

The Hub features an Aquatech Park, a training centre, a boat trip, an observation room, a kitchen garden, and a biogas plant, set in a scenic and tranquil environment

KHAZANS

Man-made low lying reclaimed marshy lands

Khazans are constructed by building intricate systems of sluice gates to regulate water inflow and outflow during high and low tides. The embankments of the *khazans* offer protection against soil erosion and natural hazards like flooding. They also serve as breeding and feeding grounds for fish, provide refuge to birds, and play an important role in soil formation, and the cycling of water and photosynthesis by plants and halophilic microbes.

MANGROVES

Tree wetlands located along estuarine coastline

Mangroves are considered among the world's most productive ecosystems. A huge variety of flora and fauna inhabit these forests.

AQUATECH PARK

Aquaculture, as exhibited by the Aquatech Park can be described aptly by the production of food, without sacrificing the environment.

Surrounded by vast cover of mangroves, the location of the Coastal Education Hub is perfectly suited to showcase naturally-occurring wildlife that inhabits the coastal ecosystems of Goa

1

SALT FARMING

Part of reclaimed waterlogged khazan land

Solar *salt farming* is a local technique of harvesting salt by evaporation of coastal saline water. Salt pans serve as repositories of biodiversity, as feeding grounds for migratory birds and absorb the impact of tides and waves.



Salt farming

2

CAGE CULTURE

This method involves growing fish in existing water resources while being enclosed in a cage. The cages are positioned and designed in such a way as to utilize natural currents to provide fish with oxygen and other natural conditions. This type of culture is a low-impact farming practice with high return and the least carbon emission.



Fish cage

3

MUSSEL CULTURE

Mussels are some of the most important cultivable organisms all over the world and play a major role in meeting increasing protein demands of human populations. Estuarine ecosystems are less turbulent than open sea farming systems but more susceptible to fluctuation in salinity during monsoons and pollution from domestic and industrial wastes. The rack or raft methods are suitable in this shallow ecosystem making use of cheap materials like bamboo poles and empty oil barrels to fabricate racks and rafts.



Mussel culture



Measuring mud crabs

CSIRO ScienceImage_1069a

4

OYSTER CULTURE

Oysters naturally grow in estuarine waters. When farmed, the temperature and salinity are monitored so as to induce spawning and fertilization, as well as to speed the rate of maturation. A batch of oysters are placed in a tray made of wire or plastic mesh within a wooden or plastic frame. Single oysters are laid on such trays and allowed to grow until marketable size.

6

BOAT TRIP

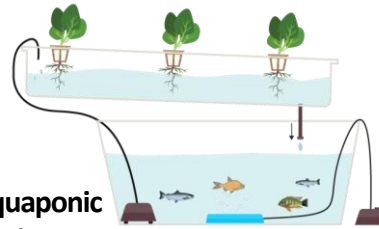
A canoe boat tour along the estuarine creeks and mangrove system will guide the following activities

- traditional net casting in creek
- traditional stake netting
- traditional crab catching traps
- collection of plankton (microscopic diversity) to observe microscopically at the Hub Centre.

7

AQUAPONICS

Aquaponics refers to any system that combines **aquaculture** (growing fish and other aquatic animals) with **hydroponics** (growing plants in water). It uses these two in a symbiotic combination in which plants are fed the aquatic animals' discharge or waste.



Source: Green and Vibrant

Aquaponic gardening

8

VERMICOMPOST

Vermicomposting is the decomposition of organic material (either of plant or animal origin) by earthworms. Vermicompost contains water-soluble nutrients and is an excellent, nutrient-rich, organic fertilizer and soil conditioner.

9

KITCHEN GARDEN

This form of agriculture involves all-season techniques such as crop rotation, green manure, composting, and biological pest control to grow vegetables and other plants for human consumption.



Kitchen Garden

10

BIOGAS PLANT

Biogas refers to a mixture of different gases produced by the anaerobic breakdown of organic matter. It can be produced from raw materials accumulated from dairy or food/kitchen waste. This closed system is called an anaerobic digester, biodigester, or a bioreactor.

OTHER ACTIVITIES

- Sluice gate, its operation & traditional fishing
- Skill training and observation room
- Ornamental and brackish water fish aquarium
- Piggery, dairy farm and animal husbandry
- Traditional kitchen

TERI Coastal Education Hub



The Energy and Resources Institute



About TERI Coastal Educational Hub

Covering an area of approximately 58,000 sq. m, the hub is situated in the wetlands of the Batim village, Goa Velha. This wetland is unique as it is a mosaic of **multiple ecosystems** and stands out as a potential zone to support diverse activities like solar salt farming, traditional fishing, traditional aquaculture and agricultural related activities.

It's mission: *to educate visitors especially students about the various coastal ecosystems located in Goa, India.*

Contact us at

The Energy and Resources Institute
H No. 233/GH-2, Vasudha Housing Colony
Alto-St. Cruz - 403 202
Tel 2459306 or 2459328
Mob 888 888 6659
Email fraddry.dsouza@teri.res.in
Web www.teri.org

Nave Marg Foundation
Dr.Celso Fernandes
F-4, Virginkar Bhavan
Comba
Margao - 403 601
Mob 9422058741

5

CRAB CULTURE

Crab culture is carried out by (i) grow out culture or by (ii) fattening of mud crabs. In the first method, young crabs are grown in ponds for a period of 5-6 months till they attain desirable size. In the "fattening" method, soft shelled crabs are reared in small tidal ponds for a period of few weeks till their exoskeleton hardens.



Oyster cultivation