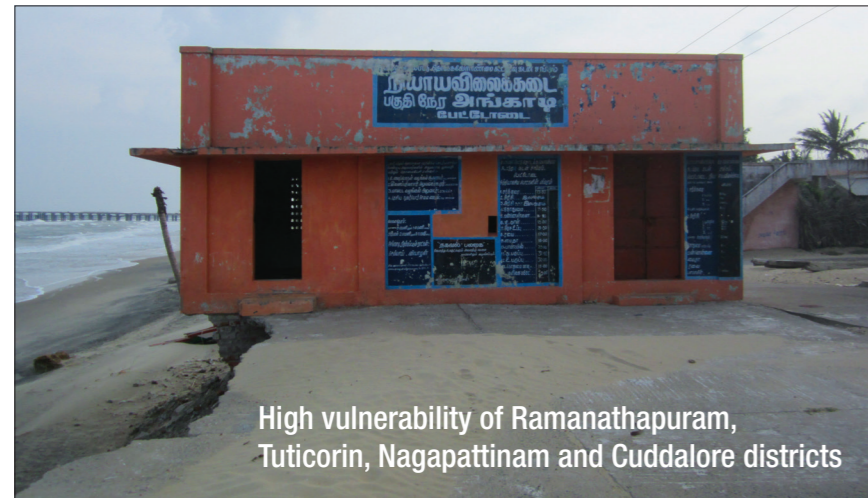


Coastal vulnerability

Coastal vulnerability is on the rise in Tamil Nadu primarily due to -

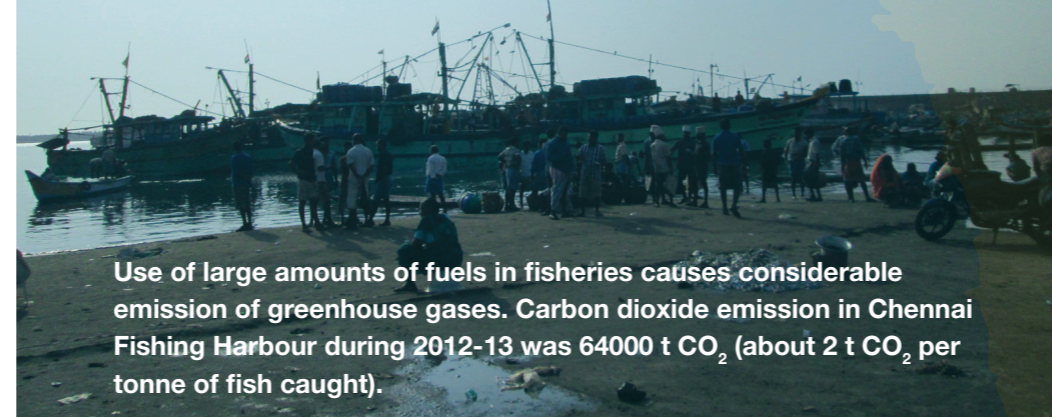
- Low-lying coastal zones
- Intense coastal erosion
- Densely populated coastlands
- Pollutant discharge into sea
- Extreme climate events
- Overfishing



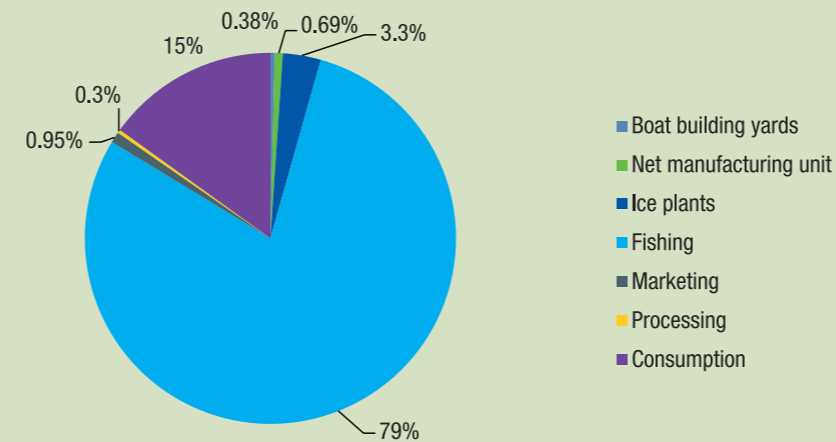
High vulnerability of Ramanathapuram, Tuticorin, Nagapattinam and Cuddalore districts



Carbon footprint



Use of large amounts of fuels in fisheries causes considerable emission of greenhouse gases. Carbon dioxide emission in Chennai Fishing Harbour during 2012-13 was 64000 t CO₂ (about 2 t CO₂ per tonne of fish caught).



Adaptation options

- Proper implementation of existing management measures
- Introducing and mainstreaming climate change into Ecosystem Approach to Fisheries Management (EAFM)
- Addressing small-scale fisheries and gender issues
- Reducing greenhouse gas emission by the fishing sector by following norms
- Raising awareness and preparedness among coastal population

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Marine climate and fisheries scenario of Tamil nadu

Climcard-1



**National Innovations
 on Climate Resilient Agriculture**

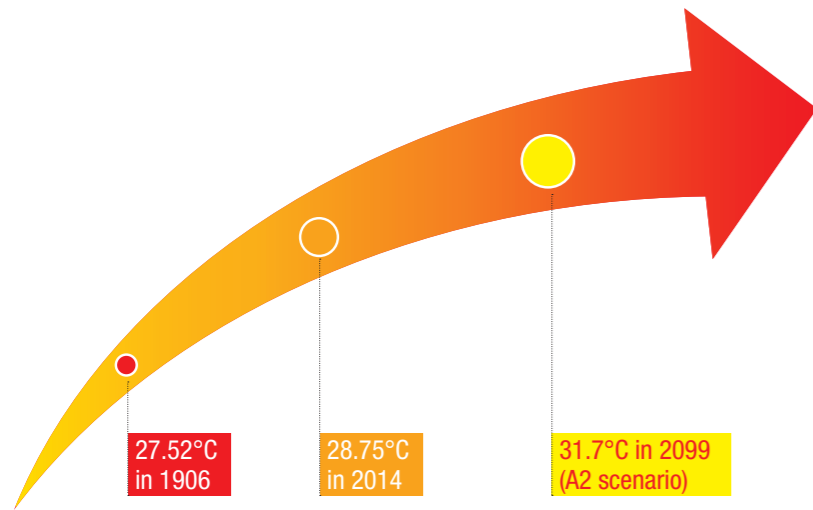


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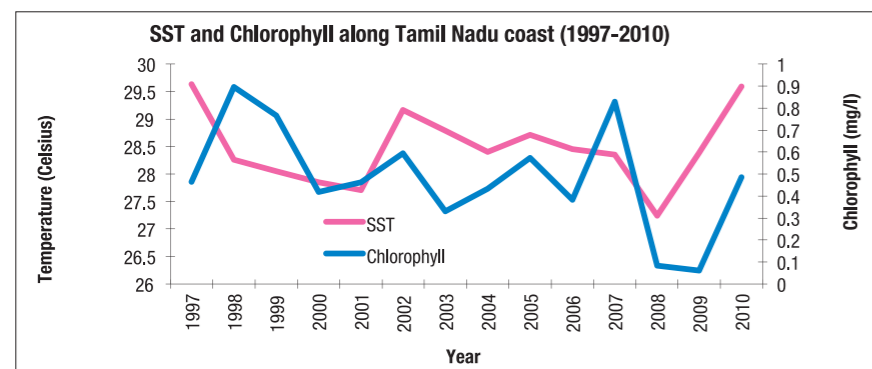
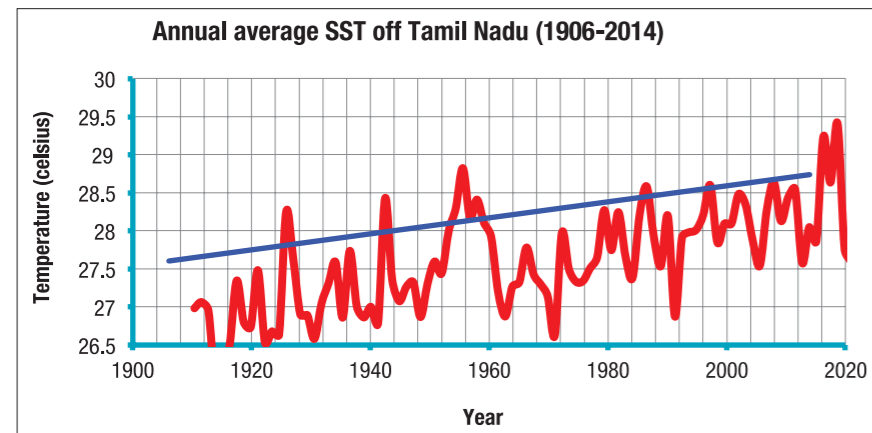


The marine climate

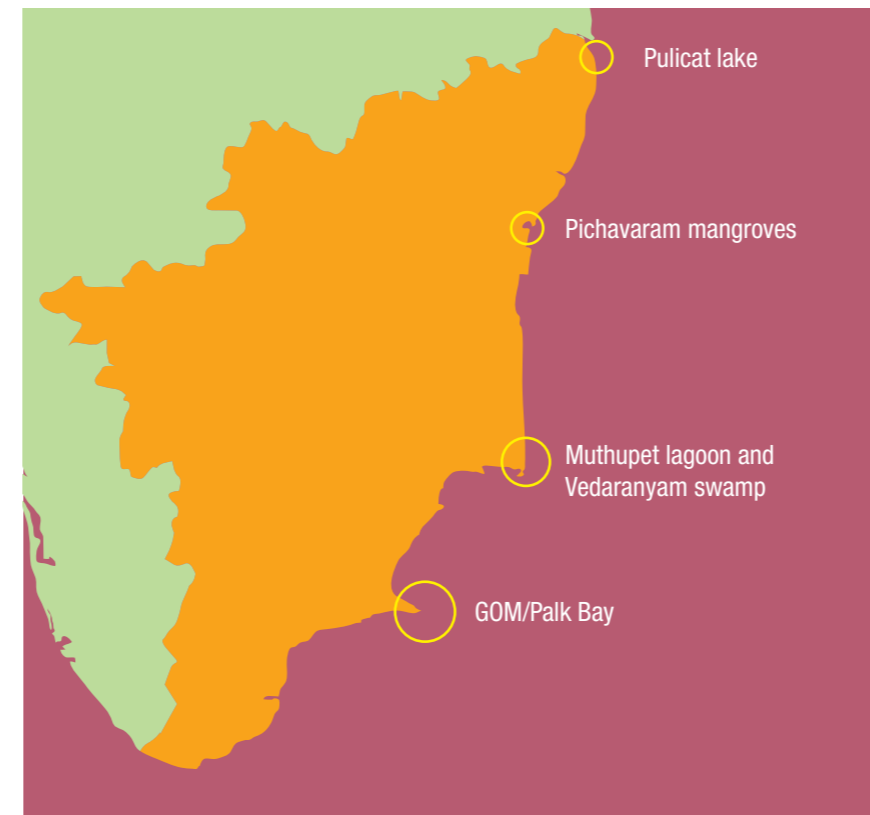
- Among the warmest coastal water stretch in India, with summer maxima >30°C.
- Monsoon pattern differs from rest of India; copious rainfall during north-east monsoon.
- Anomaly in rainfall intensity increasing.
- Coastal areas regularly hit by cyclones and depression during monsoon



There is perceptible rise in SST from 1906 to 2014. Increase in SST is pronounced off Kanyakumari. Rise in temperature affects other ocean parameters like salinity, pH, dissolved oxygen and productivity. Changing marine climate will impact marine ecosystems, biodiversity and marine fishery.



The marine ecosystems



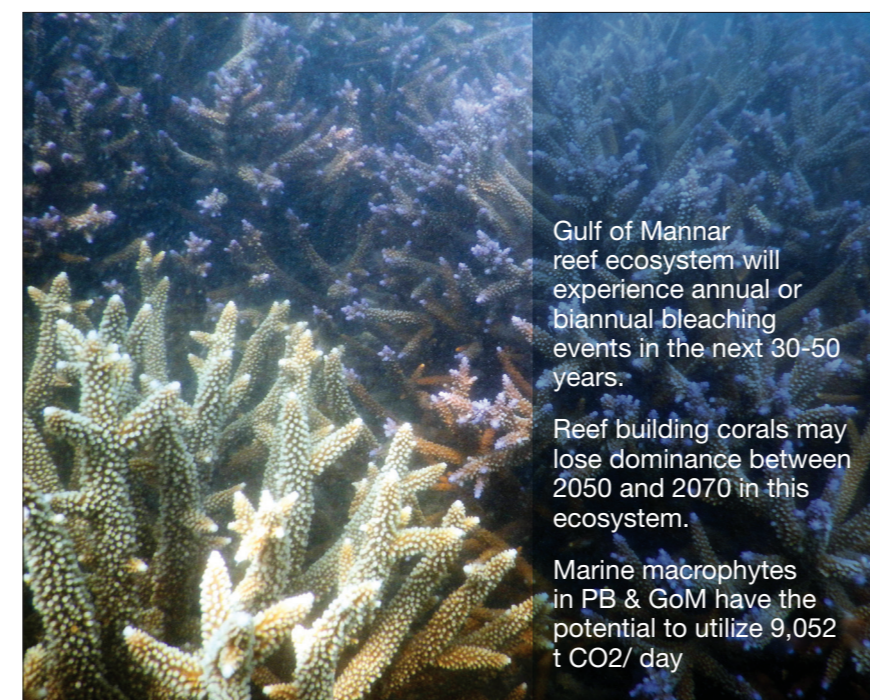
Rich biodiversity.

Exploited fish species:

Coromandel coast: 750, Palk Bay: 462, Gulf of Mannar: 657

Human interferences:

Overexploitation, fishing down food web, pollution, habitat degradation and transboundary issues along Palk Bay are causes for concern.



Gulf of Mannar reef ecosystem will experience annual or biannual bleaching events in the next 30-50 years.

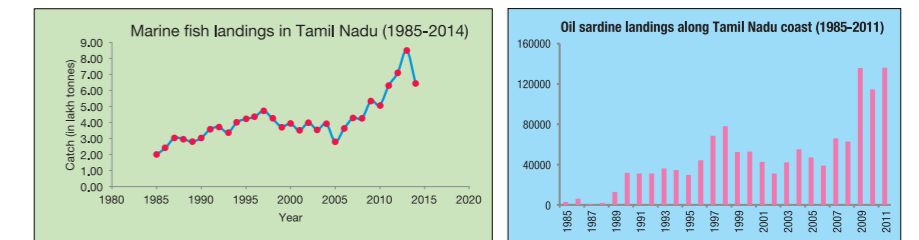
Reef building corals may lose dominance between 2050 and 2070 in this ecosystem.

Marine macrophytes in PB & GoM have the potential to utilize 9,052 t CO₂/ day

The marine fishery

- Ranks second in marine fish production in the country
- Landings in 2014: 6.44 lakh t
- Four fold increase in landings in last 30 years

Changes in environmental conditions influence spatial distribution of marine fishes, and cause phenological changes and changes in fish production.

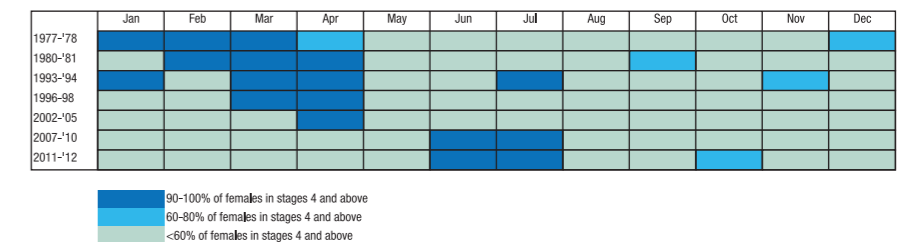


Spurt in oil sardine fishery and increase in catch of mackerel along the Tamil Nadu coast coincides with increasing SST and changing oceanographic conditions.

Phenological changes – shift in spawning season of fishes

Over time the availability of spawning fishes along the north Tamil Nadu coast indicate gradual shift in their spawning seasons.

Indian oil sardine showed a gradual shift from January-March during 1977-'78 to June in 2011-12.



Shift in spawning season of threadfin breams towards cooler months off Chennai: will have changes in months of recruitment

