



the drop of hope

reviving water as cultural harness



Country / City India / Ahmedabad

University / School CEPT University

Academic year 2019-2020

Title of the project The drop of Hope- Reviving water as cultural harness

Authors Aishwarya Goel

TECHNICAL DOSSIER

Title of the project	The drop of Hope- Reviving water as cultural harness
Authors	Aishwarya Goel
Title of the course	Landscape Design Studio 4- (Re-imagining Water Studio)
Academic year	2019-2020
Teaching Staff	Sandip Patil
Department/Section/Program of belonging	Master of Landscape Architecture
University/School	CEPT University



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

The project studies the impact of scarce water resources of a semi-arid region in altering livelihood, dependency, and quality of life. Ahmedabad, one of the ten largest cities in India by population of 8.5 million, is highly water-stressed due to irregular rainfall patterns and groundwater overexploitation, and pollution. The primary reasons are a lack of water resource ownership, unmanaged industrial operations, and a disconnected water management system.

Ahmedabad lies in an alluvial bed, with a rich aquifer system that can hold vast quantities of groundwater. Traditionally, it has helped tide over larger cyclical droughts of the Indian monsoon system. However, climate change has made this pattern erratic, and recharge to this system is compromised due to large impervious urban surfaces as well as contamination from industrial wastewater. It has significantly transformed the dynamics of hydrological cycles and their quality.

The project proposes a systemic bottoms-up approach to achieve 'individual realization of a larger phenomenon' using village land and industrial water as a medium to balance the complexity. It introduces socio-ecological rituals as catalysts to resolve surface water and aquifer pollution; as well as socio-political disputes, cultural fragmentation and social inequity. It formulates decentralized water management by the virtue of social agency. The project stabilizes the ecosystem by enabling diverse communities to re-conceptualize interactions on land with the dynamics of water as a 'shared resource'. The framework evolves with time to remediate, recharge, and re-value water that will stimulate stewardship towards surface water (seen) and groundwater (unseen).

For further information
Máster d'Arquitectura del Paisatge -DUOT - UPC

T: + 34 93 401 64 11 / +34 93 552 0842
Contact via email at: biennal.paisatge@upc.edu

Máster d'Arquitectura del Paisatge -DUOT - UPC
ETSAB- Escola Tècnica Superior
d'Arquitectura de Barcelona
Avenida Diagonal, 649 piso 5
08028 Barcelona-Spain



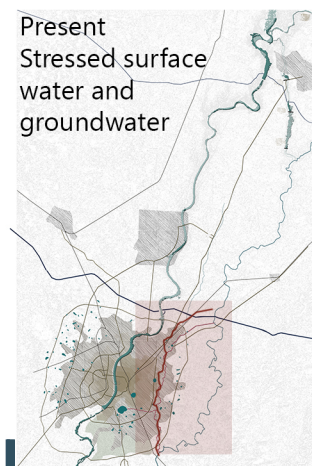
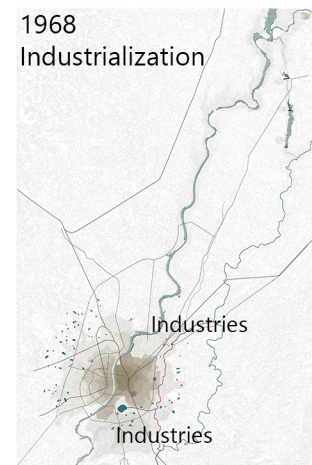
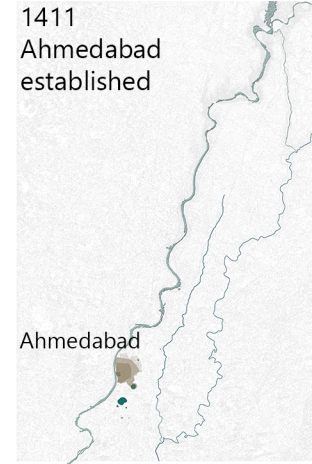
CLIMATE CHANGE AGAIN

11th International Biennial Landscape Barcelona

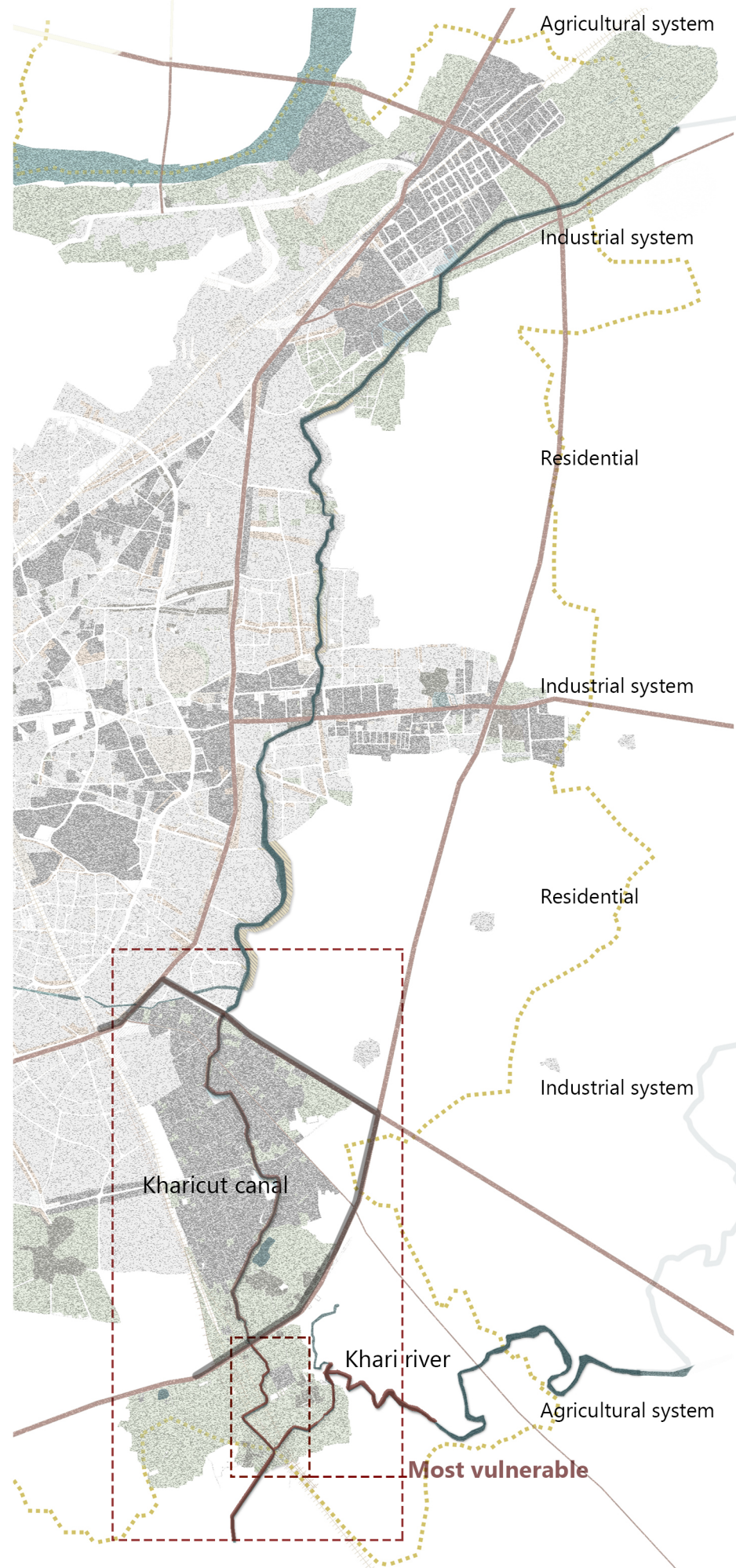
Barcelona September 2020
SCHOOL PRIZE

Analysis

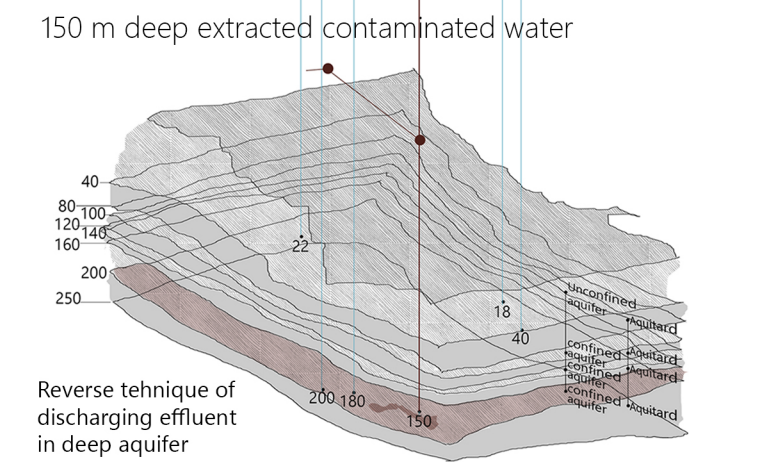
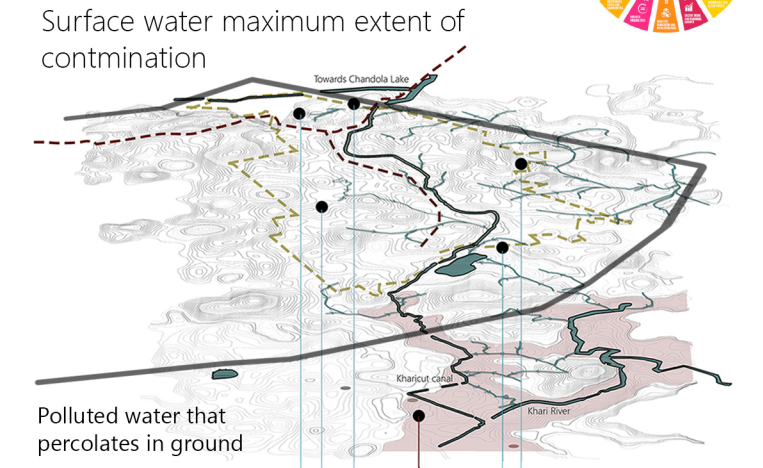
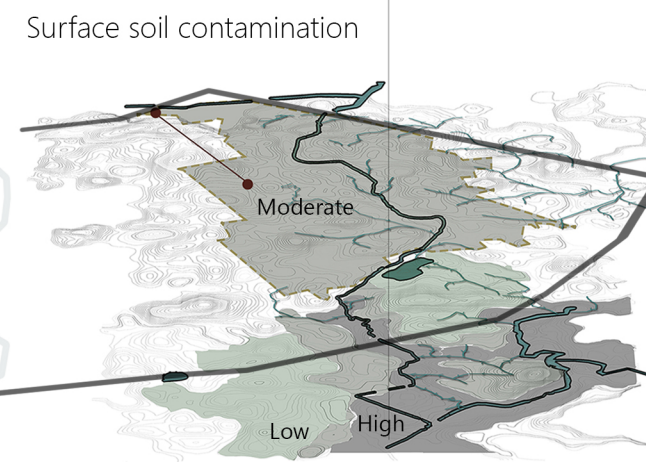
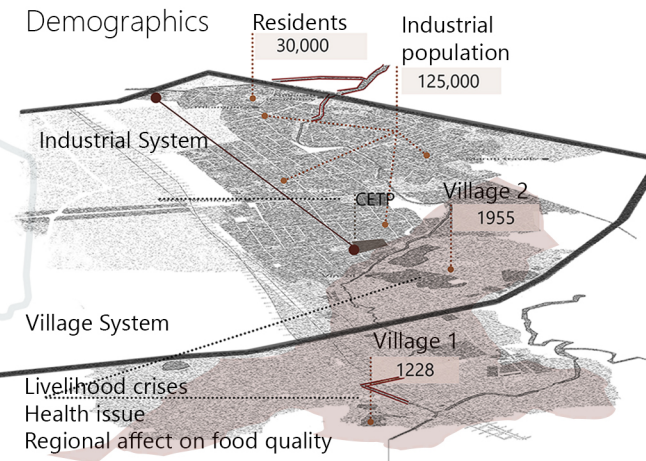
Larger system fragmentation



Eastern Ahmedabad vulnerability

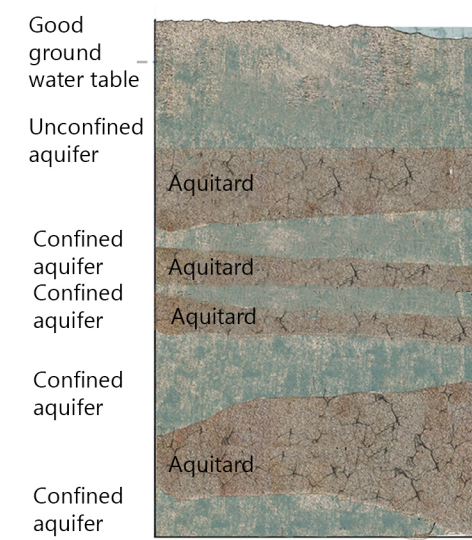


Impact of Industrial effluent on people, surface, surface water and groundwater

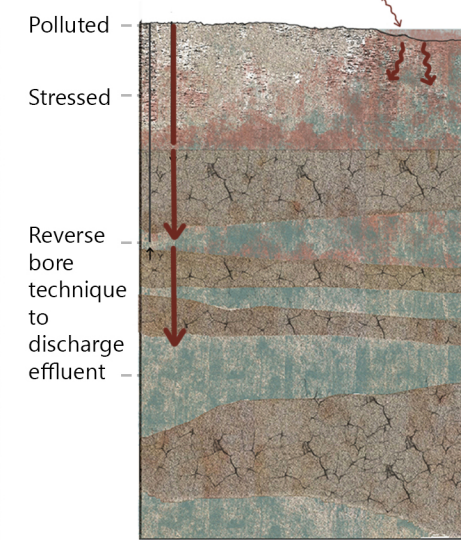


Sub surface condition

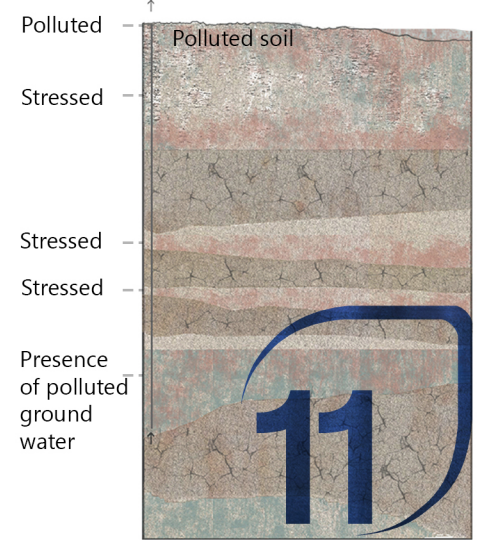
Past condition- 1
Rich aquifer system that used to hold vast quantities of groundwater



Past condition- 2
Discharge in canal and in deep aquifers with no environmental consideration has polluted surface and sub-surface systems



Present
Illegal effluent discharge in canal and irregular rainfall patterns has altered livelihood and dependency on ground

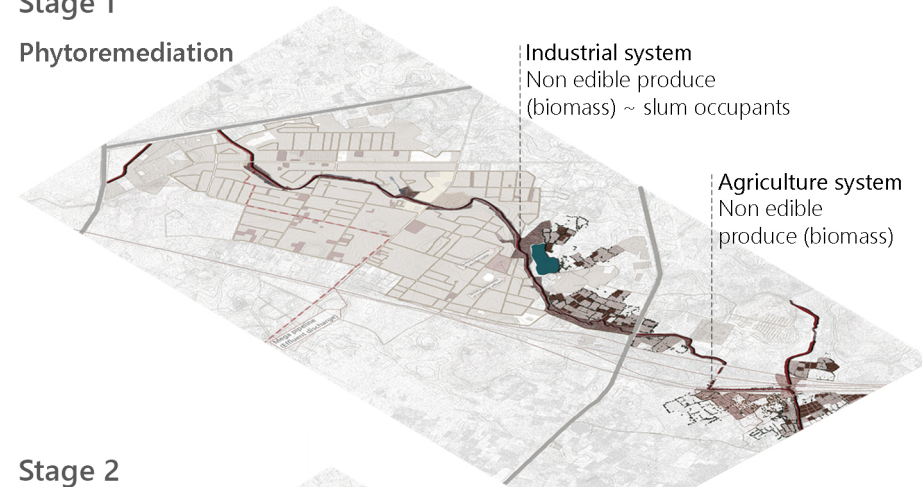


Strategies

Hierarchy 1- City level

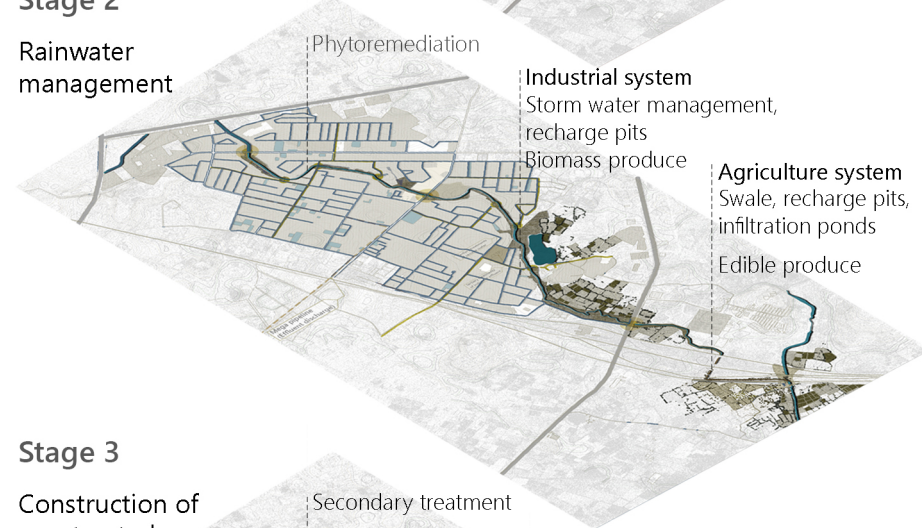
Stage 1

Phytoremediation



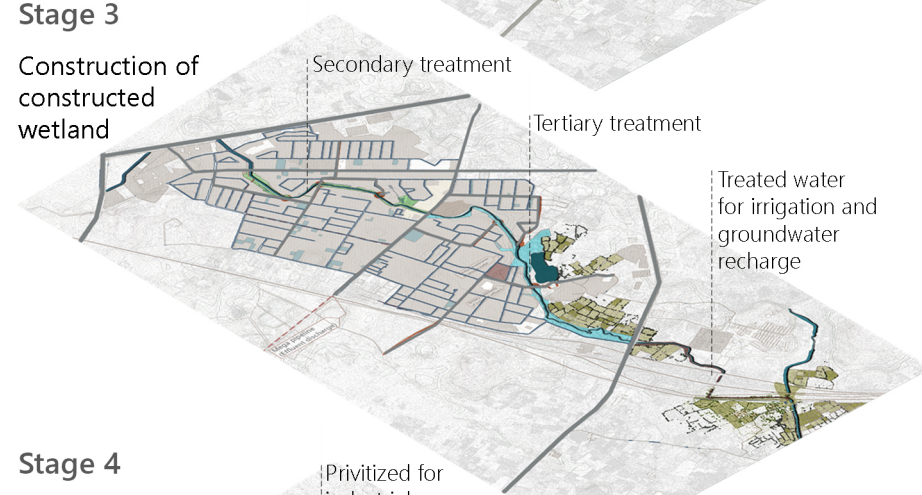
Stage 2

Rainwater management



Stage 3

Construction of constructed wetland



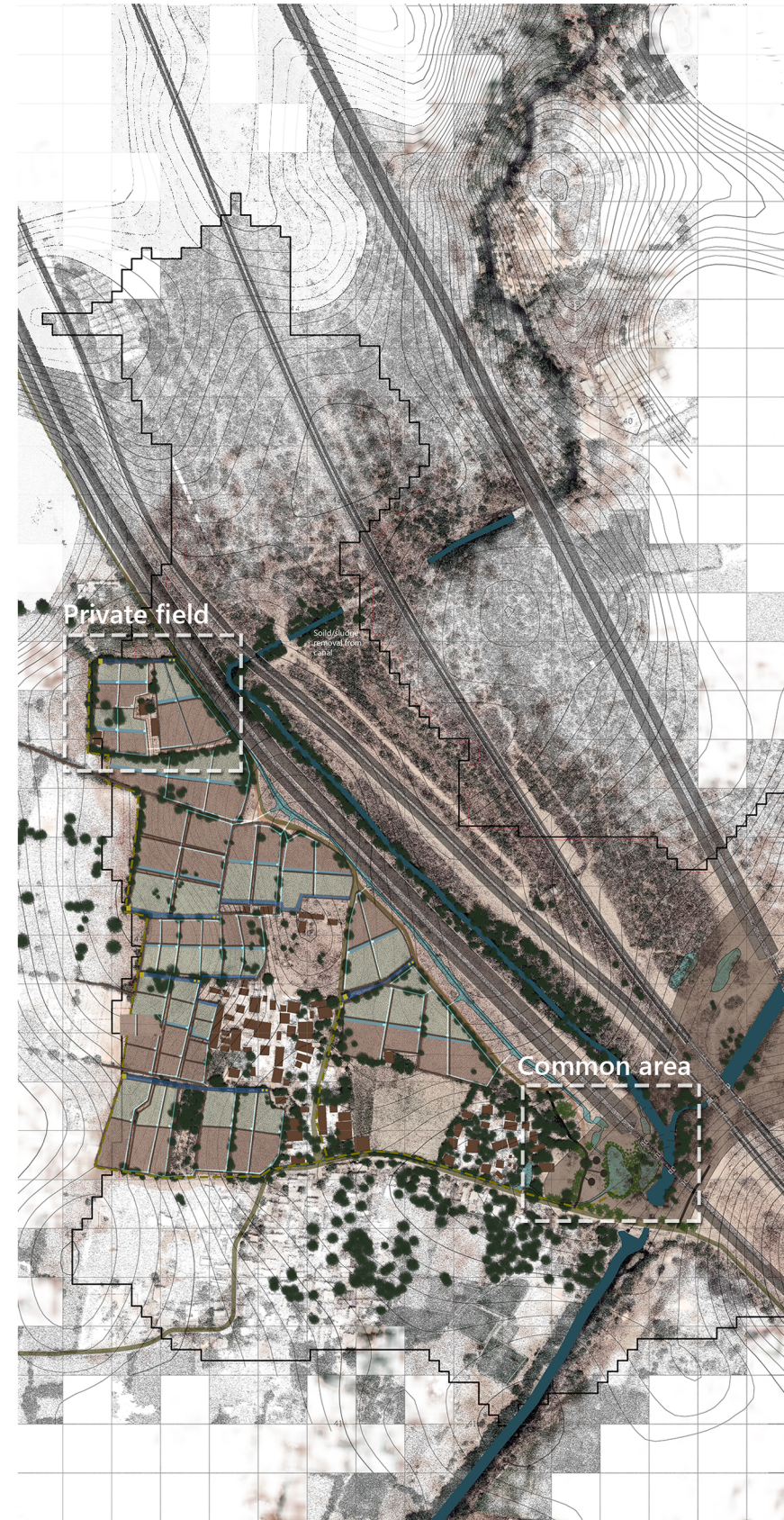
Stage 4

Public/private places along constructed wetland



Hierarchy 2- System level

Agriculture system

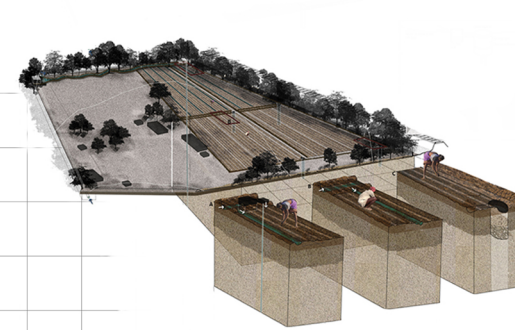


Legends

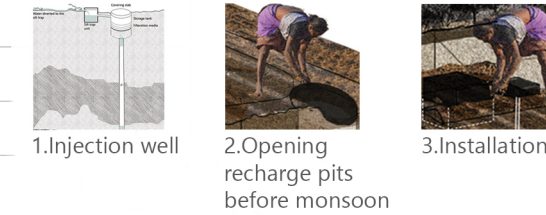
- Canal water irrigated fields
- Groundwater irrigated fields
- Rain water irrigated fields (in monsoon)
- Injection well
- Lift irrigation
- Rainwater swales

Hierarchy 3- Individual level

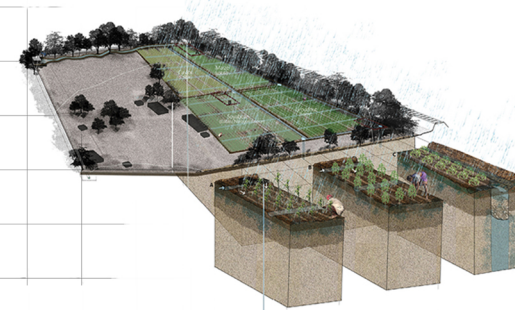
Prototype: private field Pre-monsoon



Making of injection well and management of pits



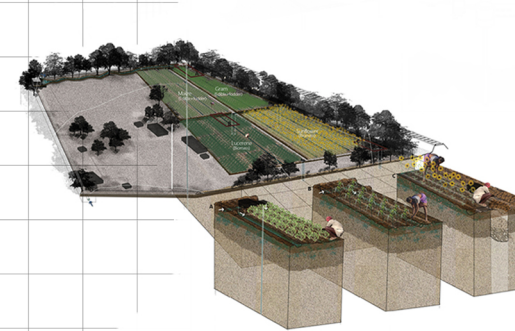
Monsoon



Edible produce through rainwater irrigation



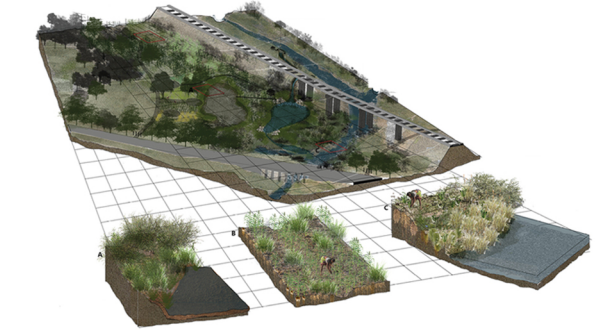
Post-monsoon



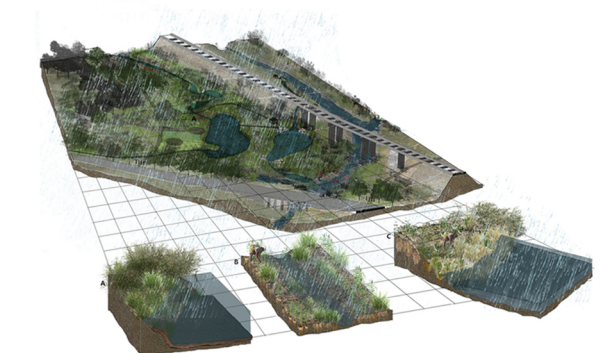
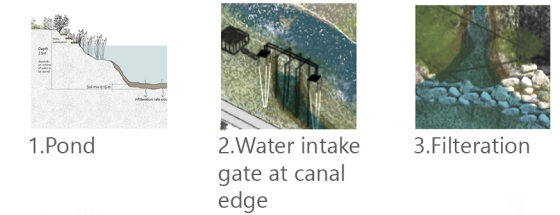
Edible and non edible produce based on irrigation



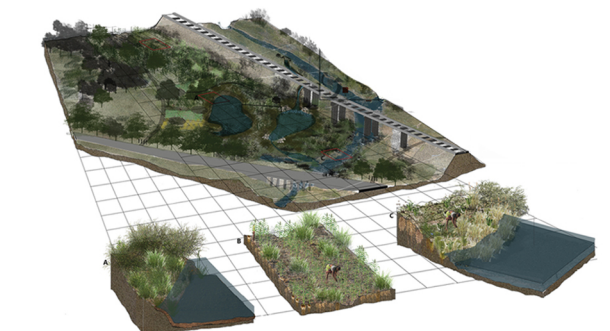
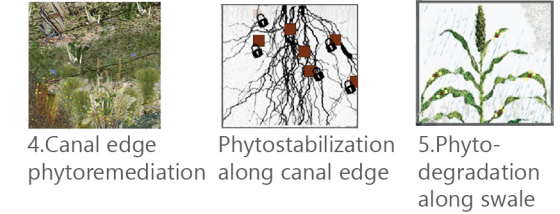
Prototype: Common area



Making of common pond to store canal water



Biomass produce through community participation



Biomass produce through community participation



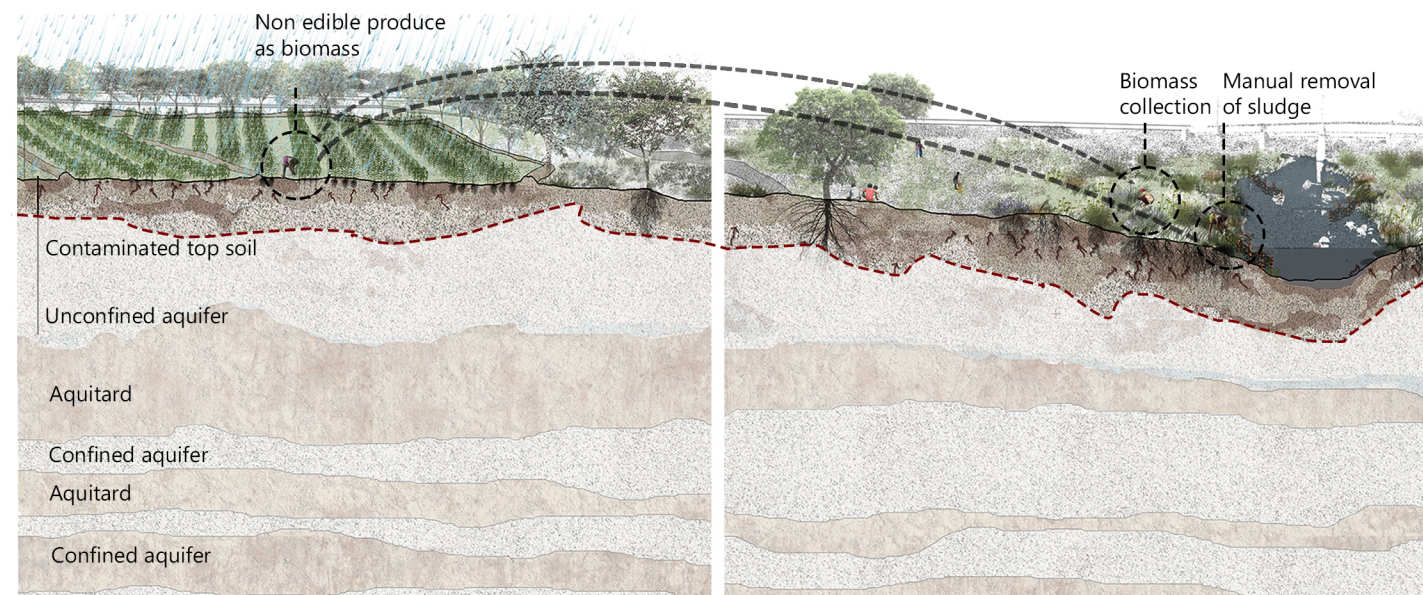
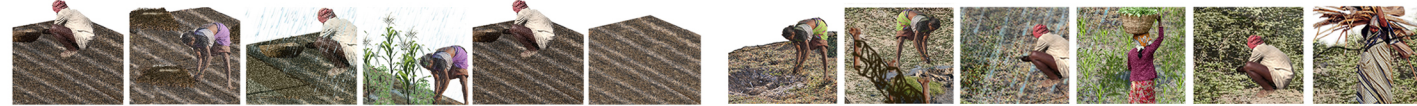
Making of the landscape that generates livelihood opportunities to directly associate people with surface and sub surface strategies



Agriculture system

Stage 1 (2-3 years): Surface treatment (Phytoremediation)

Non edible produce as biomass from fields and along canal in monsoon season

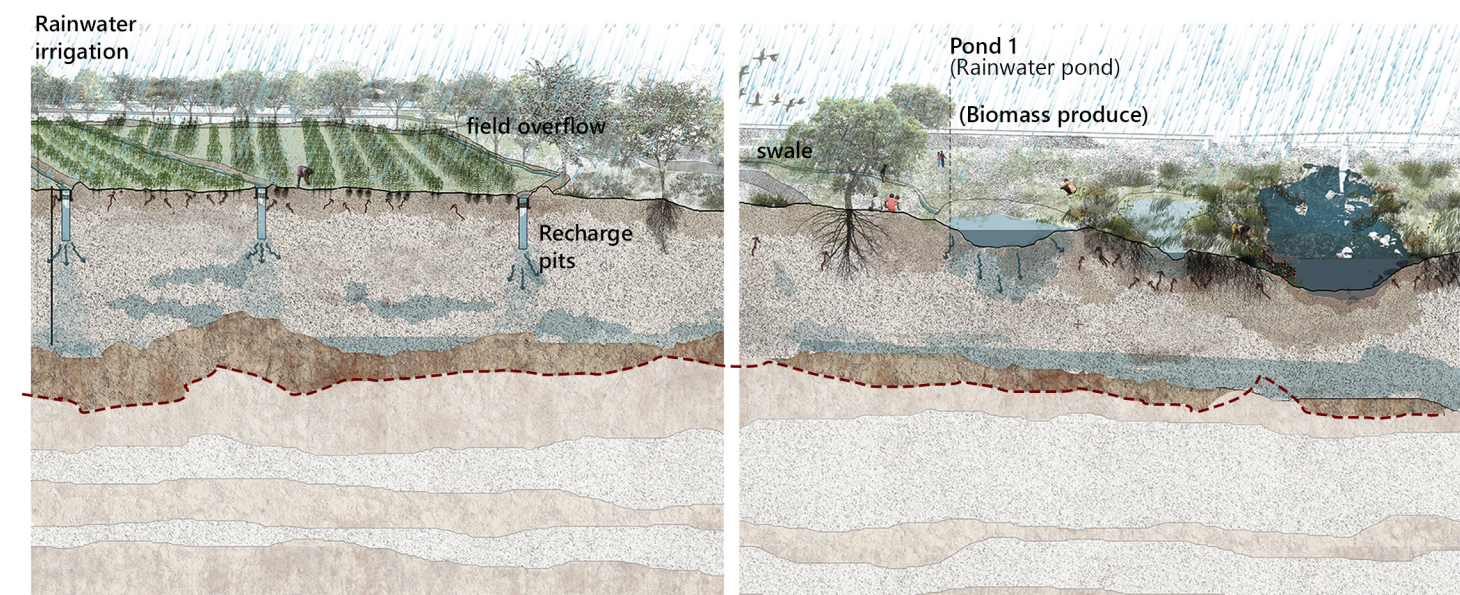


Strategy 1: Change in crops and cropping pattern to remediate top soil

Strategy 2: Restriction on illegal discharge by activating confluence

Stage 2 (4-6 years): Shallow aquifer dilution and recharge (Rainwater management)

Edible produce in monsoon season from fields and non edible produce as biomass along canal

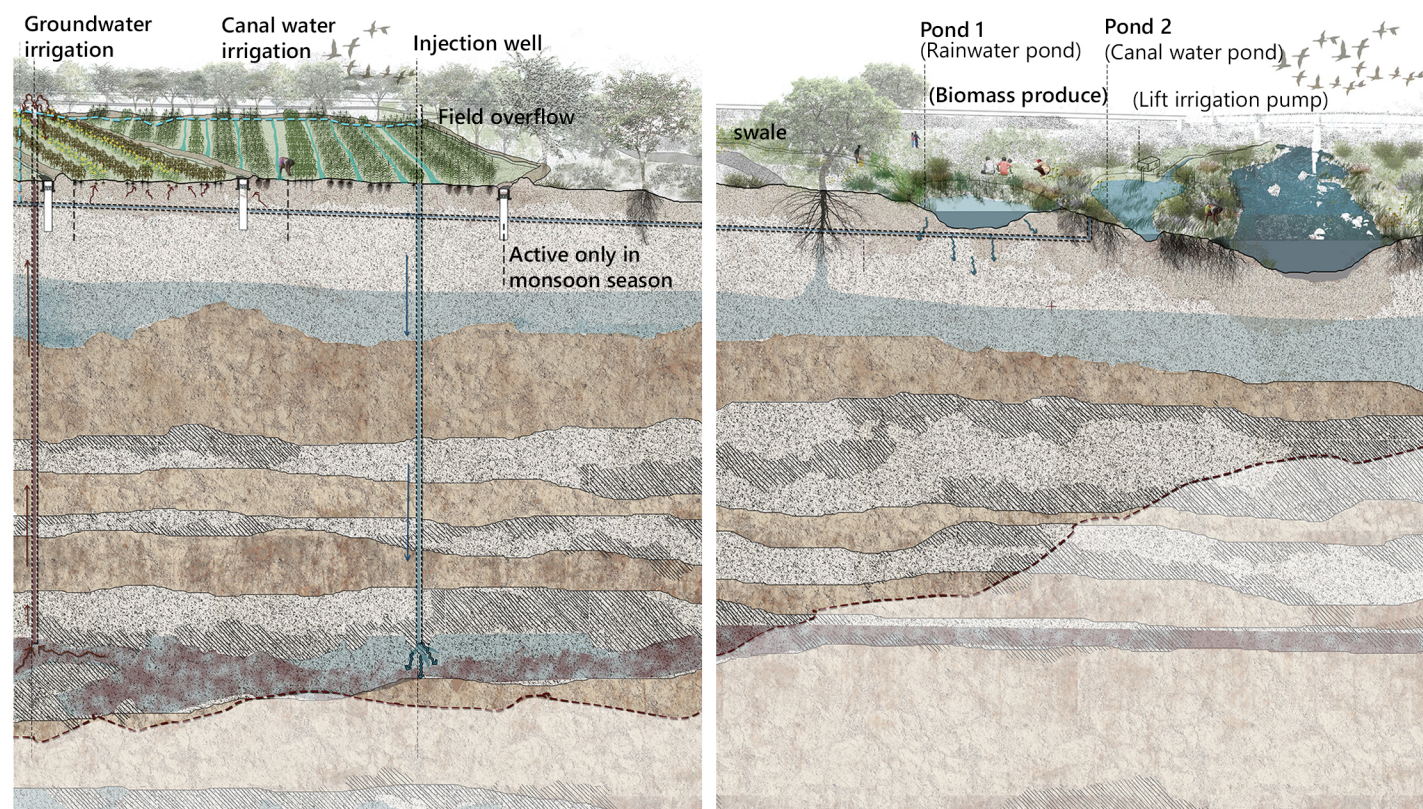


Strategy 3: Dilution of contaminant in aquifer and groundwater recharge through rainwater management

Strategy 4: Dilution through infiltration pond that also connect private fields to common area as new water network

Stage 3 (18-20 years): Deep aquifer dilution and extraction

Edible produce and non edible produce in all seasons from the fields and non edible produce as biomass along canal

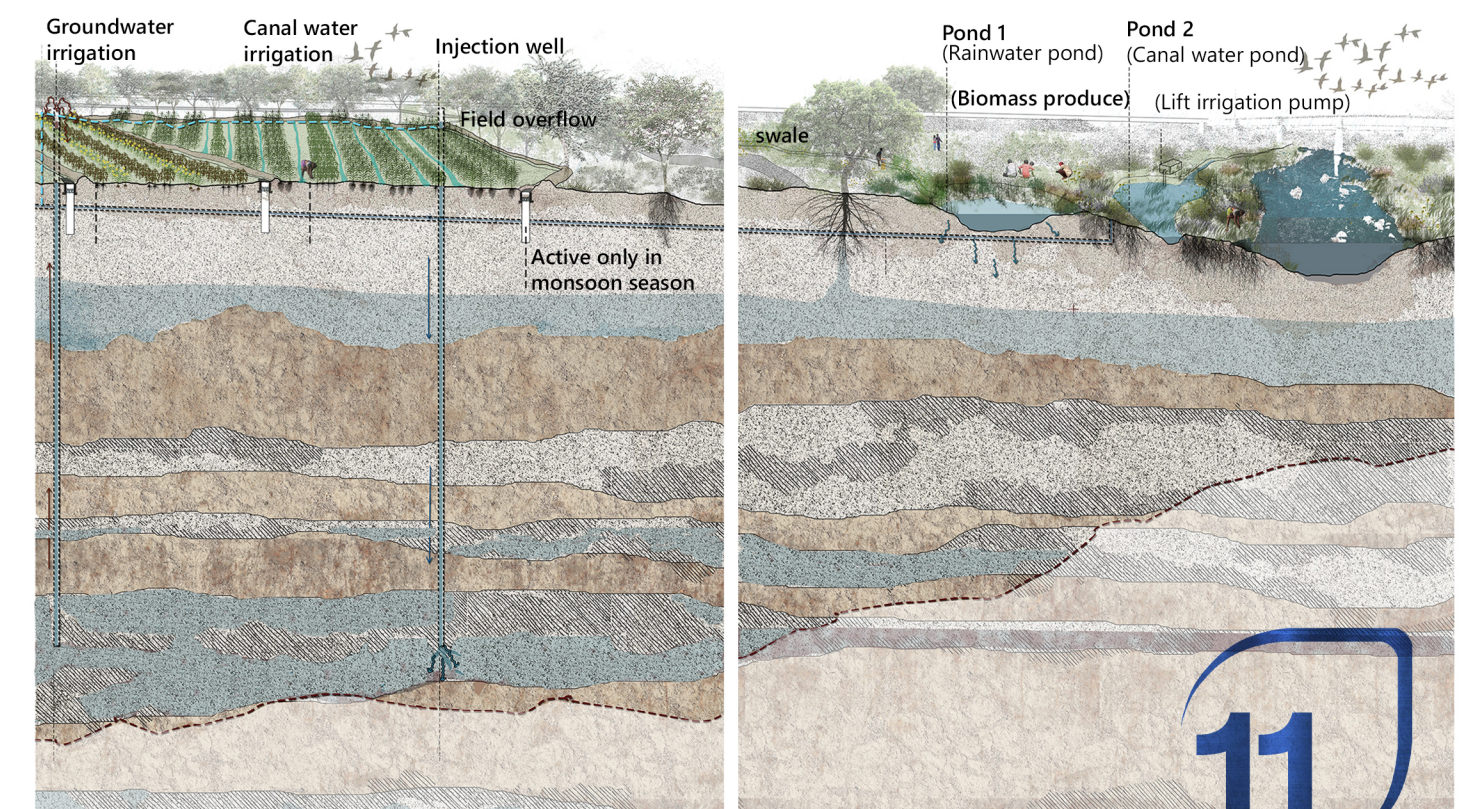


Strategy 5: Extraction of contaminated groundwater for irrigation and dilution of contaminated groundwater through injection

Strategy 6: Lift irrigation form pond 2 (intake from treated canal water)

Stage 4: Groundwater replenishment

Edible produce in all seasons from the fields and biomass along canal



Strategy 7: Recharge through rainwater and treated industrial water in canal

Strategy 8: Treated industrial water through the Kharicut canal to the Khari river