Agriculture on the coasts

National Convention on Coastal Issues, Chennai
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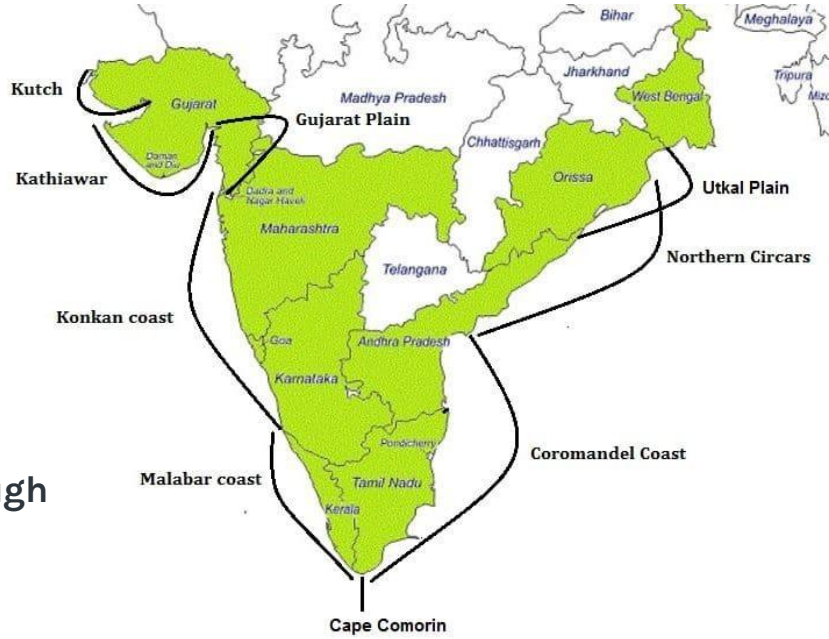
India's Coastlines

Total coastline – aprox 7500 km (including islands).

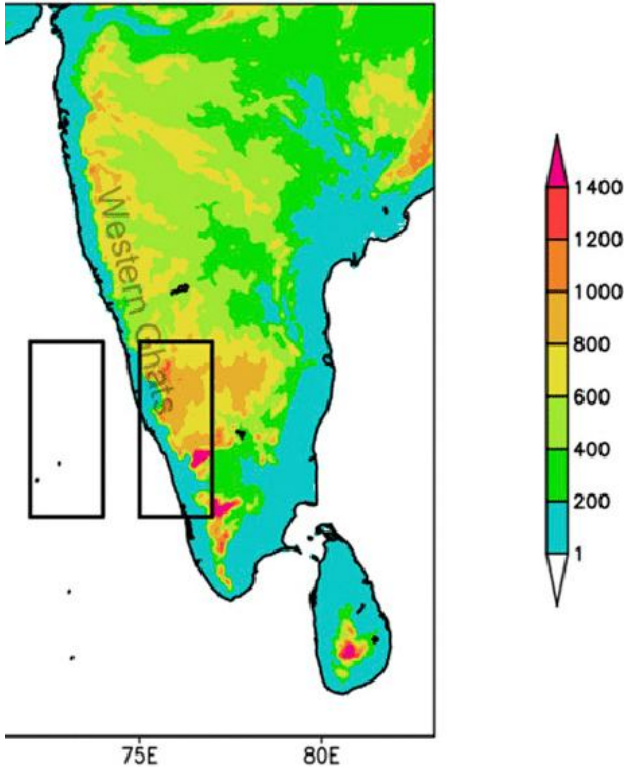
- **Eastern Coastal Plain**
- Land lying between the eastern ghats and the oceanic boundary of India -Stretches from TN to WB.
- Rivers : Slow running due to slope: Mahanadi, Godavari, Kaveri, Krishna.
- Regions: Mahanadi Delta, Southern Andhra plain, Krishna-Godavari delta, Kanyakumari coast and the Coramandal coast etc.
- **Western Coastal Plain**
- A narrow strip of land sandwiched between the Western Ghats and the Arabian Sea
- extends from Gujarat in the north and extends through Maharashtra, Goa, Karnataka, and Kerala.
- rivers are fast-flowing, usually perennial, and empty into estuaries.
- Major rivers - the Tapti, Narmada, Mandovi and Zuari
- the Konkan and the Malabar Coast.



India's Coastlines

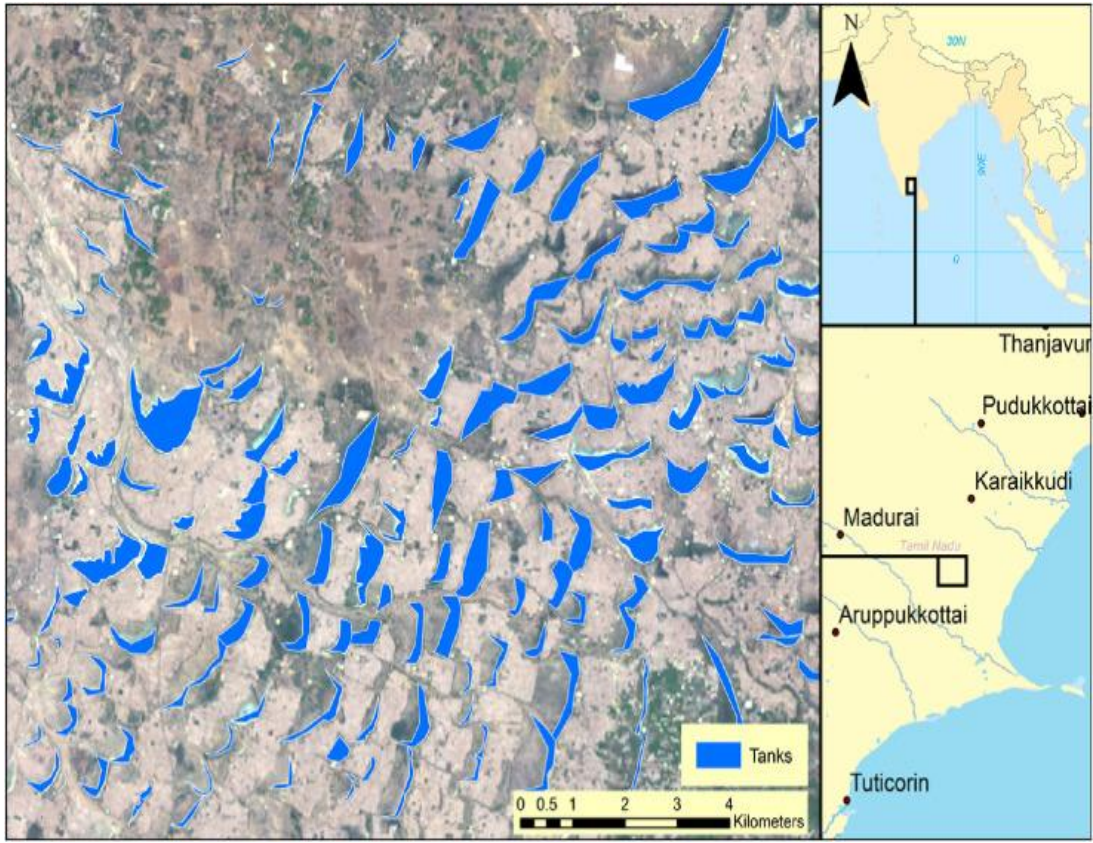
Difference in the nature of east and west coast lines.

- **Eastern Coastal Plain**
- Low slope.
- Spread out drainage, Highly productive-alluvial soils due to sedimentation.
- Peculiar rainfall pattern- low depression based, extreme events quite usual – not related to climate change.
- Need for traditional water harvesting structures- evolved through thousands of years.
- **Western Coastal Plain**
- Narrow strip
- High slope, fast flowing rivers – High run-off, slow productivity in coastal agriculture.
- Well-defined rainfall patterns – May be changing now due to climate change effects.
- Traditional water harvesting differs considerably from east coast.

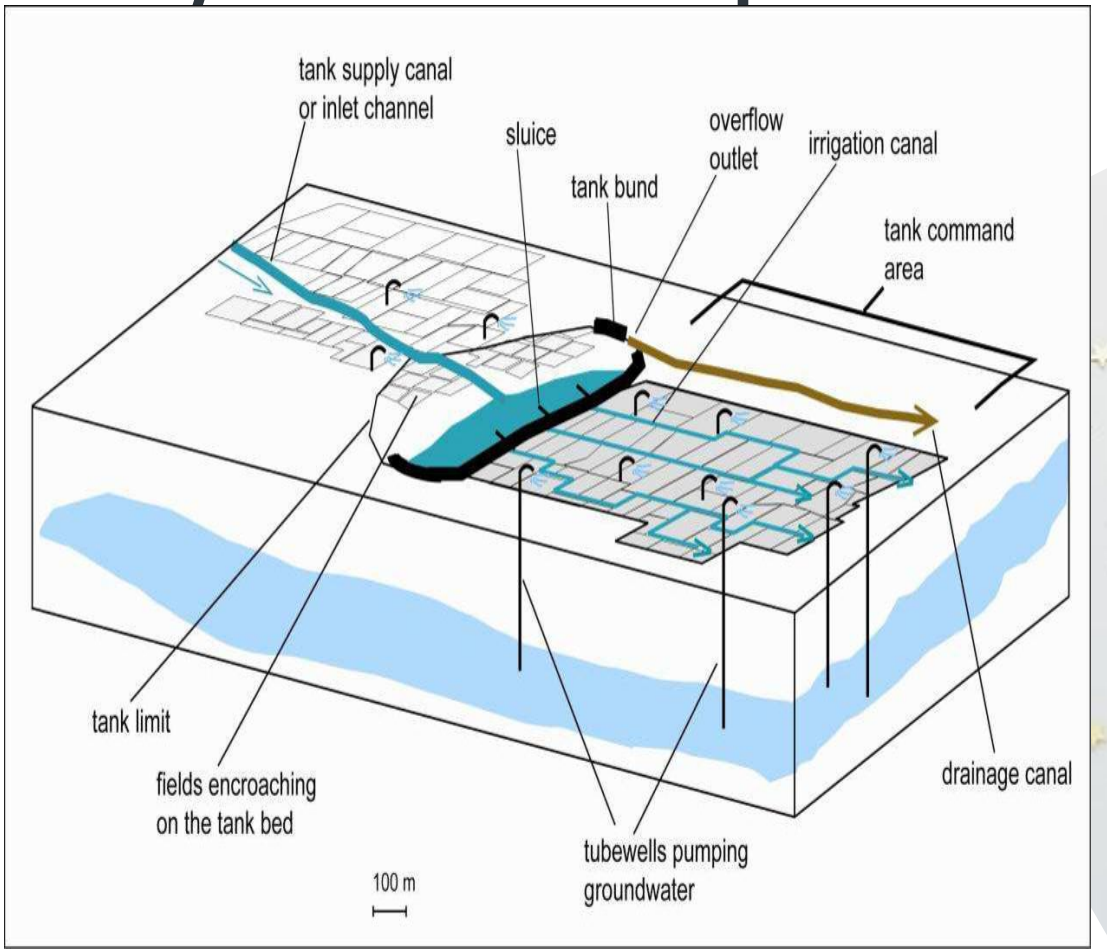


Tanks of East coast

- High density of system-tanks.
- Due to erratic rainfall pattern and high intensity events, need for “catch when it rains”.
- Tanks as flood control systems as well as water harvesting.
- Agriculture as – secondary role.
- Tanks as climate mitigation systems as a proven strategy- reference even in Sangam literature to the design and structure of Eris.
- Agriculture flourished across the coasts due to highly fertile soils and due to availability of water for extended periods.



Tank systems as water spaces



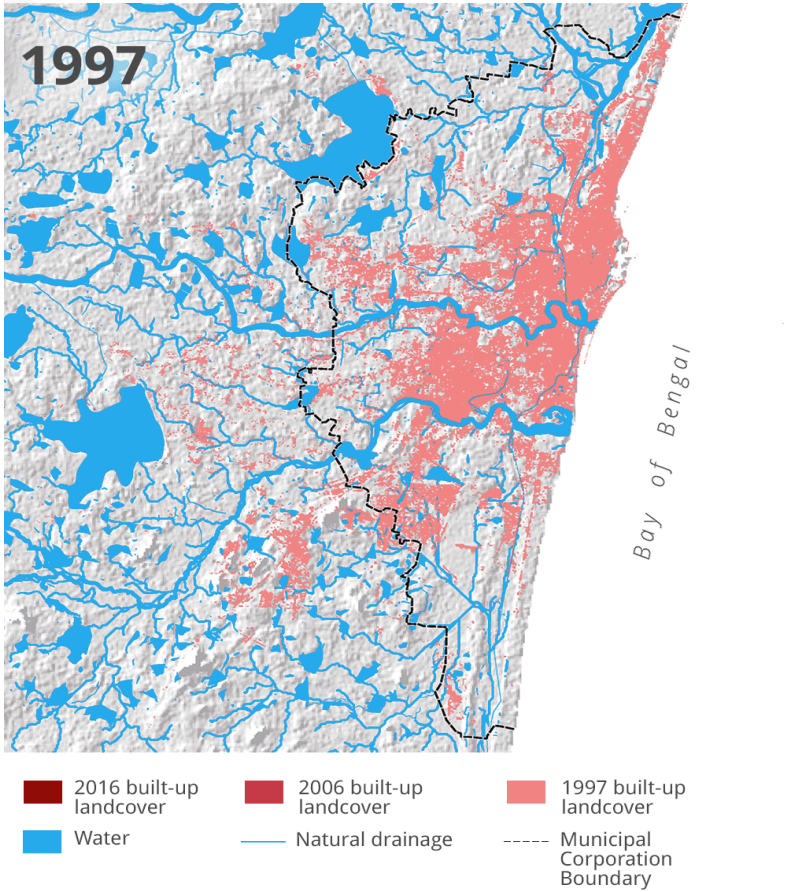
- Tank as Water harvesting and flood control systems
- Problems – Land use changes
  - Agriculture inside tanks – Siltation, Chemicals- High nitrate content – Pollution- Destruction of traditional inland fisheries- Reduced WHC- Flooding- deluge…..

Example of Chennai

Tanks as water spaces

What happens when land-use change ?

Urbanisation has caused encroachment upon Chennai's water bodies, disrupting drainage networks



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Source: CGIAR-CSI SRTM, 2009, CMDA Masterplan 2026, OpenStreetMap Contributors, 2017, India Urban Atlas 2017

Coastal Agriculture

- Base for agriculture? – Good soils, availability of water – alluvial soils -
- East coast: Rivers - tank systems – Ponds – Shallow wells – extended availability of water.
- West coast: Rivers –More distributed rain fall – Ponds.
- What agriculuture:
- East coast – mostly rice/millets with dry periods being covered by pulses (residual moisture)- vegetables.
- West coast – Narrow strips of rice- with uplands having horticulture crops also

- What agriculture does to land-water?

- Crops when irrigated, spreads (function of surface area) and recharges the shallow aquifers (upto 50m) – Keeps saline water pushed away. Thus contrary to the argument that agriculture takes away of lot of water (about 80-85%), most of it is recharged, evaporated and gets into water cycles and the rest is virtual water in the harvest.

- Crop-lands as wet land eco systems – huge role-micro climate, water cycle, eco-system services – flood control (flood resistant crops).

- Livelihoods – agriculture still continue to provide livelihoods – food security- other sectors as well.

Vulnerabilities and time-tested solutions.

- There are huge number of solutions that exist for addressing the coastal vulnerabilities w.r.t to agriculture – More 3000 varieties of rice alone – Need to invest in continuous R&D to create better crop varieties that can withstand floods, salinity, higher temperatures etc.
- Improved highly efficient irrigation systems and nutrient management systems – (not to be confused with high input intensive agriculture- but more in line with low cost, agro-ecological interventions with high degree of knowledge, training and support systems- Better and modern granaries to stop distress sales – value added systems etc.

Need to preserve water spaces –

There can not be a compromise on water spaces- Newer urban and rural designs should emerge – vertical housing to create more water spaces – Re-distributed sewerage water treatment systems to create irrigatable water quality – decentralized SW management systems to augment Soil fertility management systems etc.

New role for existing water spaces like lakes, tanks, ponds etc.
- Need to list all existing water spaces, survey, retrieve them, rehabilitate them and link them to agriculture – wetlands authority – people's initiatives for mapping and creating joint ownership – sustainable fisheries – eco tourism – Home-stays - other options – etc.

Cooperative farming with a well-thought out support system from seed to produce to value additions- Producer to consumer networks- Local food systems linked to local agriculture

– Bring back the honour of agriculture – as well as to make it remunerative -

Thanks…
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