Community Driven Resilience; Co-Creating an Interactive Land and Water Management Model for Climate Smart Agriculture and Water, Sanitation & Hygiene (WASH) in Vulnerable Landscapes, India

Dr Meena Bilgi,
Specialist (Gender, Natural Resources Management and Livelihoods)
Modal Designed by Praful Bilgi

Kutch Gujarat

India

In the Past

- The first watershed model (3 x 6 feet, fibre-glass) was developed for the arid and semi-arid landscapes of Kutch and similar regions, characterized by low and erratic rainfall, frequent droughts, fragile soils, high runoff, groundwater depletion, salinity ingress, and a range of interconnected hazards.
- Livelihoods depended largely on rain-fed agriculture and livestock, making every drop of rainwater critical.
- At that time, communities viewed natural resources largely within village boundaries and Development organizations implemented sector-specific interventions in isolation.

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- The model was designed to demonstrate the ‘watershed’ as a single interconnected hydrological unit, highlighting the importance of integrated planning & management across the entire landscape to -
  - Strengthen resilience to multiple hazards while enhancing water conservation, groundwater recharge, soil health, agricultural productivity, and ecosystem resilience.

Village-Level Decentralized Natural Resource Planning and Management based on the watershed's landforms and surface features rather than administrative boundaries.

Geo-hydrological Modal

- Building on the watershed approach, a Geo-Hydrological Model was developed following the devastating earthquake in Kutch, India, in 2001.
- It is used for regional-level water harvesting, groundwater recharge, and natural resource planning and action based on the geo-hydrological characteristics of the landscape

Regional Geo-Hydrological Planning for Water Resource Management

Sundarban West Bengal

India

- Sundarbans is a low-lying deltaic, coastal, and multi-hazard landscape.
- Formed by Ganga, Brahmaputra & Meghna river systems, the region is characterized by an intricate network of tidal rivers, creeks, estuaries, islands, mudflats, and mangrove forests
- Communities face recurrent cyclones, storm surges, tidal flooding, salinity ingress, riverbank erosion, water-logging, sea-level rise, and the growing impacts of climate change.

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- Freshwater is limited inspite of abundant rainfall
- Livelihoods depend on agriculture, fisheries, and natural resources.
- These interconnected challenges require an integrated, landscape-based approach to land and water management to strengthen water security, climate resilience, ecosystem restoration, and sustainable livelihoods.

Integrated Land and Water Management Model for the Indian Sundarbans

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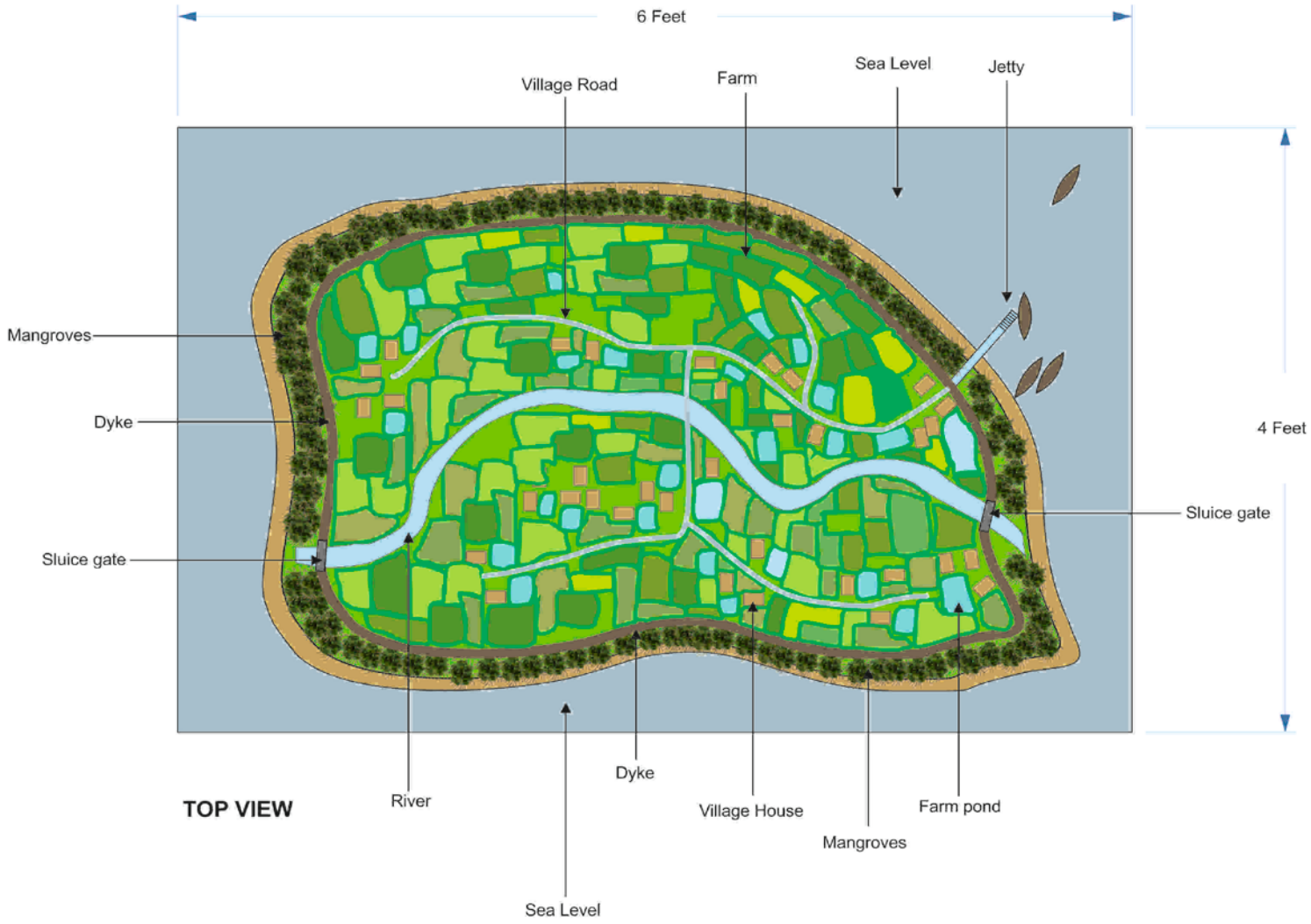
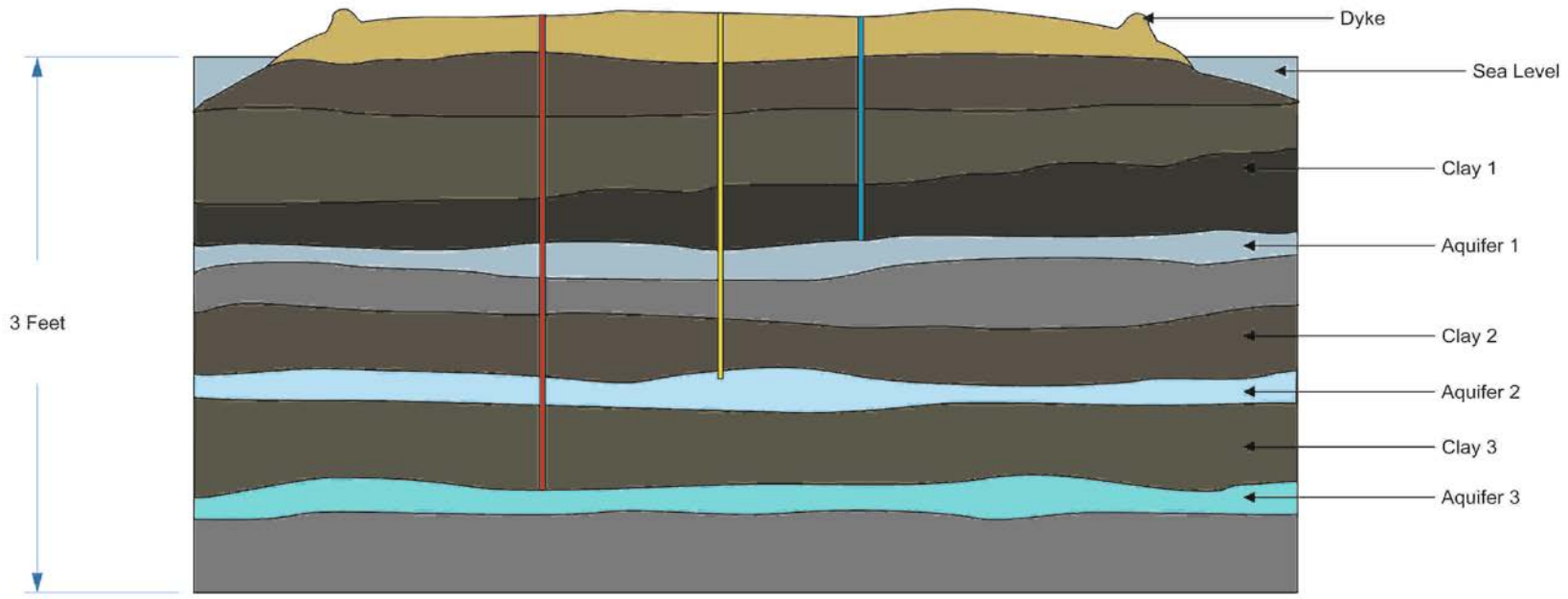

6 Feet
Village Road
Farm
Sea Level
Jetty
Mangroves
Dyke
Sluice gate
4 Feet
Sluice gate
TOP VIEW
River
Dyke
Village House
Mangroves
Farm pond
Sea Level

Continue



CROSS SECTION

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- At micro-levels – the farmers have farm ponds & with the guidance of the NGO, they are doing ridge & farrow
- Through this educational & training tool, they understand the significant role of the “collectives” and “stakeholder’s engagement” for Macro-level planning & action
- More farm ponds
- Dyke or embankment
- Roof top harvesting
- Mangoove protection & increased density
- Sluice gate etc.
- Continue with ridge & farrow etc

Ridge & Farrow