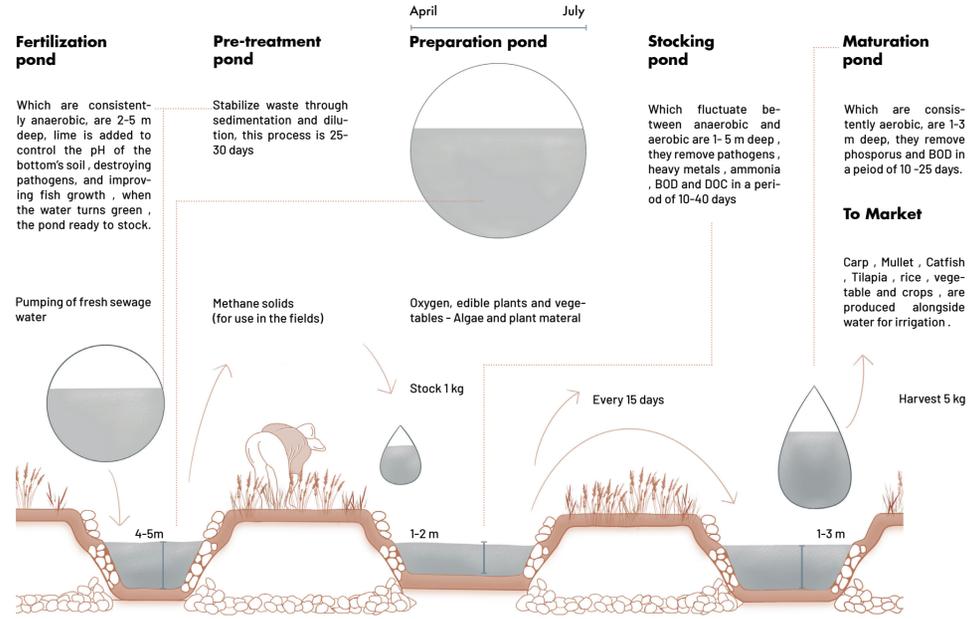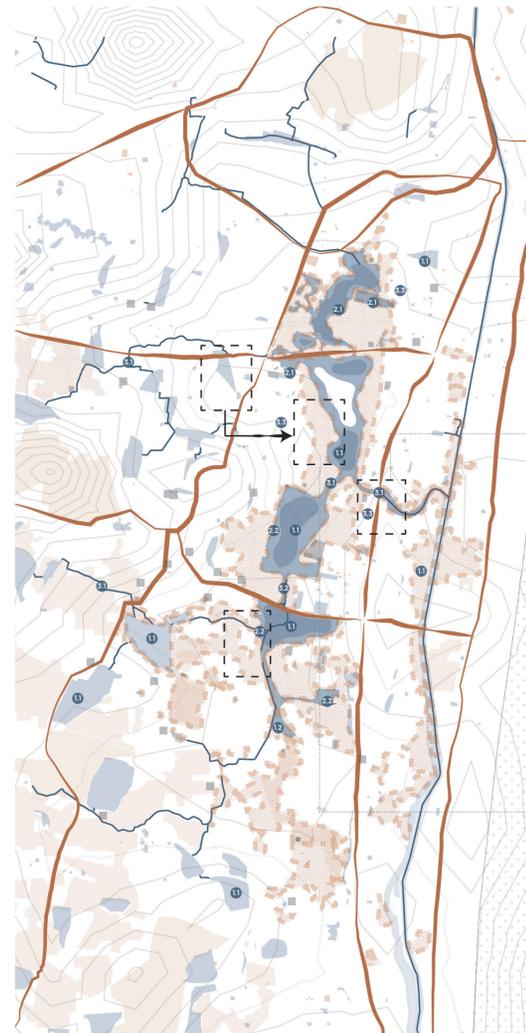# 05 STRATERGY- Water Urbanism
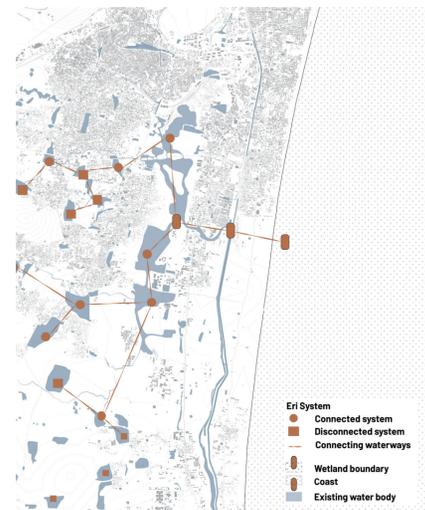
WATER URBANISM

WATER IN ACTION- BHERI SYSTEM

Fertilization pond

Which are consistently anaerobic, are 2-5 m deep, lime is added to control the pH of the bottom's soil, destroying pathogens, and improving fish growth, when the water turns green, the pond ready to stock.

Pumping of fresh sewage water

Pre-treatment pond

Stabilize waste through sedimentation and dilution, this process is 25-30 days

Methane solids (for use in the fields)

April   July

Preparation pond

Oxygen, edible plants and vegetables - Algae and plant materal

Stocking pond

Which fluctuate between anaerobic and aerobic are 1- 5 m deep, they remove pathogens, heavy metals, ammonia, BOD and DOC in a period of 10 -40 days.

Maturation pond

Which are consistently aerobic, are 1-3 m deep, they remove phosporus and BOD in a peiod of 10 -25 days.

To Market

Carp, Mullet, Catfish, Tilapia, rice, vegetable and crops, are produced alongside water for irrigation.

Stock 1 kg   Every 15 days   Harvest 5 kg

4-5m   1-2 m   1-3 m

PHASE DIAGRAM

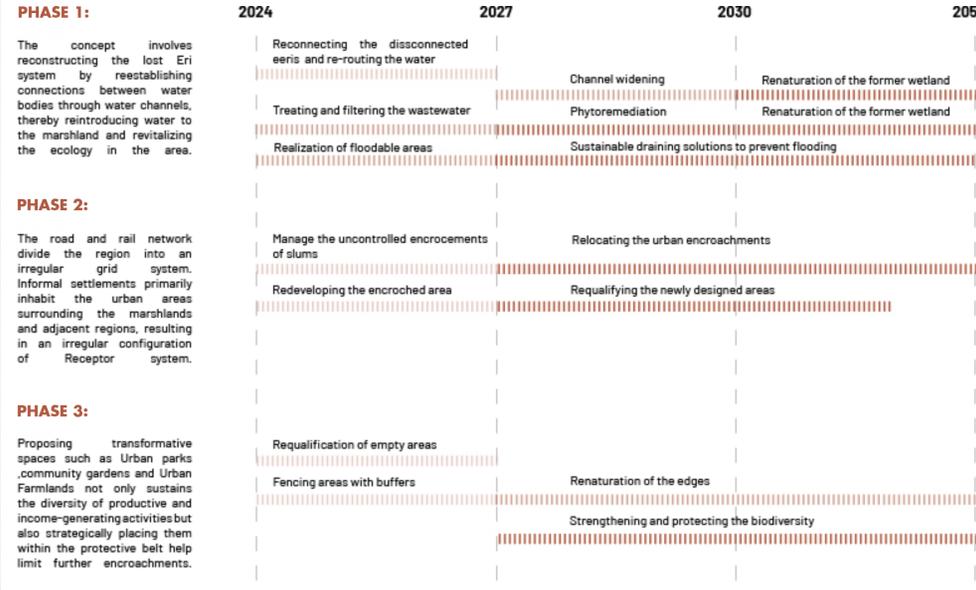**PHASE 1:**

The concept involves reconstructing the lost Eri system by reestablishing connections between water bodies through water channels, thereby reintroducing water to the marshland and revitalizing the ecology in the area.

PHASE 2:

The road and rail network divide the region into an irregular grid system. Informal settlements primarily inhabit the urban areas surrounding the marshlands and adjacent regions, resulting in an irregular configuration of Receptor system.

PHASE 3:

Proposing transformative spaces such as Urban parks, community gardens and Urban Farmlands not only sustains the diversity of productive and income-generating activities but also strategically placing them within the protective belt help limit further encroachments.

	2024	2027	2030	2050
	Reconnecting the dissconnected eeris and re-routing the water			
		Channel widening	Renaturation of the former wetland	
	Treating and filtering the wastewater		Phytoremediation	Renaturation of the former wetland
	Realization of floodable areas		Sustainable draining solutions to prevent flooding	
	Manage the uncontrolled encrocements of slums		Relocating the urban encroachments	
	Redeveloping the encroched area		Requalifying the newly designed areas	
	Requalification of empty areas			
	Fencing areas with buffers		Renaturation of the edges	
			Strengthening and protecting the biodiversity	

STRATERGY

METROPOLITIAN

Reinforcing the old eri water system and creating an ecological web which encloses the Chennai Metropolitian region. Reconnecting the lost cultural system by creating a balance between economy and ecological systems.

CITY

The Marshland act as a Transition point between Urban region and sea. Its depiltion act as the biggest threat to the city.

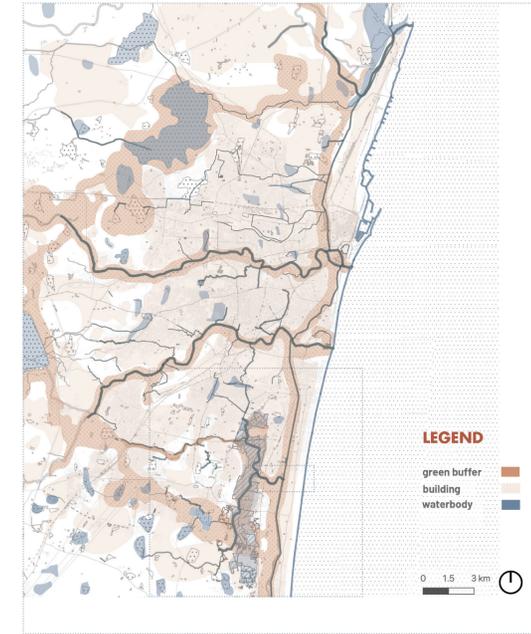The idea is convert the methane pool into a carbon sink.

NEIGHBOURHOOD

Ignorance by local government and local authorities poses threat to the traditional knowledge of pisciculture and africulture.

Proposing behri system and kund symtem reconnecting people with nature.

METROPOLITIAN STRATERGY

REINFORCING THE NETWORK

LEGEND
- green buffer
- building
- waterbody

0   1.5   3km

PHASE 1 : WATER SYSTEM RECONNECTION

Legends

Eri System
- Connected system
- Disconnected system
- Existing water body
- Wetland boundary
- Coast

Eri System
- Connected system
- Disconnected system
- Connecting waterways
- Wetland boundary
- Coast
- Existing water body

0   1.5   3km

WORKING OF THE SYSTEM

WATER IN ACTION
1.1 Phyto remediation area Water quality improvement
1.2 Sustainable draining solution

WATER IN MOTION
3.1 Ecological continuity in abandoned areas -streams recreation
3.2 Renaturation of the wetland
3.3 Rainwater regimation

WATER AT REST
1.1 Ecological continuity in abandoned areas - water retention points
1.2 Wetland restoration

0   1.5   3km

Anaerobic Ponds

Sewage fed into ponds for primary biological tretment.

Faculative Ponds

Secondary tretment pond

Maturation Ponds

Tertiary tretment pond

Edible plants, vegetables, and fish produced, while treated water for rice farming irrigation and watershed is replenished.

Berm   Pond   Rice Plant   Fish

600-1500m   150-300m

Municipal Sewage

32MILLION L/ DAY
2-3 K TONNES / DAY

ADYAR RIVER   Into the wetland

Waste Water Fish Culture System   **Water in motion**

River   Anicut   Bund   Bheri (Maturation Pond)   Canal   Farmland

Oxidation Pond

KUNDS- SOCIAL SPACE

Cultural activities near kunds   Road Connection

Residence   Behris   Kund   Outlet to the wetlands

NEIGHBOURHOOD

URBAN STRATERGY

The Pallikaranai marshland holds immense significance in Chennai as one of the city's last remaining natural wetlands. Its preservation is vital for several reasons. Firstly, it serves as a haven for a diverse range of plant and animal species, including endangered birds, contributing to regional biodiversity conservation efforts. Secondly, the marshland acts as a natural buffer against flooding, absorbing excess rainwater and mitigating flood risks for nearby communities. Additionally, it plays a crucial role in recharging groundwater aquifers, ensuring sustainable water availability in the region.

To prevent this marshland from futher degradation multiple stategies have been put into place to ensure revitalization and requalification of this important ecological hotspot.

PHASE 1 :

Re-establishing connectivity within the Eri system is crucial to restoring the link between the blue and green systems in Chennai Metropolitan. The initial step involves reuniting the water channels, guiding them from ponds and tanks to the Marshlands.

EXISTING CONDITION

POLITECNICO DI MILANO

SCHOOL OF ARCHITECTURE, URBAN PLANNING AND CONSTRUCTION ENGINEERING
Master of Science in
Sustainable Architecture and Landscape Design
AY 2023/2024

Reconnecting the Interconnected
PROBLEM FINDING | PROBLEM SETTING | PROBLEM SOLVING

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