PROMOTING CHILD'S RIGHT TO A HEALTH AND SUSTAINABLE ENVIRONMENT

HEAL EXPERIENCE – GOOD PRACTICES IN IMPROVEMENT OF LIVING CONDITION BY IMPROVING PROTECTION OF NATURAL RESOURCE AND SUSTAINABLE RESOURCE MANAGEMENT

Presented by

Y.Siluvai Vasthian, Director

HEAL Movement, Nagercoil

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- **Coastal Ecology Restoration**
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  - Restoration of Wells,
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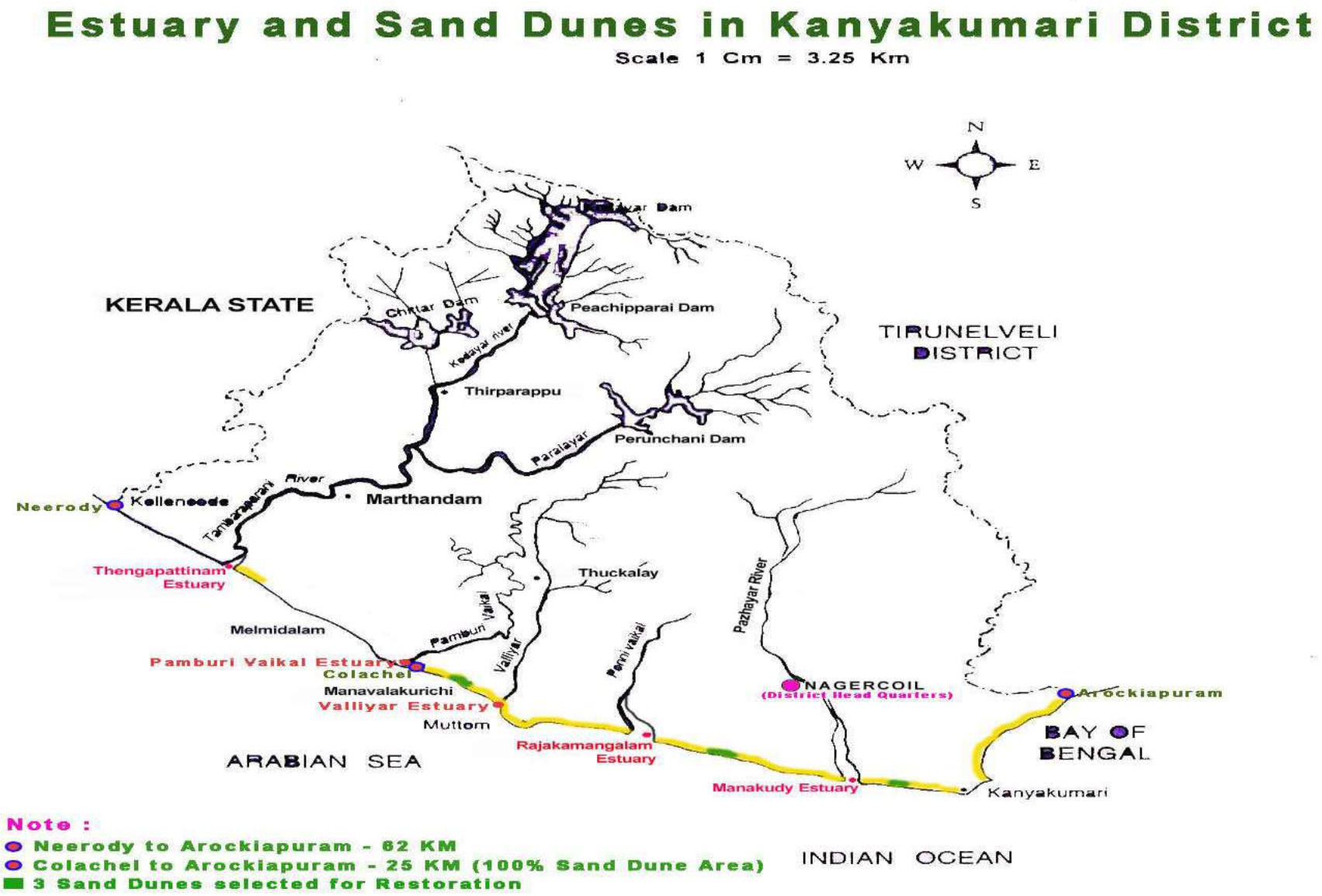
  - Paul – Portable Aqua Unique & Life Saving
  - Reed Bed Management system

Backgroud

- Kanyakumari District has the four land types: Kurinji, Mullai, Marudham and Neidhal, integrated gift of the nature.
- This is in the south end of the God's own country – Kerala.
- Kanyakumari is the Rice Bowl of Kerala.
- Coastal Sandune is the bearier of Coastal belt and ensure the Coastal Bio diversity
- Water Irrigation System was in order in Kanyakumari District (Kudi Maramathu and Tail-end Land)
- This started deteriorating after 1st November 1956 after joining with Tamil Nadu.

Estuary and sand Dunes in KK District



MANGROVE FORESTS

- Salt – tolerant littoral ecosystem
- India 6,740 km^2
- World 190000 to 240000km^2

Now two types identified in global level

- West coast of Africa and both the coast of tropical and subtropical America – New world mangroves.

- Pacific and east coast of Africa – Old world mangroves.

- Causes for depletion of mangrove resources
  - Coastal urbanization
  - Grazing
  - illicit felling
  - Shrimp culture

Economical services

- Like terrestrial tropical rain forests mangroves play significant role offering
  - Protection
  - Food for fish and other animals
  - Fuel
  - Construction – scaffolds, timber
  - Fishing – poles, fish traps, shelter
  - Beverages – Sugar alcohol, honey
  - Home hold items
  - Textiles - dyes
  - Agricultural implements

Ecosystem services

Play vital role in nutrient cycling

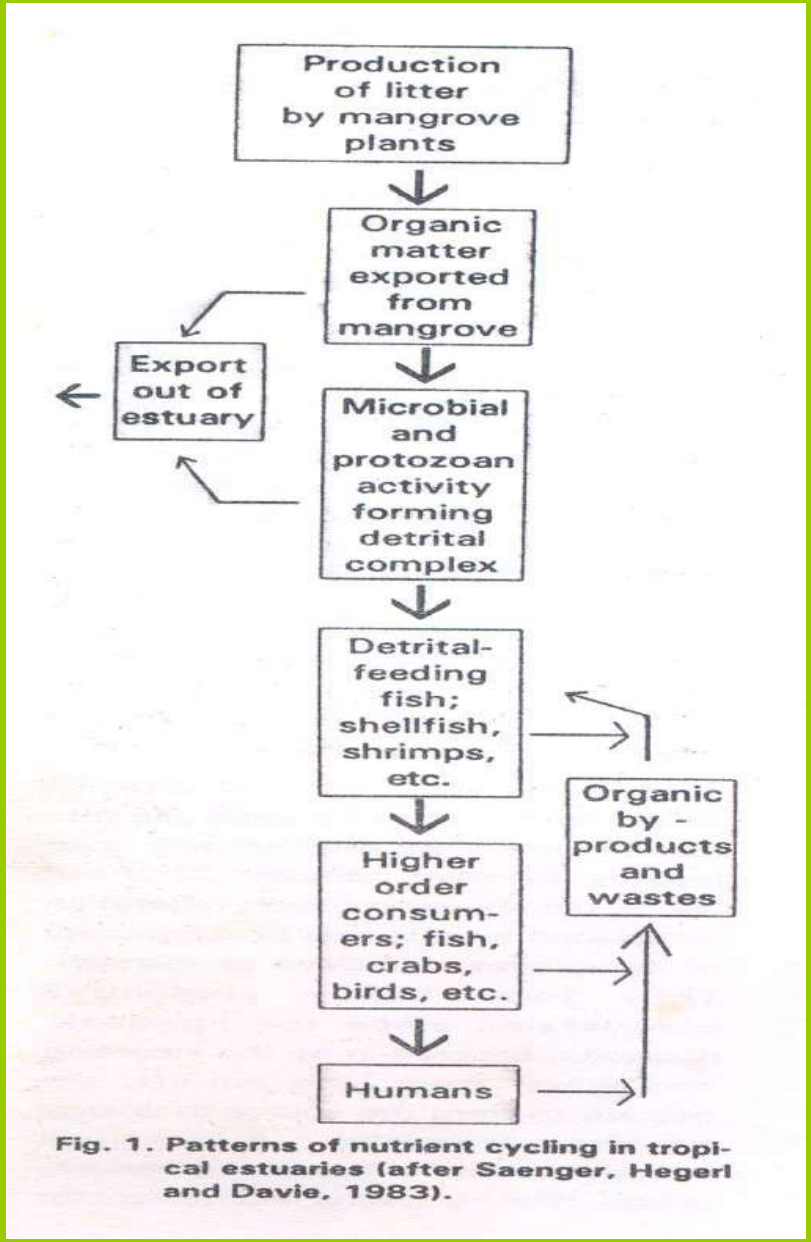
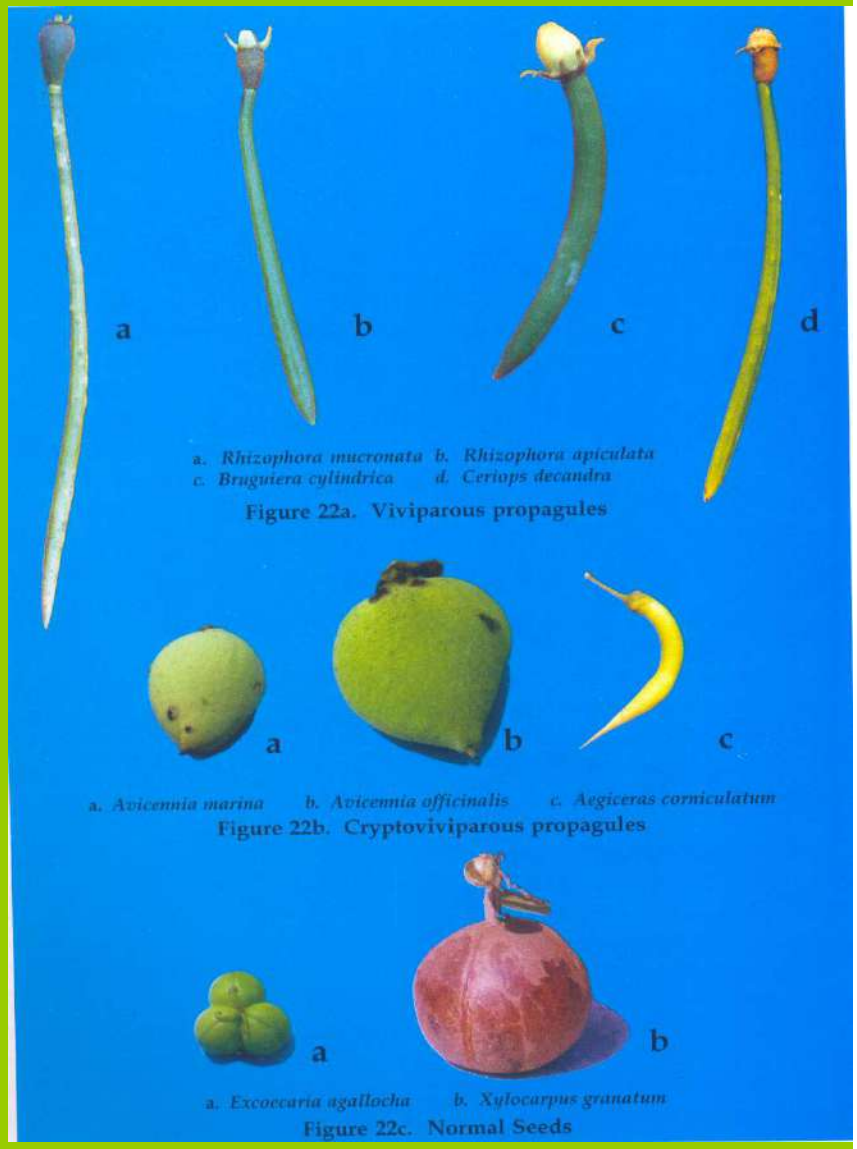


Fig. 1. Patterns of nutrient cycling in tropical estuaries (after Saenger, Hegerl and Davie, 1983).

- Green canopy – ever green climate moderation
- Litter fall – nutrient cycling
- Feeding and breeding grounds

SEEDS



a. *Rhizophora mucronata* b. *Rhizophora apiculata*
c. *Bruguiera cylindrica* d. *Ceriops decandra*

Figure 22a. Viviparous propagules

a. *Avicennia marina* b. *Avicennia officinalis* c. *Aegiceras corniculatum*

Figure 22b. Cryptoviviparous propagules

a. *Excoecaria agallocha* b. *Xylocarpus granatum*

Figure 22c. Normal Seeds

Manakudy Estuary confluencing with the Arabian Sea. West Manakudy Church in the background

Manakudy Sand for built estuary

Rhizophora (a mangrove species) propogules are being brought from Kerala and are being isolated before planting in 1992

Dr.G.Santhana Kumar –
Enviorment Scientist

Nursery of saplings is raised at village level

Rhizophora, Avicennia, Brugeria are some of the plants being raised along the bank of the estuary community participation in nursery raising is ensured

KEM an innovative method in sapling raising

Thiru. N. Manivannan SP inaugurated planting the Rhizopora

Planted Rhizopora grown after one year

Planted Rhizopora grown after four years

Two mangrove species grown in Manakudy estuary. Recent photo after two decades.

Avicennia in the foreground and Rhizophora in the background. (nearly 40 ft height)–Evergreen coastal flora playing a major role in climate change

Stilt roots of the Rhizophora – these two roots are very important habitat for sedentary organisms and also in preventing soil erosion.

Respiratory roots of Avicennia exposed during low water level.

Two photos showing the propogules hanging from the mother plant.(Rhizophora)

Three years old Rhizophora

Plenty of bats and egrets roosting in Rhizophora

Dr. Santhanakumar, Environment Scientist is observing the algae and the association epifauna

Two Brahmini Kites seen in the upper reaches of Manakudy estuary in between coconut and pandanus.

During very low water level on the estuarine bank, crab holes are exposed. **Mud crabs** breeding abundantly.

Holes of **fiddler crabs** with excavated soil pellets

Fiddler crabs coming out of their abode. Recent observation of the fiddler population indicated the polluted estuarine environment enhanced ecological health.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The mushrooming colony of Fiddler
Crabs along the estuary bank

More than 80 Wetland birds species are found in Manakudy Estuarine system. These birds belongs to above 50 genera and 20 families exhibiting a high degree of avifaunal diversity. Prominent among them is gorgeous greater flamingo. Other birds include dabchick, two species of pelicans, 3 species of cormorants, snake bird, over 10 species of Egrets and Herons, Open bill stork, Painted stork, Spoon bill, Black ibis, Glossy ibis, Block headed ibis, Plovers, Sand Pipers, Black Winged Stilt, Gulls, Terns, King Fishers and Wagtails ….

Manakudy Estuary is declared as the "Estuary Bird Century" by Tamil Nadu Government - 2012

Backwater fisherman fishing in the estuary sailing in his catamaran

Cat fish caught in the estuary weighing nearly 500 gms

Estuarine fishing using gill net

A live mud crab taken with the legs tied

Stake-Holder with their catches

Varieties of fishes caught in the estuary

Dr. G. Santhanakumar amidst Manakudy mangrove along with children seriously discussing about the mangroves and their importance in the estuarine environment.

Interaction with Children on the utility of Mangroves aired live by All India Radio, Nagercoil

Dr. G. Santhanakumar explaining the thickly grown stilt roots and their importance of green canopy in Rhizophora during the Visit of Mr. Regi(TdH(G))

Conservation Forest Officer Visit the Estuary Renaturation

District Collector Visit the Eco Park and Estuary

Coastal Pond - Before

Coastal Pond - After

Eco Parks

Implementation of Govt. projects initiated by HEAL

- The Department of Tourism and development has sanctioned Rs.3.27 crores for Eco Tourism centre in Manakudy Estuary under Swadesh Dharshan scheme – Govt. of India
- The Govt. of Tamil Nadu has sanctioned Rs.10.00 crores for establishing as Eco Protection farm with natural trial in Manakudy through Fisheries Department

Ms.Iris Stolz, TdH(G) office and Ms.Cynthia, TdH(G) I.P.S.O Visiting the Mangroves

Visit of AEI, Luxembourg Team under the Leadership of Mr.Bernard

The Stake holders explain the experience in the development of Mangroves and its effects on enhancing livelihood options to the visiting team from AEI, Luxembourg

Mangroves and its values - approached in different angles

Usage of mangroves with specific purpose like conservation by nature lovers and hobby or tourism perspective by the forest department.

Beyond those benefits different sectors are having their own approach. They are listed as follow

Researches has been done by

M.Sc (Botany/Zoology) Nearly	75
M.Phil (Botany/Zoology) Nearly	30
Ph.D (Botany/Zoology) Nearly	10
Students – College B.Sc & M.Sc visited	500
Students Eco club (School)	1000
IFS (Indian Forest Service) trainees nearly	200
NGOs and INGOs (a group consisting atleast 30)	25 NGOs

Manakkudy estuary with the old bridge broken by the Tsunami. To prevent coast and estuarine bank boulders and groins. The suggested eco-friendly option worked out by Dr. G. Santhanakumar is to plant mangroves amidst boulders to retain them from being carried away by tidal motion.


HEAL

Coastal Sand Dunes

Natural coastal sand dune intact is Periacaud sand dune with 2 km length, width 300 meter bottom and 200 meter from sea level

An exposure to study sand dune. Potable drinking water is available near the sea and sand dune due to sponge effect. A habitat for marine fauna like reptile, crabs, hare, snakes etc

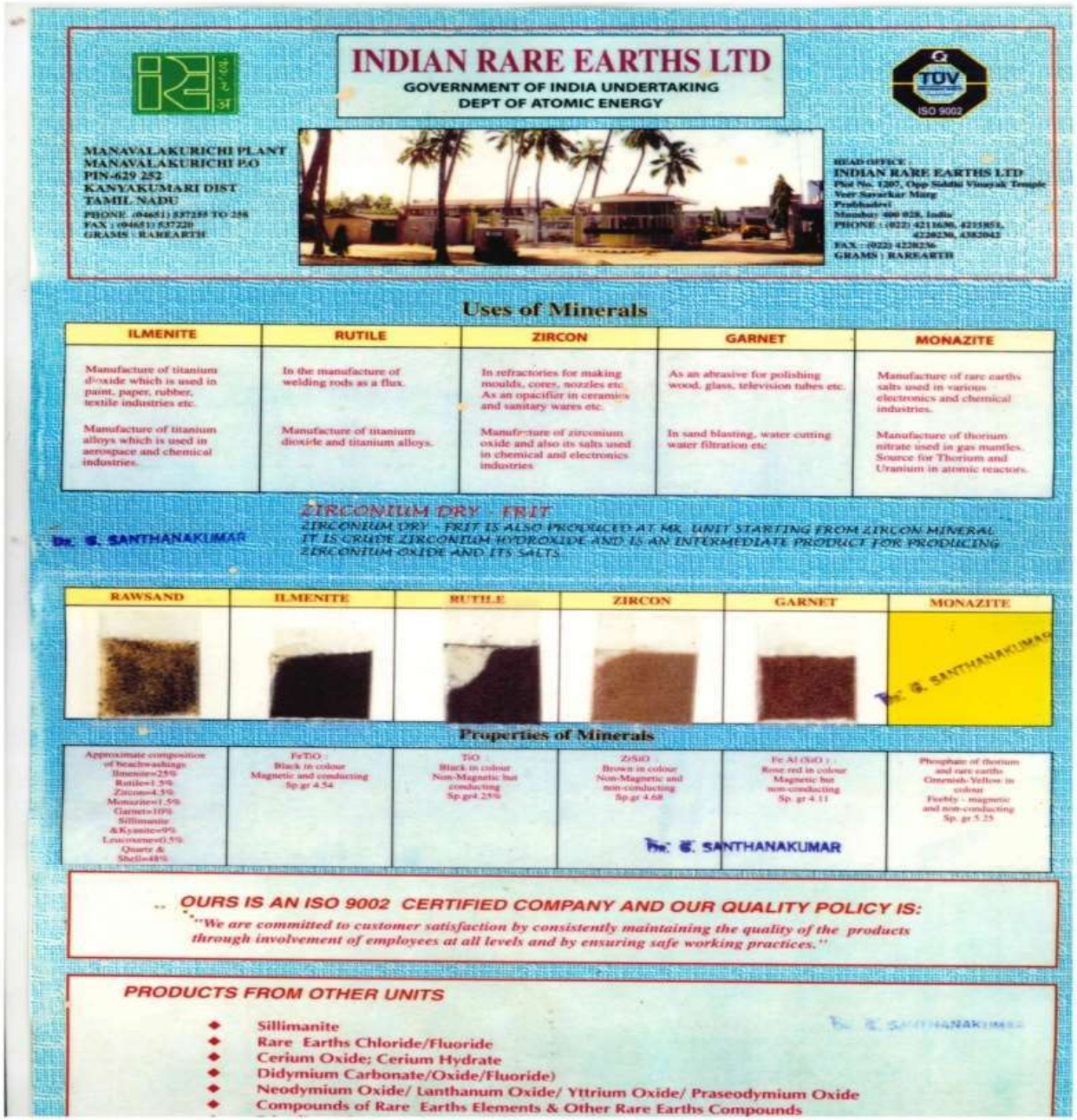
Children in planting sapling – ensuring ecological child right
Eco clubs members from the local schools in planting.

Sand dune model – a tool to educate the school children and the general public on coastal sand dune – its structure, various types of destruction say for mining for rare minerals, for housing purpose, for play ground, for tourism development, industrial purpose and destruction by Tsunami.

School children won competition on coastal sand dunes through this education at district and state level.

IRE dump tail end sands along the coast to create man made artificial sand dunes at Kootumangalam and at Mondaikaud Vettumadai along the AVM canal.

Saplings planted on this by IRE



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Uses of Minerals

ILMENITE	RUTILE	ZIRCON	GARNET	MONAZITE
Manufacture of titanium dioxide which is used in paint, paper, rubber, textile industries etc.	In the manufacture of welding rods as a flux.	In refractories for making moulds, cores, nozzles etc. As an opacifier in ceramics and sanitary wares etc.	As an abrasive for polishing wood, glass, television tubes etc.	Manufacture of rare earths salts used in various electronics and chemical industries.
Manufacture of titanium alloys which is used in aerospace and chemical industries.	Manufacture of titanium dioxide and titanium alloys.	Manufacture of zirconium oxide and also its salts used in chemical and electronics industries	In sand blasting, water cutting water filtration etc	Manufacture of thorium nitrate used in gas mantles. Source for Thorium and Uranium in atomic reactors.

Dr. S. SANTHANAKUMAR

ZIRCONIUM DRY - FRIT

ZIRCONIUM DRY - FRIT IS ALSO PRODUCED AT MK UNIT STARTING FROM ZIRCON MINERAL IT IS CRUDE ZIRCONIUM HYDROXIDE AND IS AN INTERMEDIATE PRODUCT FOR PRODUCING ZIRCONIUM OXIDE AND ITS SALTS.

RAWSAND	ILMENITE	RUTILE	ZIRCON	GARNET	MONAZITE

Properties of Minerals

Approximate composition of beachwashings: Ilmenite=25% Rutile=1.5% Zircon=4.5% Monazite=1.5% Garnet=10% Sillimanite &Kyanite=9% Leucoxene=0.5% Quartz & Shell=48%	$FeTiO_3$: Black in colour Magnetic and conducting Sp.gr 4.54	TiO_2 Black in colour Non-Magnetic but conducting Sp.gr4.25%	$ZrSiO_4$ Brown in colour Non-Magnetic and non-conducting Sp.gr 4.68	$Fe_3Al_2(SiO_4)_3$: Rose red in colour Magnetic but non-conducting Sp. gr 4.11	Phosphate of thorium and rare earths Greenish-Yellow in colour Feebly - magnetic and non-conducting Sp. gr 5.25

Dr. S. SANTHANAKUMAR

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"We are committed to customer satisfaction by consistently maintaining the quality of the products through involvement of employees at all levels and by ensuring safe working practices."

PRODUCTS FROM OTHER UNITS

- Sillimanite
- Rare Earths Chloride/Fluoride
- Cerium Oxide; Cerium Hydrate
- Didymium Carbonate/Oxide/Fluoride)
- Neodymium Oxide/ Lanthanum Oxide/ Yttrium Oxide/ Praseodymium Oxide
- Compounds of Rare Earths Elements & Other Rare Earths Compounds

1. RAWSAND
2. ILMENITE
3. RUTILE
4. ZIRCON
5. GARNET
6. MONAZITE

Chothavilai

FOOD SECURITY

- Food security exist when all members at all times have access to enough food for an active and healthy life.
- Eradication of the Malnutrition to the children, youth, vulnerable groups in the society.
- Eradication of poverty, availing Government Schemes, increase the income
- Provided quality drinking water to improve health- particularly women, children & aged.

School Eco Garden/Kitchen Garden/ Roof Garden

- Established in all schools/ community with Eco Garden
- Supplementary nutrition in the mid day meals
- Provided ecological education
- To ensure the food security to the children, women and old age people

NATURAL FARMING

- Provided awareness & training on sustainable agriculture
- Small farmers as practitioners/producers
- Organic farming, manure, organic fertilizer
- Enrichment of Soil
- Environment friendly agriculture practices in farmers

MODEL FARMING

- Interested farmers trained on more eco friendly farming, increase awareness, knowledge and skills
- Utilization of degradable biological waste and preservation of food security
- Practice oriented learning centers farmers and peer groups from the fisher villages to learn alternative environment friendly waste disposal techniques.
- Cross – learning & sharing of resources among farmers
- Children and Youth as a Eco Friendly trainers
- This is a base for exposure place.
- This promoted multi-cropping

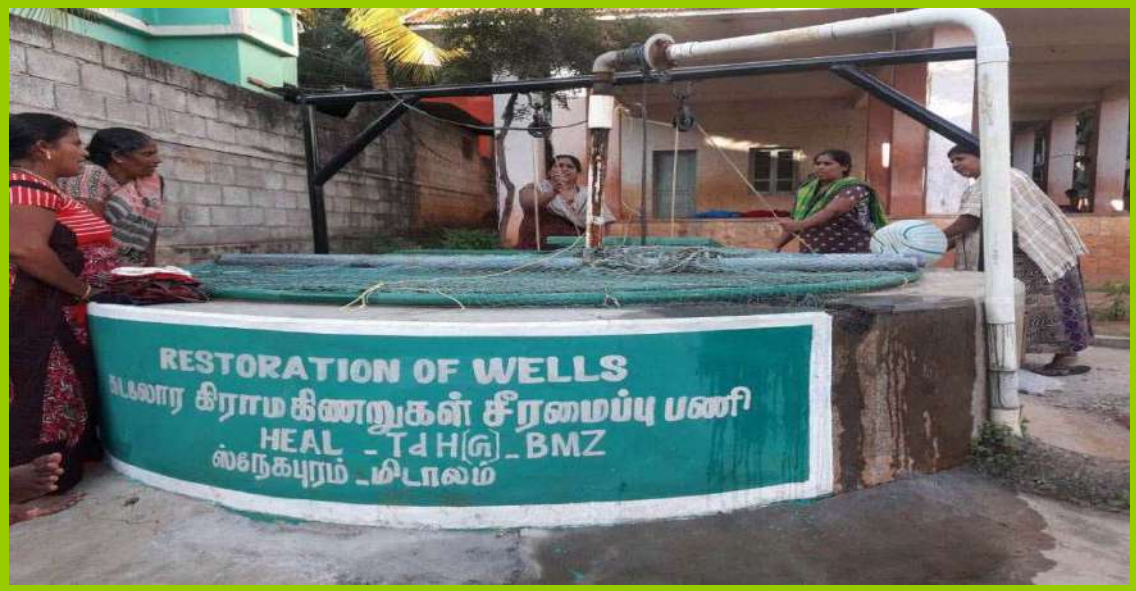
WATER RESOURCES – CLEAN & DRINKING WATER

- Water resources are natural resources for potential use for all.
- In the world 71% of surface is covered by water
- Among this water surface area 97.5% in the salt content water
- Underground water area 2.5%
- Portable water area 0.26% only
- 29% population in the earth depend on 0.26% only

RESTORATION OF PONDS & WELLS

- Repairing and maintenance
- Effective management of pond & wells by the users/committee/ownership and sustainability
- Increased quantity and quality of the water
- Improving drinking water security for all (women, children & aged)

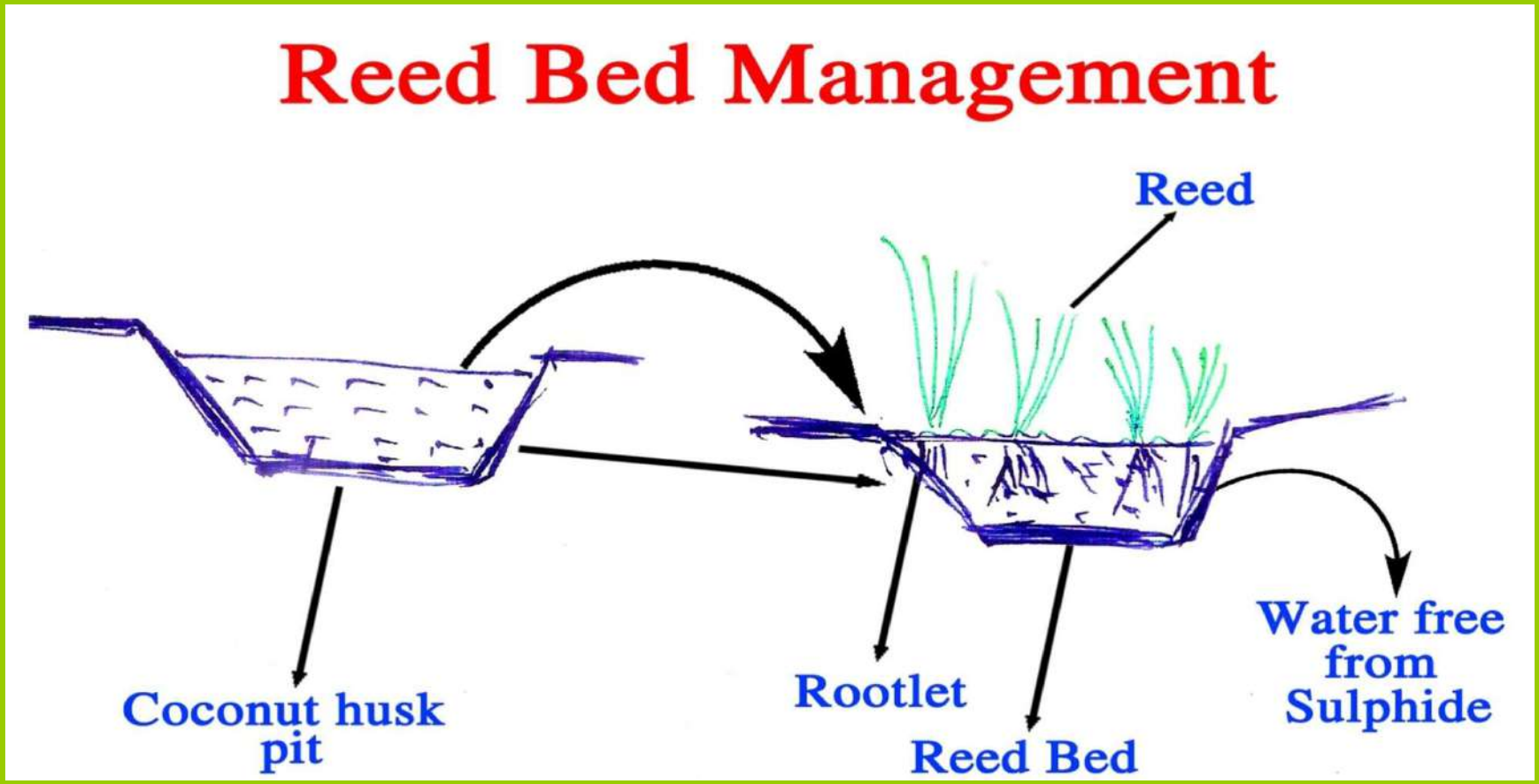

Restoration of Pond
Thamaraikulam-Pallam
By
HEAL-TdH(G)-BMZ
2014


RESTORATION OF WELLS
HEAL -TdH(G)-BMZ

RAINWATER HARVESTING

- Rainwater harvesting structure established in all schools.
- Rainwater storage used for drinking water, hand washing and waste water to the School Eco Garden.
- Rainwater structure connecting with roof water harvesting and Panchayat drinking water for safe and durability of the structure and continuity of the water availability.

Plant clarification system



Retting pond in the foreground and the Manakudy estuary in the rear

Ret liquor is being released. Effluent is released with Sulphide pollution

PORTABLE AQUA UNIQUE & LIFE SAVING (PAUL)

- Paul unit was used during the disaster
- Paul unit was established in school and community
- It is very useful to coastal area (1 unit meter reading 10967.7 at Pallam School)
- The Paul unit water is used as an additional portable water facilities for the community

CHALLENGES

- Disaster like Okhi cyclone and drought
- Getting the permission from government authorities
- Lack of availability of the local body functionaries
- Facing so many difficulties to get permission from the parish to launch the program

THANKS
to
Terre des hommes