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Point for discussion this month **Invasion of non native species in rivers and lakes**

Eternal Words

"You must be the change you wish to see in the world."
– Mahatma Gandhi

The best time to plant a tree is 20 years ago. The second best time is now
- Dambisa Moyo, Zambian economist

"The nation behaves well if it treats its natural resources as assets which it must turn over to the next generation increased, and not impair, in value."
— Theodore Roosevelt

The environment is not as 'cheap as chips', it's priceless and we all have a part to play in protecting it
- David Dickinson (TV celebrity)

Dear Readers,

It's a beautiful photograph of Koyna river flanked by high mountains meandering through thick forests of Western Ghats in South Maharashtra. The catchment supports one of the biggest hydroelectric projects in Maharashtra bringing prosperity to the state from decades. Rain-dependency of local population is changing due to year-round tourism development but leading to worrying situation of deforestation and waste accumulation. Mahabaleshwar – the most popular hill station where Koyna River originates with other 4 rivers – is under pressure due to floating population. Tourism if recognises the importance of ecology and ecohydrology of river basins, then it will become more responsible and invasion-encroachment can be stopped.

Population growth surrounding the most beautiful lake of Mumbai is a major cause of its accelerated ecological death. Invasion of water hyacinth has become routine phenomenon in the lake due to ingress of sewage discharged from not only from poor communities but from rich high-rise buildings in the catchment also. This lake once served as a source of drinking water for developing Mumbai has become a ground for invasive floral and faunal species. So, the native species of Powai Lake needs rejuvenation and looking at the institutions on its shoreline to help it for its ecological revival. IIT Powai – a world renowned institution or NEERI must devise a scheme for it's sustainable management while removing stresses from its lentic-lotic system and help, guide municipal corporation and state government to achieve the targets based on tangible improvement criteria.

SERI's ecotechnological work of 18 years has been compiled by our team to apprise the readers of marvels of ecological processes and ecosystem approach. It was difficult period of SERI to sail through non-conducive policy framework for ecological restoration but with open-hearted support from industry and NGOs, we could complete 18 years of professional career in raking up ecological space in engineered infrastructure. Heartfelt thanks to all well-wishers and supporters of SERI who helped us to sustain and grow over a period of time. We are thankful to Green Infrastructure, WAPPSYS, Yash Foundation, Vihan and Eco-sys to walk along ecopath with us.

SERInews – the popular e-magazine is entering in 8th year, only because of its environmentally awakened readers. Heartfelt thanks to all the readers and supporters!!

Thank you,
Chief Editor

-News Views

Invasion in the Powai Lake

Powai Lake, an artificial lake, once was the source of drinking water for Mumbai. Pawai Lake is now a paradise for anglers. But this ecologically important lake, in midst of Mumbai is under threat of invasion as experts found number of foreign fishes growing in lake. The piranha, African catfish, Arowana, Flowerhorn, Red-eared slider turtle and few others are these unforeseen guests.

Pacu Piranha is fond of meat like its sibling origin red bellied Piranha. Red eared slider turtle is native of America and is banned in most of the countries all over the world as this invasive species is famous for eliminating the local indigenous species after entering the ecosystem.

African catfish and Tilapia are the most important invasive species in the list of International Union for the conservation of Nature. Aquaculture in Controlled environment of these has benefits, but illegal fish farming crafted entry gate to these species in environment. Price in aquarium market is another suspected source for this invasive phenomenon of fishes in Powai Lake.

There were around 35 native fish species in Powai Lake; nowadays it counts only around 20, say naturalist.

These fishes threaten the existence of indigenous species by eating greedily or through completion for resources. The native species don't withstand against African catfish's strength and Piranha's voracious appetite. These foreign fishes got easily adopted as most of them thrive in warm tropical climates.

Growing Demand for aquarium and fish is leading more illegal trade and fish farming. Aquarium trade has to be Regulated and restricted to check the flow of invasive species entering in ecosystem. Lots of awareness about these invasions of species has to be done for classes and masses.

Or else Invasiveness will reach at point from where it would be difficult to extricate such species from environment.

Pachauri panel report on Sethusamudram rejected

Report by Prime minister–appointed RK Pachauri committee and also the objection raised by Tamil Nadu government on controversial Sethusamudram Project trashed by Ministry.

Shipping Ministry claimed in its affidavit that the project would prove to be beneficial in economic terms, besides serving the public interest and only after a careful examination of all relevant factors environmental clearance had been granted to the project.

The Pachauri panel report is said to be a "clear disconnect" between the committee's studies, its summary reports and conclusions.

The shipping Ministry has submitted this affidavit in response to Tamil Nadu's objections for the project as the project site is having historical importance.

The Ministry claimed that despite of the evidences and data provided by committee against the project is actually showing the benefits from the project and the evidences are not sufficient to block the project. The conclusion and studies of this committee are contradictory. Hence the recommendations of the committee are not tenable and are not supported by the scientific data and by the environmental studies commissioned by it.

The stated serious long lasting adverse environmental consequences as a result of the project are not scientifically studied and the committee's conclusion of denying Alignment 4A (an alternative route suggested by the court as against the original Alignment 6 which will cut through Ram Sethu) is not supported by detailed studies.

The demand to declare the Ram Sethu/Adam's Bridge, located southeast of Rameswaram near Pamban in Tamil Nadu, as a national monument by Tamil Nadu Government was also rejected.

Sethusamudram Ship Channel Project proposes linking the Palk Bay and the Gulf of Mannarbetween India and Sri Lanka by creating a shipping channel through the shallow sea sometimes called Setu Samudram, and through mythological Ram Sethu and Adam's bridge. The project involves digging a 44.9 nautical mile (83 km) long deepwater channel linking the shallow water of the Palk Strait with the Gulf of Mannar that would provide a continuous navigable sea route in and around the Indian Peninsula.

On 2 July 2005, the Indian Prime Minister Manmohan Singh unveiled the The Environmental Impact Assessment of Sethusamudram Ship Channel Project carried out by the Indian government.

The opinion aroused that, being an important fishing ground for the state of Tamil Nadu and existence of the Gulf of Mannar Marine National Park in the vicinity of the proposed project, the project would be the reason for the death of corals and would disturb the ecological balance.

Local fishermen and religious alike oppose the present route and are demanding alternative channels, which are available. They concerned that the present channel would destroy marine life and corals and will kill the trade in shankhas (conch shells) that has a turnover in excess of Rs 1.50 billion per annum. Invaluable thorium deposits which are too important for our nuclear fuel requirements would be also affected.

From economic point of view the time saving and cost reduced per voyage is just marginal.

In 2008 Prime Minister Manmohan Singh appointed Pachauri committee to look at an alternative alignment avoiding the sensitive Ramar Sethu stretch. Pachauri committee released its report in 2013, calling the project "unviable both from the economic as well as ecological angles"

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From ***SERI's Desk***

Ecotechnology for Sewage Treatment of Villages Using Soil Scape Filter

Scarcity of water in rural area, and effected health due to sewage contaminated water has to be concerned for livelihood downstream to Urbanised area. Sewage generated from Villages or residential settlements can be easily recycled with Soil Scape Filter Ecotechnology and can be used for irrigation purposes.

Ecotechnological treatment system – Vertical eco-filtration – Soil Scape filter of which first unit was installed in 1996 on mix of domestic industrial wastewaters (120 cum/day) after 6 years of research and on field pilot studies of Mr. Sandeep Joshi, the founder of Shrishti Eco-Research Institute.

The process that involves Simulation of ecological processes of green plants and bacterial symbiosis for zero electricity and no chemical biodegradation of pollutants leading to stabilized ecosystem starting from detritus food chain.

For this Vertical eco-filtration – Soil Scape Filter – patent is registered in the Name of Sandeep Joshi of Shrishti Eco-Research Institute.

the capital expenditure required will be jus approximately Rs. 25 lacs and operational expenditure about 10% along with Area of 300sqm per MLD will be sufficient for treatment of sewage generated from village having population about 7000.

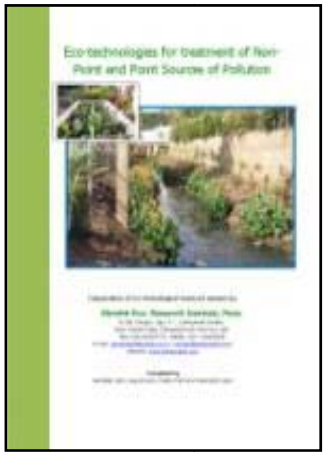
Along with pollution reduction limit the treatment system serves -

1. Reduction in energy footprint by 70 – 80%
2. Reduction in chemical consumption by 50- 60%
3. Reduction in process control by 80 -90%
4. Reduction in dedicated skilled manpower 80-90%
5. Reduction in space footprint
6. Reuse and recycling of treated water for gardening, construction purpose and any other non-consumptive and non-contagious applications
7. Possibility of making it zero discharge unit

Why Soil Scape Filter?

1. Optimal space footprint comparable with Activated Sludge Process and its bio-mechanical variants – 1 sq. m for 1000 litres/day (Actually space is not problem in rural India/Maharashtra)
2. Adaptable to any kind of terrain and shape of land; in the villages low-line area can be identified for the treatment system. It can be developed along the blue line (flood plain) of surface water bodies
3. Construction material – locally available such as stones, sand, gravel etc.; only one time use of proprietary material which augments the treatment process multifold in very short period of time
4. Tested, proven lifetime of treatment system – about 30 years (Systems installed 17 years ago are still running efficiently)
5. If gravity benefits are available, then electricity cost for operations is absolutely zero. This is very suitable for Maharashtra's villages as there is power cut for long hours
6. Treated water contains fecal coliforms in the range 0 – 7 MPN/100 ml (confirmed in MPCB's Central Lab in 2010) (while CPCB norm is 2500 MPN/100 ml). So, the soil scape filter is very suitable for Maharashtra's villages which will help in reducing the outbreaks of epidemics.
7. Very advanced ecological treatment with affordable capital and operational expenses and maintenance is very simple which can be done by unskilled personnel with simple orientation programme.

Detailed information about Soil scape Filtration and its Journey is published in "Compendium on Ecotechnological Treatment system for Point & Non-Point source"



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