Context
Roads have a major impact on surface hydrology, drainage and flooding. Roads can interrupt drainage flows and the connectivity of khals (water ways inside polders), accentuating drainage problems in polders of Coastal Bangladesh. If well designed and provided with adequately sited and sized water-crossings, roads can also be used for effective polder water management and improved drainage conditions, as well as for flood protection and shelter. With 40000 km of internal polder roads and 4500 km embankment roads, the opportunity to improve polder water management and flood resilience through roads is huge.

Purpose
This innovative study explored ways, both technical and governance, to improve the role of (embankment) roads for polder water management and flood protection, directly contributing to component 2 “Water Resources Management” of the Blue Gold Program focusing on Internal Water Management.

Description
MetaMeta and the Bangladesh University of Engineering and Technology (BUET) carried out a comprehensive assessment of the impact of both embankment roads and internal polder roads on water management and drainage in Polders 26 and 43-2F. Impacts on local livelihoods have been quantified and practical solutions have been identified and ranked jointly with key actors (BWDB, BG, LGED, UP, WMAs, WMGs).
Main outcomes

- Testing of a comprehensive assessment method for the analysis of (embankment) road-water issues
- Identification of several infrastructural improvements and best practices
- Siting and dimensioning of priority culverts, based on hydrological modelling
- Engagement of key players (BWDB, LGED, BG, WB, ADB, UPs, WMG/WMA) through workshops and meetings to start crystallizing consensus and cooperation around roads for polder water management and flood protection

Lessons learnt

Several infrastructural improvements need to happen:
- Improve the siting and size of road-water crossings
- Provide simple metal gates at road-water crossings in specific locations to retain and control water in higher elevated lands for irrigation
- Improve the quality of (embankment) roads and carpeting
- Improve the design of pipe inlets and outlets along embankments to reduce erosion problems
- Improve the shelter function of (embankment) roads

In addition, quality check on contractors is challenging and needs to be guaranteed if infrastructures are to be sustainable and effective. Improved coordination between BWDB and LGED appears to be key to improve both road and water infrastructure development and management.

Upscaling potential and business model

Three steps are suggested to outscale roads for polder water management:
1. Joint development of Guidelines on Roads for Polder Water Management and Flood Protection
2. Coaching and learning activities
3. Implementation of few selected infrastructural improvements

MetaMeta is currently also working on roads for water in two other areas – Polder 32 under the Coastal Embankment Improvement Project of the WB and Khajuria Project of LGED and funded by the ADB - and could thus contribute with more insight coming from this work.

There is growing interest in the concept of roads for polder water management and flood protection and potential uptake by governmental agencies and donors (BWDB, LGED, WB/CEIP, and ADB).