

# Examples of Adaptation in the Indian Bengal Delta, GBM, India



**Embankment Construction**



**Cultivation of Salt Tolerant Paddy Varieties**



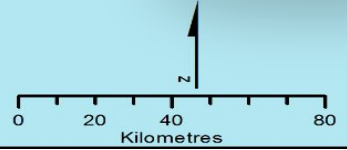
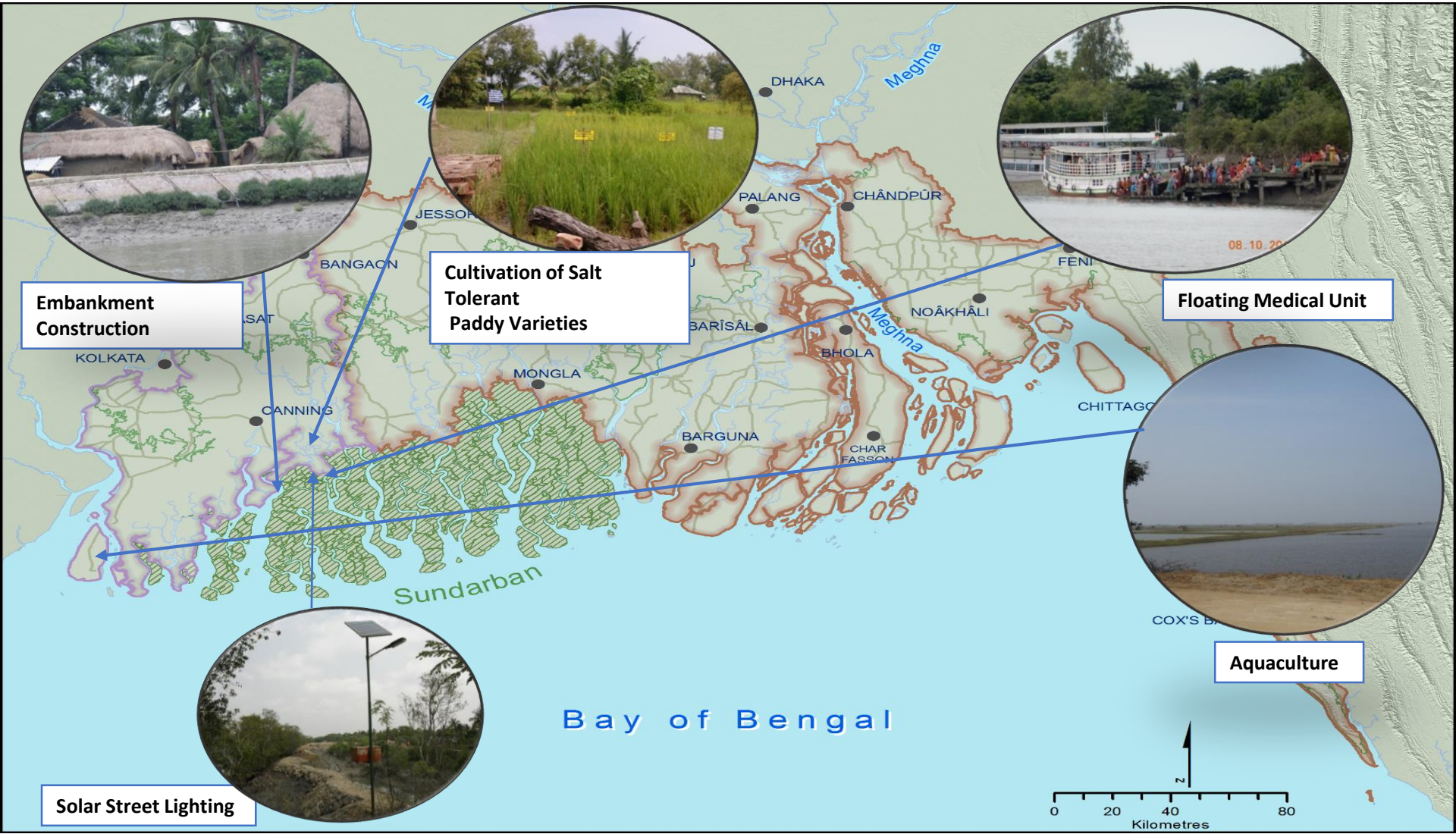
**Floating Medical Unit**



**Aquaculture**



**Solar Street Lighting**



# Cultivation of Salt Tolerant Paddy

The Indian Bengal Delta (IBD) faces soil-salinisation due to inundation and to sustain agriculture which is the mainstay of the population, this adaptation practice has reintroduced five varieties of Salt Tolerant Paddy, namely, *Nona-bokra*, *Talmugur*, *Lal Getu*, *Sada Getu* & *Hamilton*, to maximise yields. These varieties were known in IBD around 80 – 100 years back but largely lost due to Green Revolution. , Selection of worst affected areas by the local communities, followed by soil testing to determine the level of salinity was the first step. In the second step, appropriate seeds were used, depending on the level of salinity, in the seed beds and then transplanted to the farmers' fields. No chemical fertilizers were used. The activity has been implemented in five Blocks viz. three blocks in South 24 Parganas (Mathurapur I-II, Namkhana, Gosaba), and two blocks (Sandeshkhali I-II, and Hingalgunj) in North 24 parganas.

## For More Information

1. Ghosh Asish K., 2012, Food Security in Indian Sundarbans. Farmers Forum. 12(3):40-44
2. Sundarbans' Salt Tolerant Rice Project A Hit Globally; The Times Of India, October 29, 2013
3. ENDEV to replicate Sundarban's Success in East Midnapore; The Statesman, November 3, 2013
4. Search for Salt Tolerant brings Honour; The Telegraph; November 25, 2013
5. B K Chand, R K Trivedi, S K Dubey and M M Beg (2012) Aquaculture in Changing Climate of Sundarban, West Bengal University of Animal & Fishery Sciences Survey Report on Climate Change Vulnerabilities, Aquaculture Practices & Coping Measures in Sagar and Basanti Blocks of Indian Sundarban
6. A. Kapoor (2011) Engendering The Climate For Change, policies and practices for gender-just adaptation, Alternative Futures Development Research and Communication Group
7. S. Hazra, B. Samanta, S. Das (2014) Micro Level Vulnerability Assessment of Kusumtala Mouza, Mousuni Island (south 24 Parganas) in Sundarban region of West Bengal, School of Oceanographic Studies, Jadavpur University

# Construction of Embankment

The sea-level in certain areas of IBD is higher than the land elevation which poses a risk of inundation of the lands. The communities of these areas protect their agricultural lands and their homes by building and maintaining dams and levees (raised embankments) that need regular maintenance. Efforts are being made to ensure reconstruction of 1300 km breached embankments on the islands of IBD , with support from the Grants of Central Government. This initiative is being carried out by the Project Management Unit of West Bengal Irrigation and Waterways Department (WBIWD- PMU) () under Government of West Bengal. Construction of better embankments in wider land areas can prevent coastal flooding, save lives and livelihood and ensure food security. The activity has been implemented mostly in the southern islands and few northern islands of IBD.

## For More Information

1. Livelihoods in Focus: Tidal wave-blocking mangroves save coastal communities in the Sundarbans, India, NEWS, March 2014
2. GoWB, 2014. Report of the comptroller and auditor general of India on general and social sector for the year ended March 2013. Government of West Bengal.

# Community empowerment through Aquaculture

Besides agriculture, fishery is an important livelihood of the residents of IBD. The fish farmers of this region face problems related to salinity intrusion due to climate change. In the islands of Sagar and Basanti, identification and cultivation of both fresh water & brackish water fish species (both Finfish & Shellfish) at different Saline Levels have been done along with raising the height of pond dykes to prevent saline water intrusion & fencing of pond with net. Space utilisation has been maximised by planting vegetables and fruits (salinity tolerant) on the raised pond dykes. This has been done by West Bengal University of Animal & Fishery Sciences (WBUAFS) & Indian Council of Agricultural Research (ICAR) under National Initiative on Climate Resilient Agriculture (NICRA).

For More Information :

1. Development of Climate Resilient Aquaculture Strategies for Sagar and Basanti Blocks of Indian Sundarban under ICAR funded by NICRA
2. B K Chand, R K Trivedi, S K Dubey and M M Beg (2012) Aquaculture in Changing Climate of Sundarban, West Bengal University of Animal & Fishery Sciences Survey Report on Climate Change Vulnerabilities, Aquaculture Practices & Coping Measures in Sagar and Basanti Blocks of Indian Sundarban

# Floating/ Mobile Medical Unit

The people of IBD have limited access to healthcare facilities owing to their remoteness. It used to be a time-taking and risky process to take patients during times of medical emergency to the mainland or the nearest medical centre. With the introduction of Mobile Medical Units by a local NGO Southern Health Improvement Samity (SHIS), the residents have been ensured access to proper medical and health facility in the rural remote villages of Hingalgunj, Hasnabad, Sandeshkhali – I and Sandeshkhali - II in North 24 Parganas and Sagar, Namkhana, Kakdwip, Gosaba and Basanti in South 24 Parganas. The medical services provided include Curative, Reproductive and Child Health, Family Planning, Diagnostics and Specialised facilities and services. Emergency services and care at the time of disasters/epidemic/ public health emergency/ accidents etc. are also provided. This activity also included preparation of IEC Material on health including personal hygiene, proper nutrition, use of tobacco, diseases, PNDT Act etc., RT/STI, HIV/AIDS. Proper access to medical facilities builds the resilience of the community against the future calamities triggered by climate change.

For More information:

SHIS: Mobile Medical Unit (MMU). Southern Health Improvement Samity Annual Report 2012-2013.

<http://www.shisindia.org/website/SHIS-AnnualReport.pdf>

SHIS: Mobile Boat Dispensary. Southern Health Improvement Samity News Letter (2013)

<http://www.shisindia.org/website/newsletter/Shis-NewsletterJune2013.pdf>

# Solar Lighting Systems

An energy deficient region, the IBD has many villages which are deprived of the conventional sources of electricity. Renewable energy in the form of Solar Energy is providing households a supply of electricity for 4-6 hours in the evening daily. West Bengal Renewable Energy Development Agency (WBREDA), a unit of Government of West Bengal is running 21 Renewable Energy Power Plants or Mini Grids in Sagar, Patharpratima, Gosaba, Namkhana, Hingalgang, in the districts of North and South 24 Parganas of IBD. The unit has achieved to provide 100, 000 Solar Home Lighting Systems (SHS) to the rural household, and another 20, 000 SHS through NGO's and Private Sellers, in order to ensure electricity (15kWh per month), to each household. The Programme has been implemented in Gosaba and Sagar Block (South 24 Parganas).

Different NGOs are also working with solar street lighting in the Gosaba Block.

For More Information:

1. Ghosh A., Chaudhuri J. (2012). Living with changing climate: Impact, vulnerability and adaptation challenges in Indian Sundarbans, Centre for Science and Environment, New Delhi
2. <http://www.wbreda.org/solar-energy-programme/>