science Service Center on Climate Change and Adapted Land Use (WASCAL). The aim of the workshop was to engage the local and regional stakeholders to gain insights into their views and knowledge on flood disaster and adaptation measures in Accra (Odaw catchment), Kumasi (sub-catchments), and the Bolgatanga (the White Volta catchment). The workshop series was found necessary as its outcome would provide significant inputs for flood modeling, validation of the models' outputs, and assessment of human-water-interactions and the consequent cascading impacts.

Since flood risk in Ghana affects many different areas such as settlements, commercial or industrial areas, critical infrastructure as well as farmland, the perspective of different expertise and advocates of different affected groups are needed for effective flood risk disaster management. Hence, participants represented perspectives from policymakers, technocrats, civil engagement, and academia covering a broad array of expertise and research fields. Within our workshop experts from NADMO and Water Resources Commission (WRC) of course contributed as the designated experts regarding disaster management and water resources. Additionally, experts from national agencies such as the Hydrological Service Department and GMet provided their expertise on flood risk and hydrological processes. Experts from spatial planning were represented by representatives from regional development (e.g. Ablekuma West Municipal Assembly), from a community perspective, and also from NGO's advocating the different dimensions of vulnerability due to flood events. Academic staff from the hydrological sciences and spatial planning from the Ghanaian universities also contributed with their expertise. With such a diversity of experts and knowledge, the workshop helped in integrating the different perspectives and advancing our understanding of flood risk and flood risk disaster management in terms of hot spots of flooding, causes and effects of flooding, and the discussion about effective adaptation measures.

The workshop series was structured into three main activities:

1. Identification of flood areas through a participatory web-based spatial mapping exercise using interactive Google maps.
2. Identification of flood problems, causes, impacts, and adaptation measures by using participatory qualitative system modeling approach
3. Identification and ranking of adaptation measures based on the qualitative system analysis where potential adaptation measures were collected and discussed with all participants and in a second step, were ranked or selected according to the preference of implementation using a voting tool.

The workshops showed that the diversity of participants in each location provided fruitful ground for social-learning processes. Participants learnt from each others by discussing and integrating their different perspectives.

## Summary of outcomes

The learning outcome of the workshop series allows to draw some conclusions regarding 1) elicitation valuable local and regional knowledge, 2) social learning and the need to approach flood disaster risk management from an interdisciplinary and holistic perspective, and 3) the importance to identify commonalities and differences across regions when designing a national flood disaster risk management strategy to ensure that also local key challenges are addressed.

- 1) Elicitation of local and regional knowledge is at the core of the workshop series and our participation approach. By gaining insights into local and regional expertise and into local conditions and situations the data basis for our analysis and flood models is greatly enriched. This has two important meanings. First we are assured that we are touching the problems of relevance to the local population and second we pay attention to the local characteristics and particularities which build an important basis for developing sustainable and tailor-made flood risk disaster management suggestions.
- 2) The workshop participants as well as the consortium partners cover a broad array of perspectives and disciplines. The common discussions about flood extent, cause-effect relationships and potential adaptation measures served as mutual eye-openers and strongly linked the diversity of approaches by discovering feedback processes between these different perspectives. Additionally, the consortium partners had a learning process across the regions where it became clear that even though that there are commonalities of flooding, the specific challenges differ quite a lot. On the other hand the discussion of combining structural and non-structural measures was a unifying concept across the regions.
- 3) Looking at the identified flooding areas in the selected regions and their types of flooding one can see that GAMA's hotspots of flooding are mainly related to flash floods and poor drainage system. At contrast in KMA's hotspots are found around rivers and especially the encroachment into the natural wetland as the main type of flooding. Additionally, blocked drains due to improper waste management such as in Accra is observed as well. In Bolgatanga region, a more rural dominated area, riverine flooding is also dominating in addition to flood risk caused by spillage of the Bagre dam in Burkina Faso. Relating these flooding patterns with the qualitative system models developed in each region, we see that lives and livelihoods are affected in every region and that physical and mental health issues are also present. Same is true for infrastructure (transportation, communication, community services, education). In Bolgatanga the degradation of farmland presents an additional threat. We can also see a cause pattern repeating in the different regions: inadequate structural measures, poor law enforcement and uncontrolled urban/rural planning. It became also clear that positive feedback loops affecting ecosystem health accelerate and aggravate flood risk. Even though the causes and impacts are very similar the focus on adaptation measures especially when comparing the metropolitan areas with the more rural northern area is quite different. In Bolgatanga focus lies on farming and adaptation of farming to conserve natural ecosystem function but also to adapt to the impacts of climate change. All have in common that non-structural measures are the most prominent measures which need implementation and enforcement and only with these, structural measures will gain full efficiency.

One major outcome of the workshop series is definitely that participatory approaches in flood disaster risk management are a necessity to understand the complex human-water interactions and to adequately develop measures reducing the risk for the most vulnerable groups. Furthermore, it needs collaboration of many sectors to avoid unintended consequences.