

POLDERS OF THE FUTURE

“ Construction of regulator gates using fibre reinforced polymer is essential for climate-proofing polder drainage management

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Strengthening polder drainage against climate impact

i Context and problem
Polders were constructed to protect low-lying coastal areas of Bangladesh from tidal flooding and salinity. But climate change affects the efficacy of the polder drainage system, leading to an increase in inundated area.

📄 Researching this question
Based on field survey and data collection, besides simulation of models and scenarios, a modification in the polder regulator design and material have been suggested to ensure that the polders are not affected by climate change.

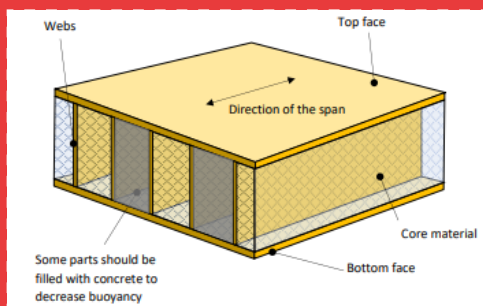
💬 How can the efficient functioning of polder drains be ensured even as a changing climate impacts them?

💡 In coastal Bangladesh polders were built to prevent low lying areas from tidal flooding and saline water intrusion, and improve farming. As climate change impacts drainage, the polder gate design and material need to be modified for efficient functioning of polders.

CLIMATE-PROOFING POLDERS IN COASTAL BANGLADESH

1. Field and scenario studies

Existing polders were studied through field survey and data collection. Using mathematical simulation modelling and scenario studies for different hydrological and climatic conditions, climate-proof polder drainage systems were designed.



Design principle with sandwich panel

2. Modification of gates

Presently the polder regulator gate height is 1.8m, and is made of mild steel (MS). Using fiber reinforced polymer (FRP) instead of mild steel will allow for an increase in the gate opening as FRP weighs lighter than MS and does not corrode easily. FRP gate also lends itself well to design modifications.

3. Improved drainage

In Polder 40/1, present inundation of 31% increases to nearly 53% in 2050, as per a scenario study. With an FRP gate, the height can be increased to 2.2m, and then the inundation would only be 38% in 2050. With dredging of drainage khals, present gravitational drainage system would work well till 2050.

🎯 Towards better polder management
Besides changing gate height and material and monitoring the performance, polder management needs to be improved through rules for operating the gates, switching from manual to electric operation, and installing pump drainage systems.

✉ For more information contact Shaikh Nahiduzzaman at snn@iwmbd.org

📣 KEY MESSAGE

To climate proof polders, design and material of polder drainage regulator gates need to be modified.

🌐 www.jcpbd.nl