

Mending the gap

Landscape conservation for the island of Aliabet

Country / City **India / Ahmedabad**
University / School **CEPT University**
Academic year **2018-2019**
Title of the project **Mending the gap - Landscape Conservation for the island of Aliabet**
Authors **Shreeni Benjamin**



TECHNICAL DOSSIER

Title of the project ***Mending the gap - Landscape Conservation for the island of Aliabet***
Authors ***Shreeni Benjamin***
Title of the course ***Landscape Design Studio 4 - Thesis***
Academic year ***2018-2019***
Teaching Staff ***Prof. Dr. Deepa Maheshwari***
Department/Section/Program of belonging ***Master in Landscape Architecture***
University/School ***CEPT University***



Written statement, short description of the project in English, no more than 250 words

Coastal management is one of the most indeterminate parts of urban planning for a resilient future. Ignoring minor miscalculation can result in to devastating consequences. The overlooked social cost of the Sardar Sarovar Dam (Gross reservoir capacity of 0.95 M.ha.m) has left the island of Aliabet from an ecologically rich & diverse habitat of the bountiful wetland fauna to become a saline wasteland. Aliabet from the estuary of the river Narmada is infamous for getting easily submerged during the High-high tides (6m) & the seasonal floods. Presently this island has formed connections with the mainland due to the depositions of the sea-sediments. The construction of the Dam has lowered the river's velocity to wash the island during ebb. The absence of this vital process required for the formation of the brackish water has further declined the growth of the local grass "Aal" & the mangroves. The proposal is to reinstate the lost ecology essential in making Aliabet habitable again. The strategy involves strengthening of the coastal edge using the polyhaline mangrove species to nurture lost biodiversity and filter sediments at both the ends. Secondly by making the earthen dams at strategic location to conserve water of different salinity promoting growth of diverse vegetations & biodiversity. The last step of the proposal is to encourage the native animal-herding community to cultivate fodder for their livestock (approx. 800 camels and 1700 buffaloes), this gives the community a sense of ownership and responsibility towards the nourishment of the island of Aliabet.

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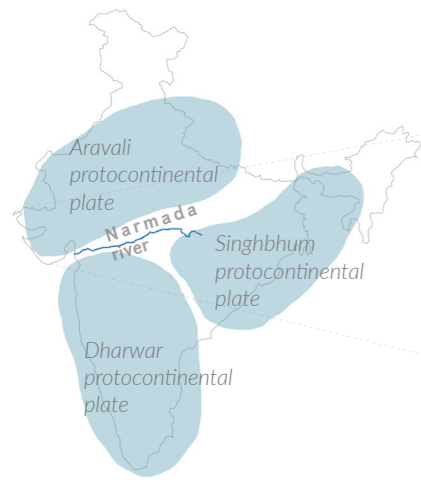
CLIMATE CHANGE AGAIN

11th International Biennial Landscape Barcelona

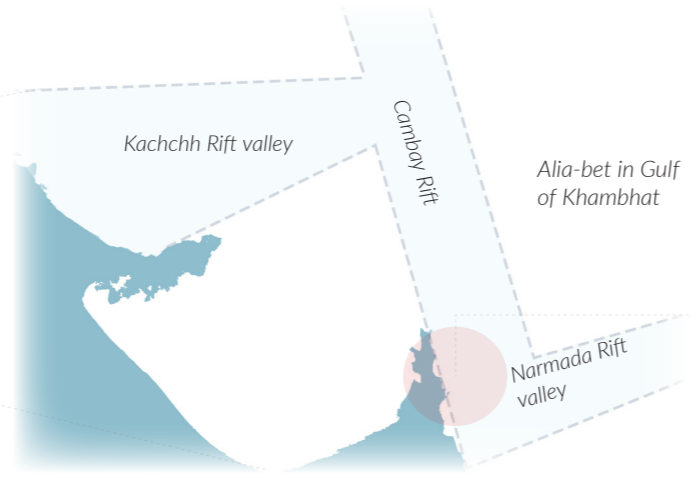
Barcelona September 2020
SCHOOL PRIZE



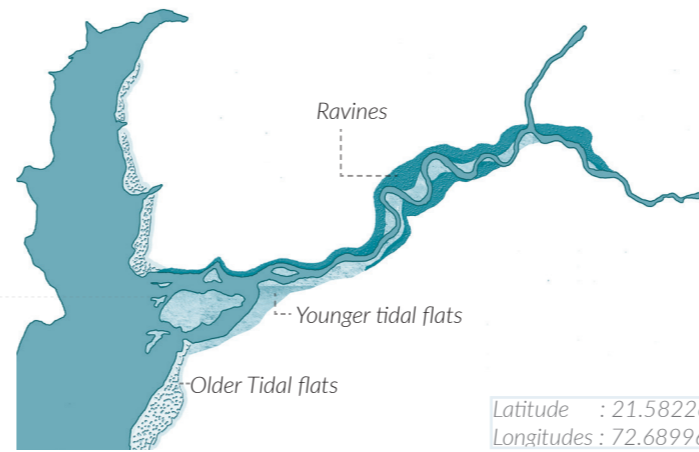
Overview



The Narmad rift valley was a result of the upliftment between the Protocontinental plates of Aravali, Dharwar and the Singhbhum fracturing along the Precambrian patterns.

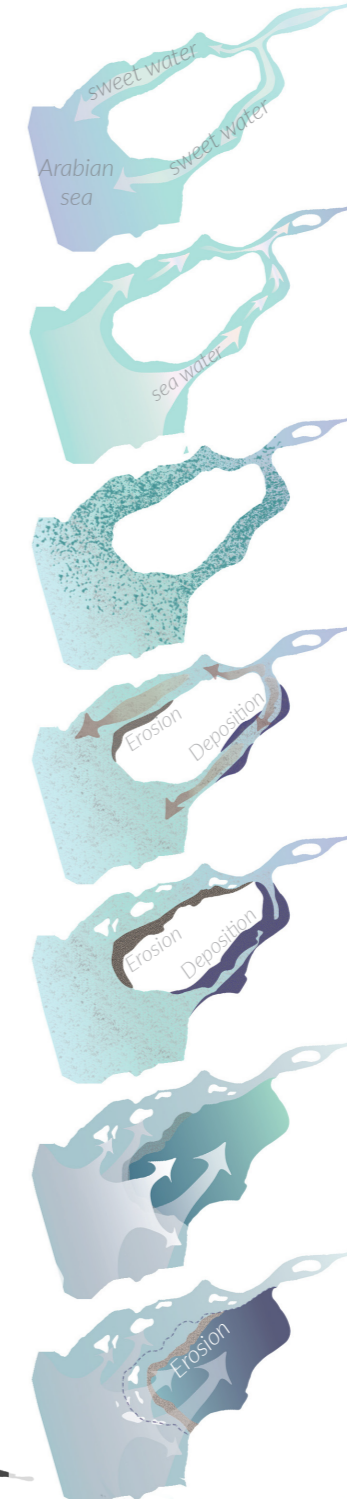


State of Gujarat, Alia-bet highlighted with the Rift valley system at the Gulf of Khambhat, which is a part of an active estuarine area and thus undergoes regular changes in terms of deposition and shifting.

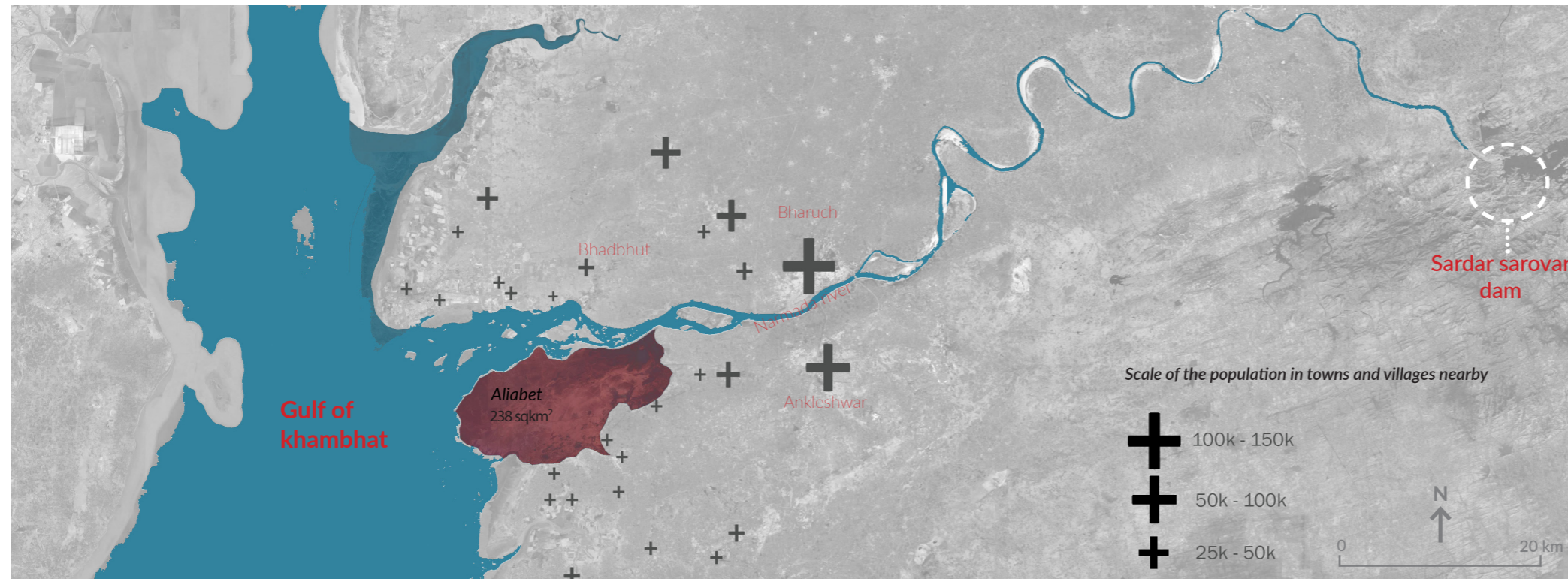


The configuration of the Landforms in the Gulf of Khambhat consists of the Older tidal flats, Younger tidal flats and Ravines. The island of alia-bet is part of a younger tidal flat.

Fluvio-marine Dynamics



01. Before Sardar Sarovar Dam, Alia-bet was an island and was surrounded by river water channels on all the sides
02. During Floods and high tides the sea water currents travels North and North-Eastern part of the Gulf of Khambhat
03. After the floods, the water recedes back to the sea leaving behind loads of sediment, which is then left for the river water to clean up during ebb.
04. River water has now lost the pressure to flush out the sediments in to the sea leading to the sediment deposition.
05. More deposition leads to the formation of Sand bars and Shoals, also many submerged sediments emerges in the absence of adequate flushing.
06. The process leads to the shifting of the Mudflat towards the mainland to an extent that it completely fills up the river water channel on the other side of the island. Forming a landwise connection to the island.
07. The present condition may increase the deposition of the island towards the sea.



Lower Narmada trail of Sardar sarovar dam to the Gulf of Khambhat. Narmada River, west of Bhadbhut, enters in the delta region, part into two

distributaries. These distributaries circle Aliabet, and merges in the Gulf of Khambhat. Along with the two banks of the waterway, mudflats and swamps

are framed. The Sardar sarovar dam is situated approximately 110 km away from the estuary of river Narmada

Grains of Island of Alia-bet





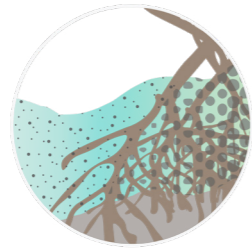
Ways of Mending the gap

replenish

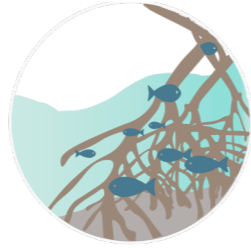
01 Replenishing mangroves using salt-tolerant species



Prevention of Coastal Erosion by providing a natural surge Barrier

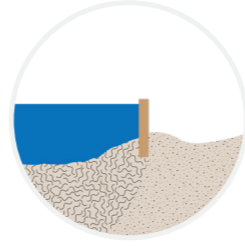


Mangroves adds nursing grounds for fishes and crustaceans. The roots also filter the sediments entering either side



conserve

02 Preventing Salinity ingress



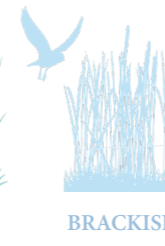
By introducing barriers at the strategic locations not only prevents sea-water from plundering the land but also conserves rain water.



03 Fresh water conservation



SALT



BRACKISH

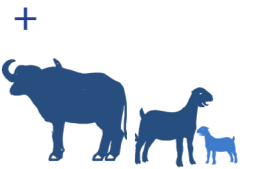


FRESH

Conservation of fresh water can help Re-generate the lost habitats of varying salinity and biodiversity.

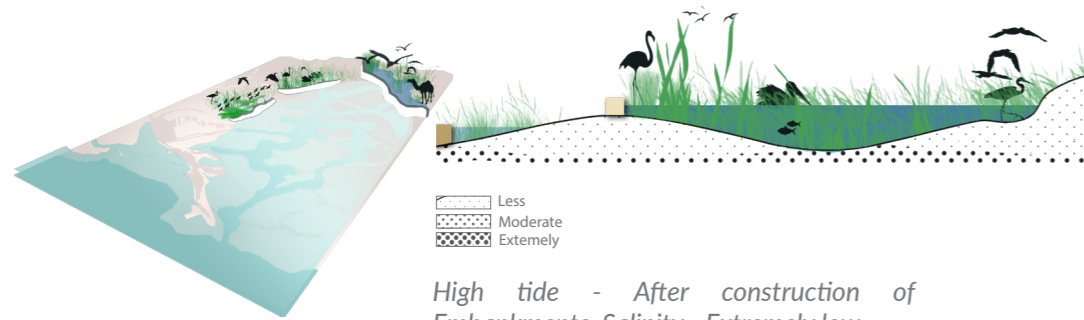
flourish

04 Cultivating fodder for the livestock

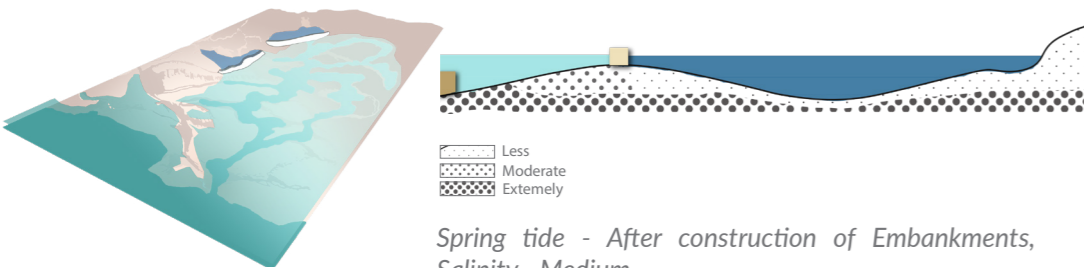


Cultivation strengthens the tribal community increasing their ownership & responsibility towards the island.

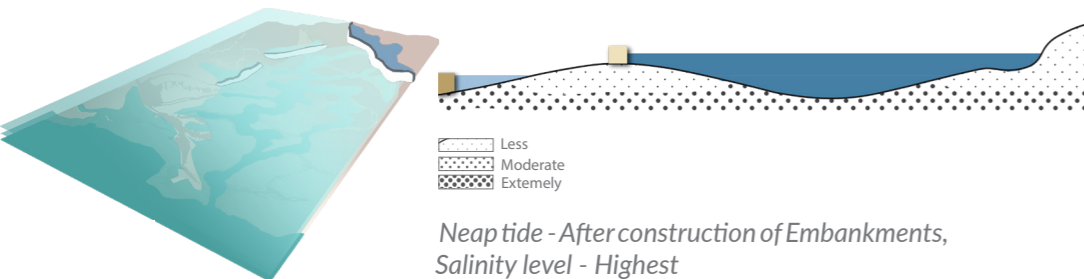
Salinity with Embankments



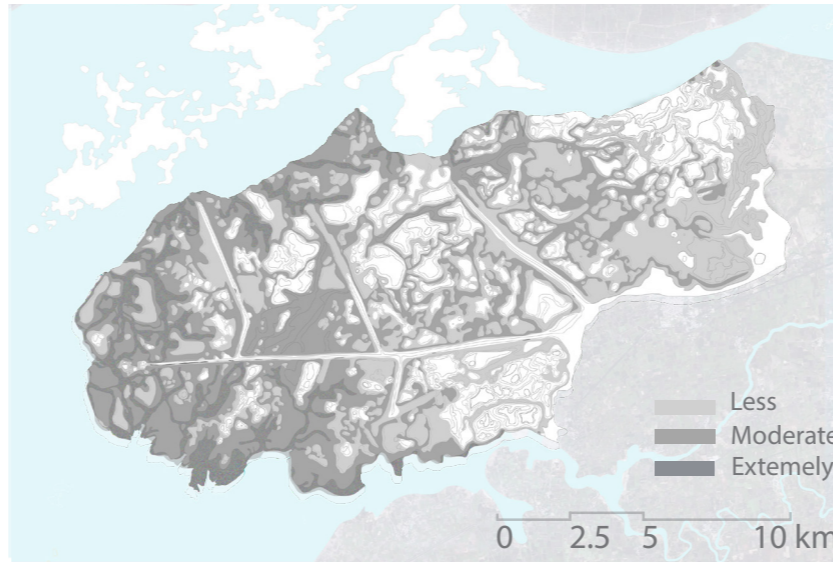
High tide - After construction of Embankments, Salinity - Extremely low



Spring tide - After construction of Embankments, Salinity - Medium

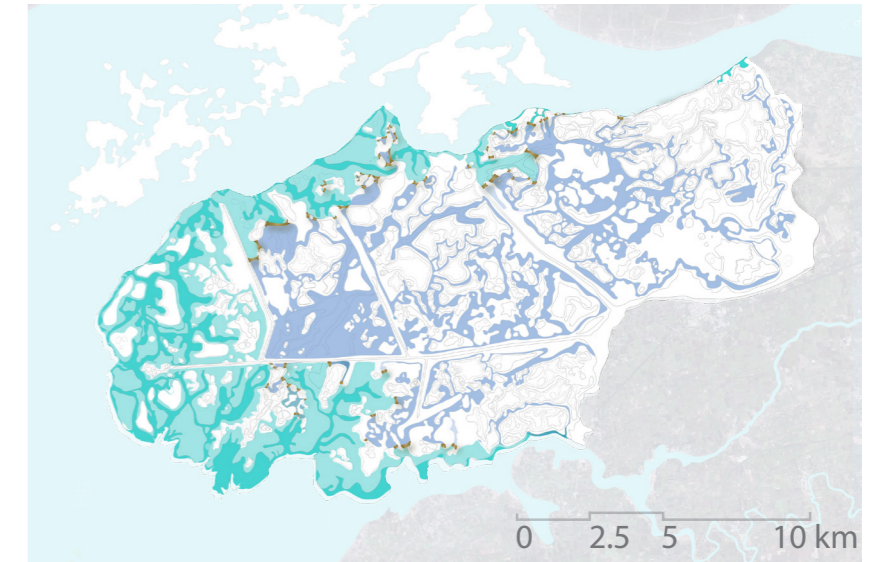


Neap tide - After construction of Embankments, Salinity level - Highest



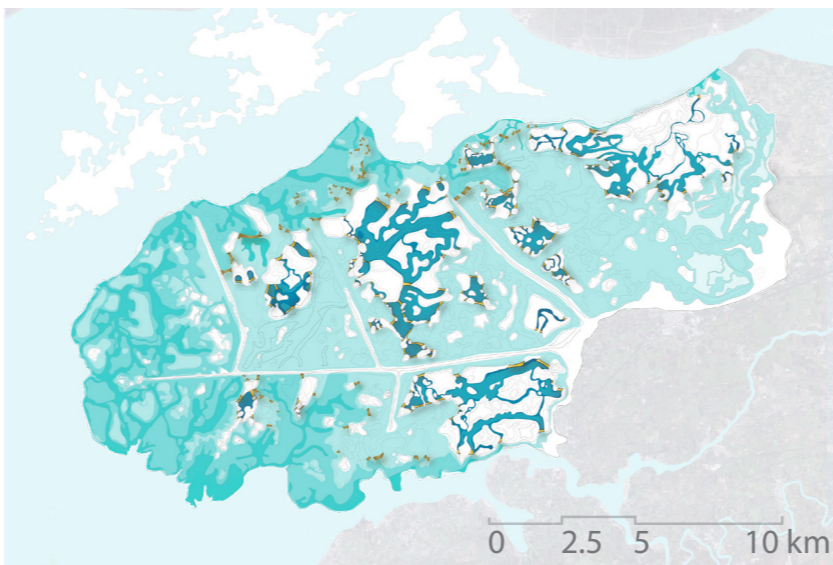
01 Existing Salinity gradation

More than 90% of the area are subjected to salinity



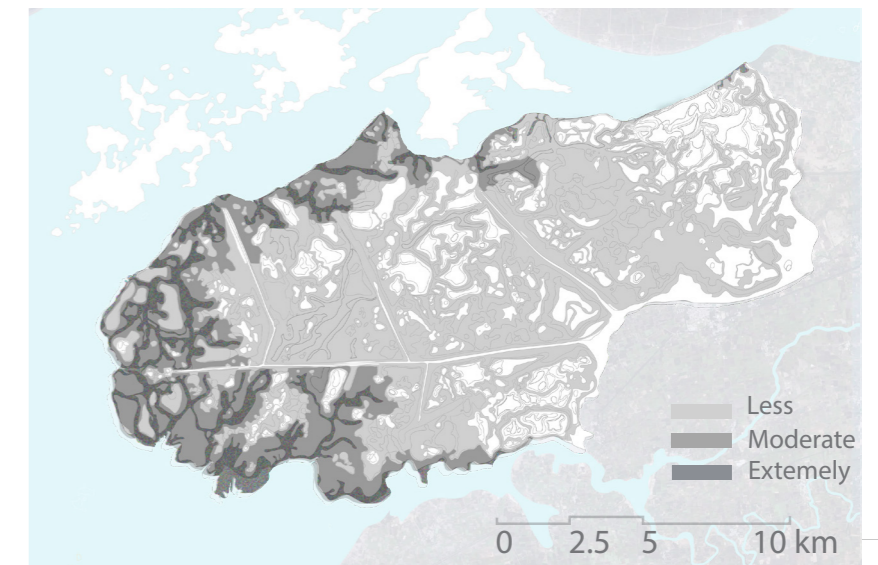
02 Spring tides after Embankments & Rainwater pools

The rain-water can be then conserved in the areas of depressions which were earlier flooded by the sea water.



03 High tides after Embankments & Rainwater pools

Rain water conserved after monsoon in the areas dammed under the second level of embankments which percolates to improve the salinity of the land.



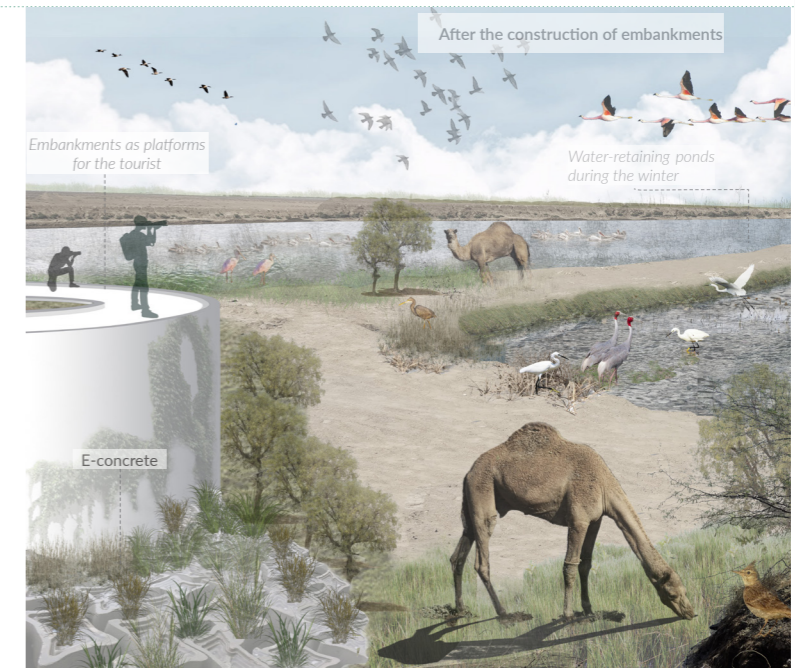
04 Achieved Salinity gradation after 3-4 seasons

Achieved state of salinity after embankments helps promote native vegetation and inhabit local biodiversity

Aliabet Revived



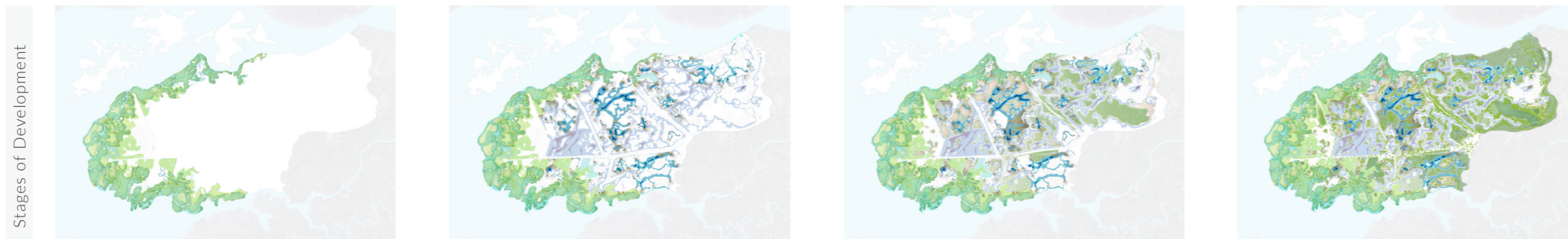
05 Succession of Woodlands to Dense forests and addition of the farmlands to cultivate the fodder.



Wetland habitats generated for the birds and residency grazers after the construction of embankments



Conservation pools close to the 'Animal herders' community

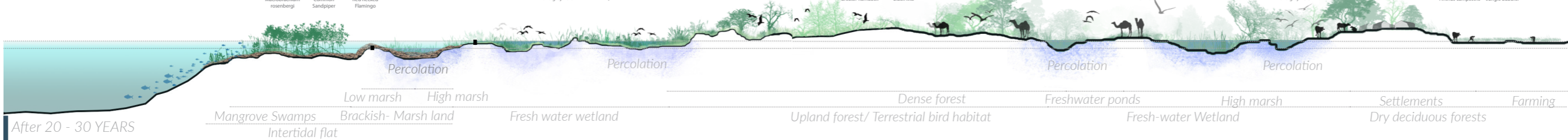


01 Replenishing Mangroves followed by salt marsh

02 Freshwater and Brackish water habitats

03 Grasslands preceded by wetland habitats

04 Woodlands



After 20 - 30 YEARS

