# Opportunities and Challenges of implementing Ecosystem Based Adaptation in Coastal Bangladesh

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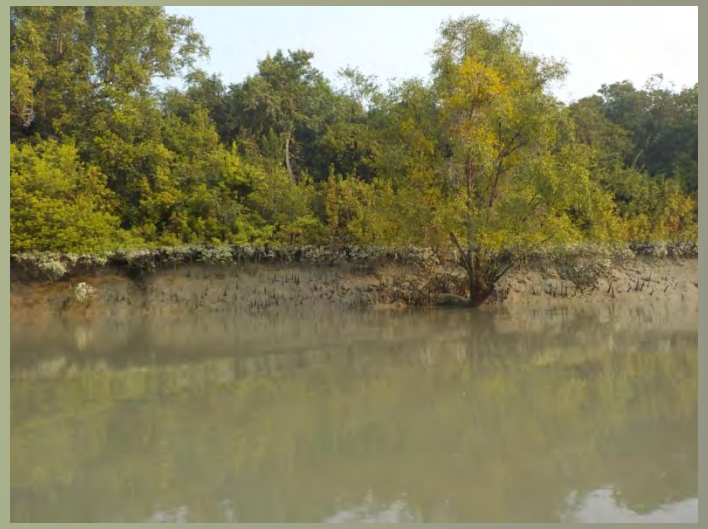
**Bangladesh is considered as one of the most vulnerable to climate change due to:**

- flat and low lying topography
- funnel shaped coastline challenged by its high population density;
- high level of poverty and reliance of various livelihoods on climate sensitive sectors including agriculture, fisheries and water resources.



***Coastal Vulnerabilities in Bangladesh***

Massive salinity intrusion, river erosion, increasingly frequent extreme weather events.
Mangrove deforestation and shrimp farming

# Successful stories and narratives around …
# ***Adaptation, Resilience, Innovation – all over Bangladesh***

*"The government and the people of Bangladesh have been proactive in developing the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) and then setting up the Bangladesh Climate Change Trust Fund (BCCTF) in 2009 with our own money to implement it"*

- Rainwater harvesting after the two major storms Sidr (2007) and Aila (2009).
- Several water filtering technologies e.g. sand filter ponds
- Floating gardens and diversified, water storage in crop fields, homestead gardening and incorporating the Triple F Model (simultaneous food, forestry and fish production )

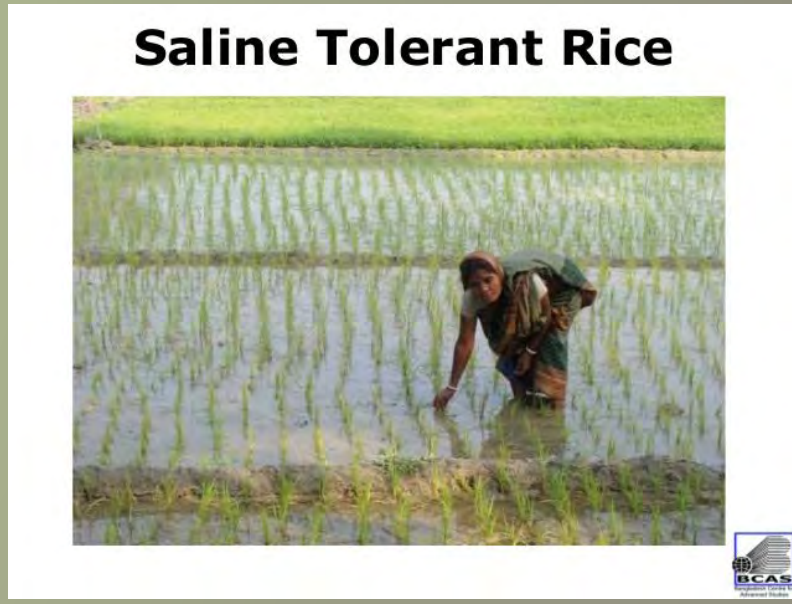
Photo credit: Practical Action

*Despite successful implementation of community based adaptation as well as ecosystem based adaption (EbA) at grass root level, not implemented at national level*

*Paucity of evidence to measure the benefits and co-benefits of Eba and incorporating it in policy.*

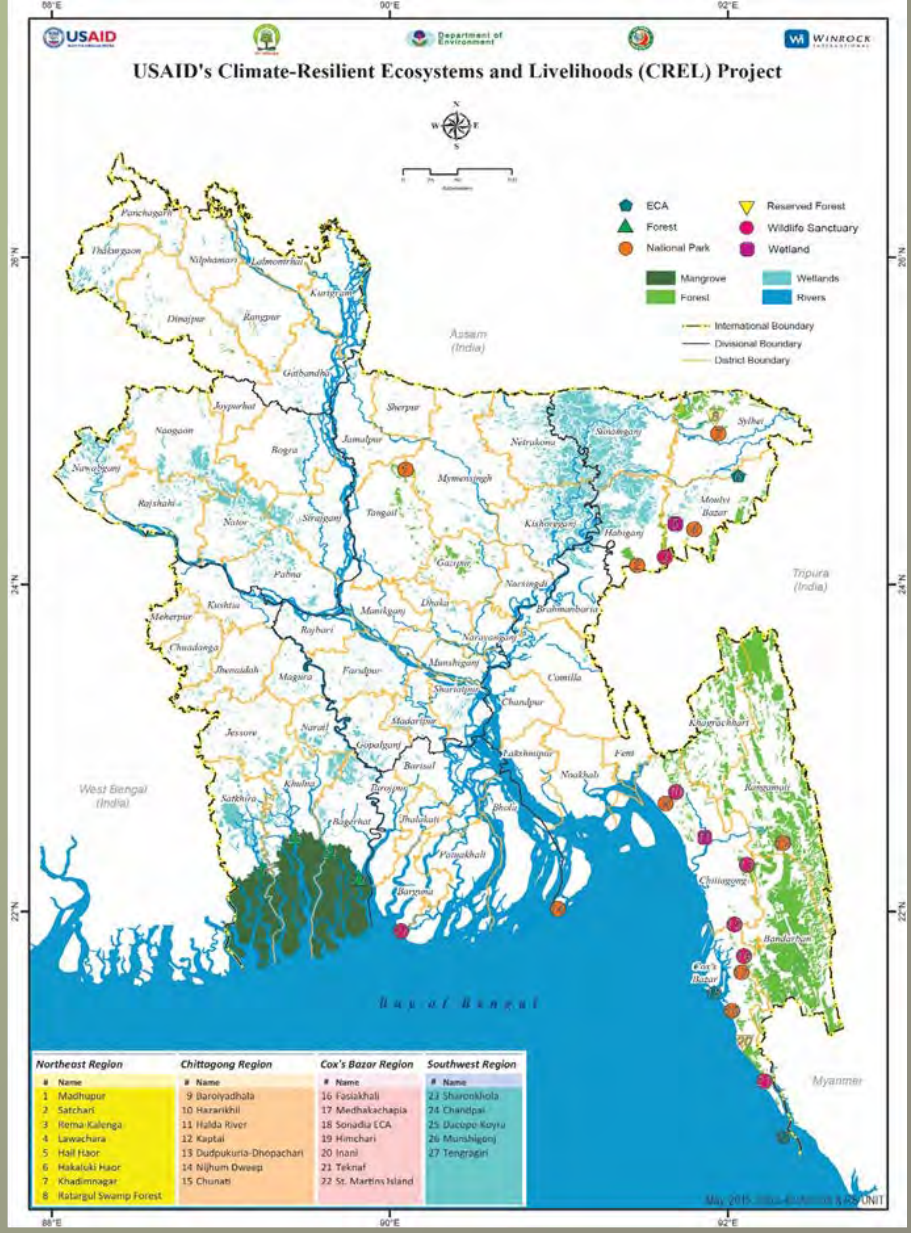
- Are they transformative to long term sustainability?
- Can these be scaled up?

*"There are a lot of good (and not so good) case studies around — a lot of knowledge about how poor communities are coping with climate impacts such as drought or sea level rise. A burning issue is how to build up from these individual stories and roll activities out on a wider level." – Dr Hannah Reid, IIED*




**Climate Resilient Ecosystem and livelihoods USAID Project**
**5 years**
**$35.5 million project (October 2012 through September 2017)**

- Technical Assistance and Training so can collaboratively manage (co-manage) biologically significant ecosystems
- create viable, diversified livelihoods for rural poor individuals, especially women
- builds the capacity of government agencies and community organizations to plan and implement activities that support sustainable, climate-resilient ecosystems
- inter-ministerial process of policy development intended to strengthen the legal and policy structure

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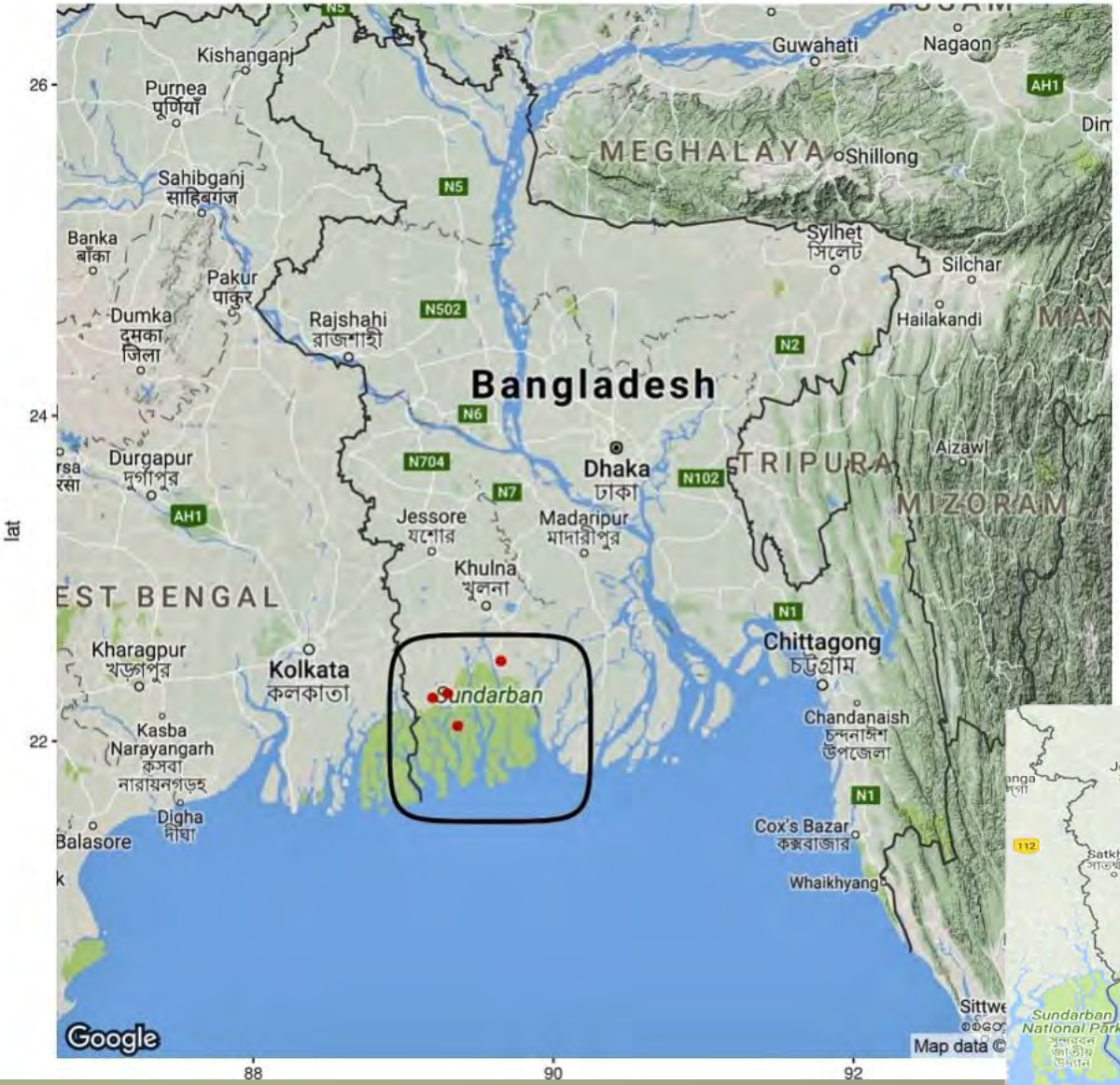
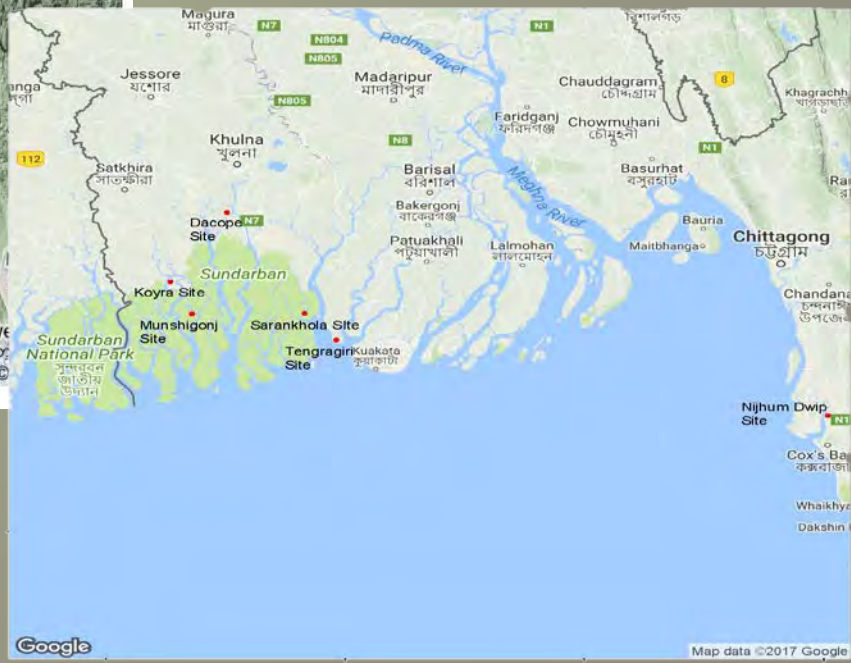
## Field study Objectives

- November 2017 – January 2018
- 4 CREL coastal sites, 2 non CREL sites
- 12 FGDs with CREL beneficiaries – 200 individuals, 200 interviews with non CREL beneficiaries



- Focusing on the benefits people get through training provided by CREL
- The impact of climate change and its vulnerability in that study area
- People's perceptions on natural resource managements along with their behaviors
- Approaches to ecosystem based adaptation focusing on aquaculture and agriculture.

**The impact of climate change**

*"I'm 35 now, but I did not see any salinity problem till I was 8-10 years old. But now with time I am encountering the harsh image of salinity causing problem in making it difficult to grow crops or farm fishes. Fish die in the saline water and the plants don't bloom."*

*"Migration: Due to the very drastic change in climate in Mongla upazilla villagers are becoming unemployed. As a result, a substantial number of village people are maneuvering to places like Dhaka, Chittagang, Barisal and Faridpur with a hope to earn money and support their family financially."*

**Confusion and skeptical about causes of river erosion and salinity**

Many mentioned that the salinity was there before from shrimp farming

" Nadi Bhangon" River erosion was also always there

**Natural Resource Management**

*"Benefits they gain from Sundarban: Oxygen from trees, Golpata, honey, crabs, fish, honey, wood, deer meat", "These trees help to buffer cyclones and other natural disasters and helps us survive"*

*"Before we were dependent on forest because we did not have enough knowledge about the importance of trees for us. We did not have any source of income so we used to cut trees to sell the woods in the market. But now that we are aware of our mother nature, we try our best to preserve it".*

**Crab cultivation and selling:** *"Once we used to enter in Sundarban illegally. After CREL came, we learned about having ID card and getting permission legally from government. We collect crab from Sundarban and some villagers also cultivate the crabs caught from Sundarban in their own land but the number is not very high. Monthly we can sell crabs 700-1000 taka per Kg".*

**Livelihoods training – Poultry rearing, agriculture and aquaculture**

- *"In the Poultry training of CREL we know what kind of foods will make the chickens and ducks healthy and protect them from dying. Through training we now know what percentage to dry straw has to be mixed with and how to prepare ideal food for the poultries." - North Bazigor village and North Kainmari village, Mongla*

- ***Training on Aquaculture -***

➢ *Because of CREL we have learned how to cultivate fish and vegetables together in the same land*

➢ *When to feed fish, what to feed*

➢ *Making a pond*

Shrimp fry collection from the wild

Mud crab fattening

Golda shrimp farming

Common near Khulna and Mongla: Fish ponds with prawn and Tilapia.

## Chandpai site

## Koyra site

**Challenges and feedback**

- Grey line between adaptation and development
- To the respondents the biggest challenge is the scarcity of sources of **pure drinking water.**
- **Selection of attendees:** Biased selection process for receiving the training
- Females trained, males still fishing illegally
- No market integration

## Addressing challenges round sustainable livelihoods in changing climate

- ***Need for Monitoring and Evaluation embedded into the time span of the project - allow the ability to innovate and adapt.. Long term monitoring also key***

- ***Better collaboration (not just between government, NGOs and communities….but within NGOs, Universities and other stakeholders***

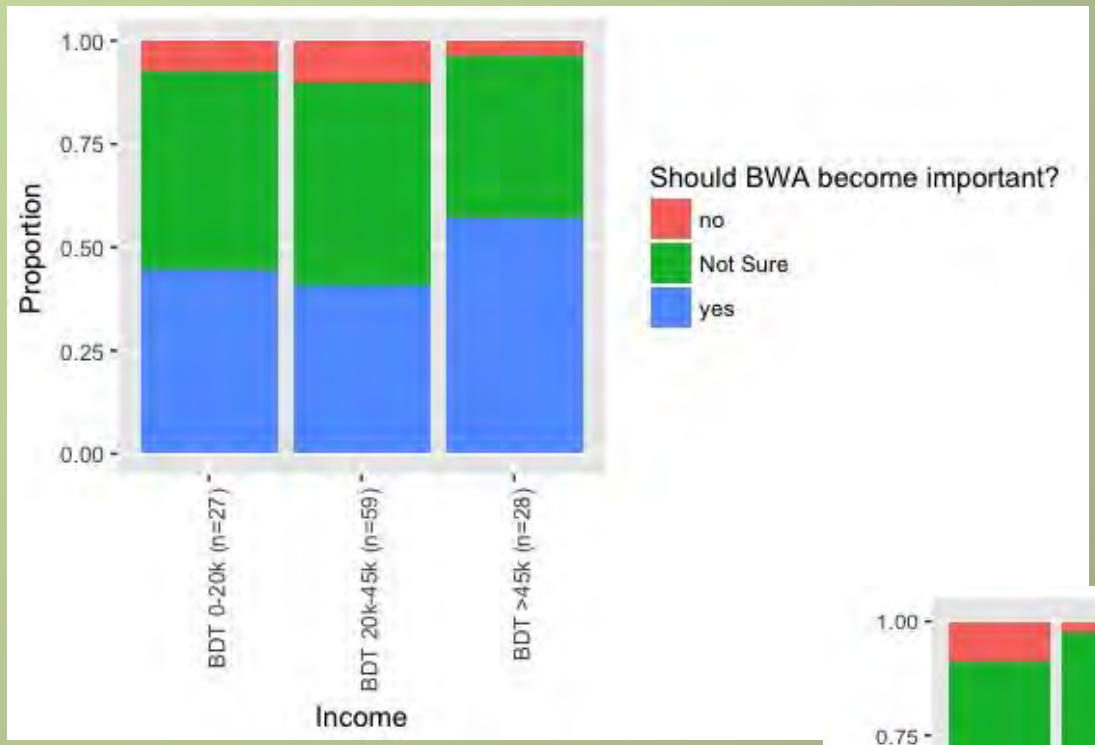
- ***Involvement of the private sector, market linkages and financial inclusion***

- ***Address power struggles and land conflict issues in rural coastal regions - Social and governance biases***

**In addition to interviewing CREL beneficiaries, we interviewed 200 non CREL people**

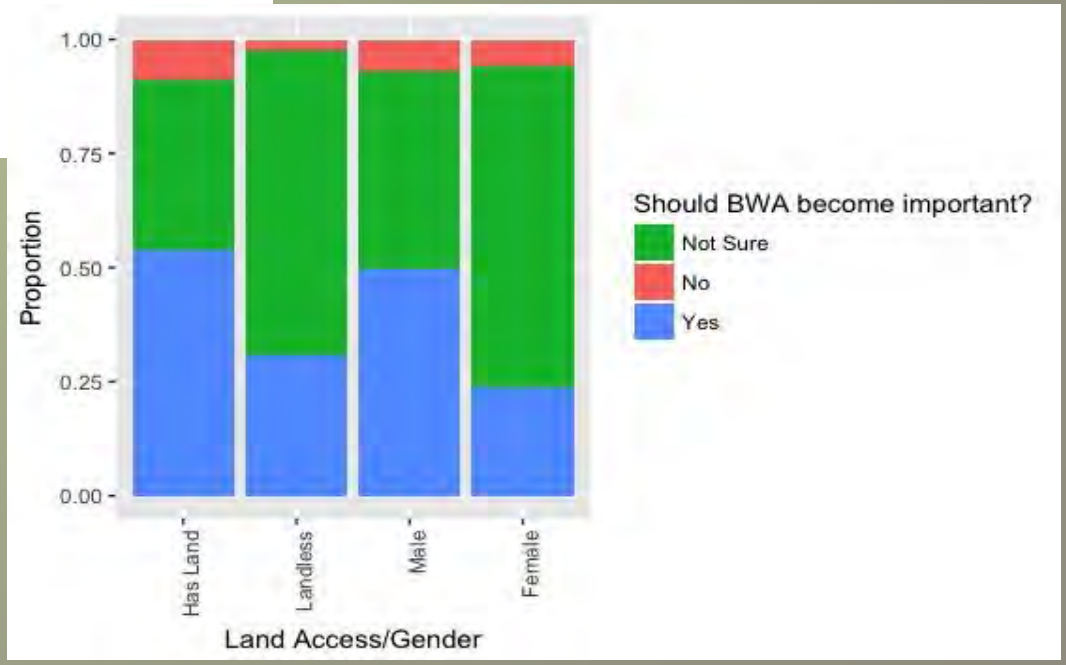
- Exploratory Study on Integrated Aquaculture as a sustainable livelihood and adaptive to climate change impacts as part of collaboration with **Leibniz Centre for Marine Tropical Research, Germany**

- What kind of integrated, or other aquaculture is being undertaken in brackish/saline/coastal waters?
- Do poor coastal residents see these as a sustainable or viable livelihood?
- What are the opportunities and barriers for making BWA a possible and promising livelihood?
- What other livelihood options (or other solutions) are seen as needed by local people in the context of progressively more saline and wet coastal environment in Bangladesh?

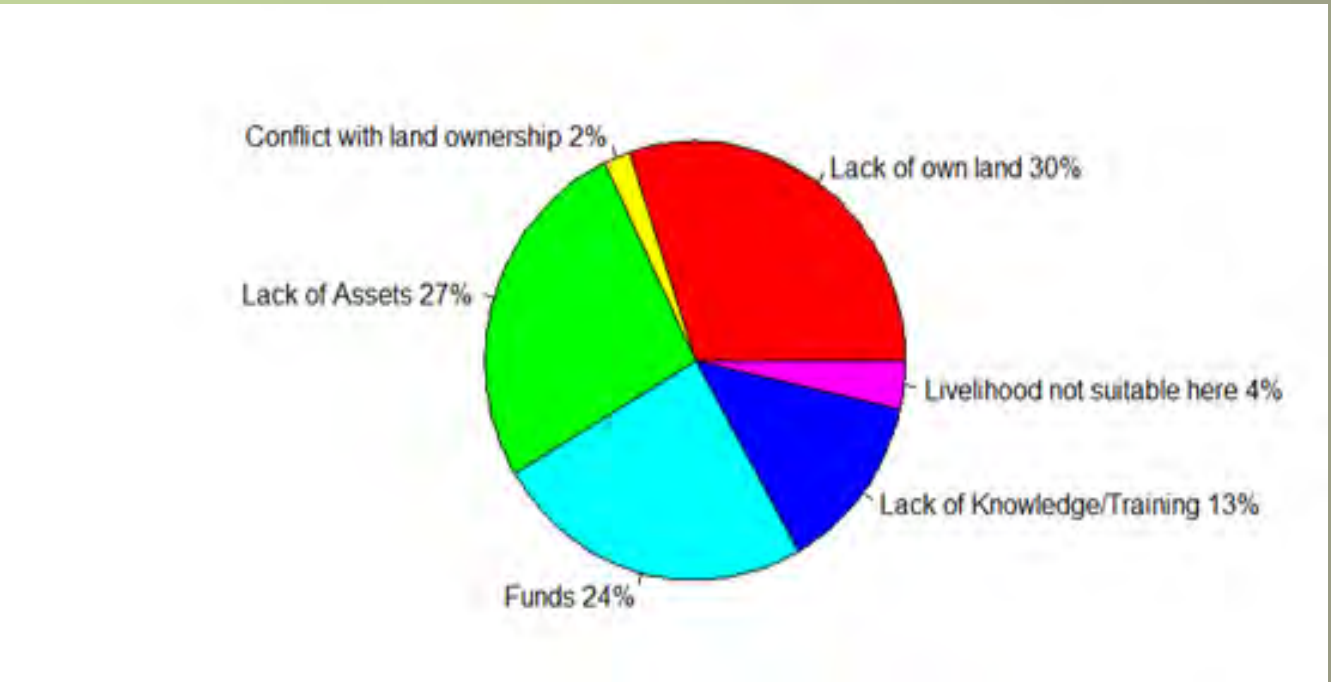



BWA = Brackish Water Aquaculture

Interest in brackish water aquaculture (BWA) among case study site residents by self-reported annual household income




Interest in brackish water aquaculture (BWA) by land ownership category and gender




**Barriers to BWA as a sustainable livelihood with increasing salinity**

*What other livelihood options (or other solutions) are seen as needed by local people in the context of progressively more saline and wet coastal environment in Bangladesh*?

26% said more education and information on environmental change and climate change impacts was needed.

13 % mentioned better infrastructure (roads, electricity)

15 % mentioned funding and 8 % mentioned access to land and safe drinking water as preconditions for successful overall change.

# Key Lessons and Recommendations:

***Addressing social and political issues e.g. land rights, power struggle, weak local governance***

***Focusing on transformation to sustainability, and enabling innovation in design and adaptation mechanisms***

***Social energy for collaborative ecosystem-based aquaculture development with the poor***

**Thank you for listening!**

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