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Point for discussion this month **Who is guardian of Fresh water bodies?**

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Eternal Words

A margin of life is developed by Nature for all living things - including man. All life forms obey Nature's demands - except man, who has found ways of ignoring them.

~Eugene M. Poirot, *Our Margin of Life*, 1978

Man must feel the earth to know himself and recognize his values... God made life simple. It is man who complicates it.

~Charles A. Lindbergh, *Reader's Digest*, July 1972

Man is a complex being: he makes deserts bloom - and lakes die.

~Gil Stern

Dear Readers,

The beautiful picture on cover page is of a perennial wetland in the dense forest of Periyar, Kerala, India. These are the lifelines of any forest and are responsible for its sustainability and biodiversity. They are the source of water for wild animals. In the urbanised areas such beautiful wetlands are just barriers in selling the vast lands for construction and infrastructure. Then every inch of land is priced and priceless wetlands are destroyed for want of economic growth. This happens only because “ecological values” of the wetlands are considered as zero in human accounting system!

As per National Environment Policy of India, 2006 endorsed by wetlands can be alternative to sewage treatment plants. But the suggestion is instead of using natural wetlands; artificial wetlands can be developed in decentralised manner in the widespread area of the city to manage the sewage and industrial wastewaters. This will definitely reduce the heat budget of the city as compared to infrastructural and mechanistic systems which crave for more use of energy.

In the Bangalore City – famous for IT industry, about 200 wetlands – lakes have been killed for the city development and chief minister has asked his engineers to revive them for sustainable water supply for the city. Retaining the water body in the city does not give you short term huge benefits of selling flats.

Monsoon is on its verge in India. It has already the most of the parts of country and every where we can see such wetlands coming up. They are the natural wealth of the region. Let’s try our best to preserve and conserve these wet lands for our generation next.

In this issue you will get introduced with the power of PIL (Public Interest Litigation) with the help of which you can save and protect our fresh water bodies from the “development” giant. I think what is lacking in controlling the pollution and deterioration of fresh water bodies is the feeling of ownership. Ownership can protect it from outside hazards. Comparison of ecotechnology with the conventional technologies is given in the end to understand basic advantages of each technology and help decision makers to arrive at conclusions while selecting the technology as per requirements and applications.

**Thank you,
Chief Editor**

NEWS VIVES

Posco – never ending troubles!

Pohang Iron and Steel Co (Posco), a South Korean company, is one of the world's largest steelmakers. A memorandum was signed between Orissa Government and POSCO in 2005 to set up a steel plant in Jagjitsinghpur district of Orissa. The government will provide it 1,000 million tonnes of ore and 4,000 acres of land. The land selected for this project is partly private and partly government land. Out of the government land 2900 acres of land has been previously identified as forest land. Also the site selected for the port is ecologically sensitive as it's a nesting site for the endangered Olive Ridley turtles. Due to all these troubles the Environment clearance took two years and still the problem is not totally solved as the local people protest is still on and now there is addition of a new dispute over the source of water for the plant.

Will Devnadi breathe again?

In one of our previous issues we have published the story about channelization of Devnadi, a rivulet meeting the Mula River in Pune. The Baner Area Sabha , an NGO along with Jalbiradari filed a PIL in Mumbai High court against Pune Municipal Corporation (PMC) which started channelization of Devnadi under JNNURM scheme.



Recently, the Mumbai High Court has given stay orders to the PMC and ordered to stop every construction work in any river bed till the inspection committee from Ministry of Environment and Forest gives their say on this issue.

This is a success of people movement and a case study of how we can use legal frame work to protect our water bodies.

We will cover in detail chronology of this Devnadi PIL in our next issue.

Cries of Hebbal Lake

Like thousands of other lakes the Hebbal lake of Bangalore is also crying for help.

Once its water was used for drinking but now even birds avoid this polluted water body. It was once a favourite place for migratory birds but now due to continuous flow of untreated sewage and effluent the water body is so polluted that you can hardly see any bird in its vicinity.

The Hebbal lake, one of the largest man-made lakes in the city, was built in the 16th century to meet the area's water requirements. The lake Development Authority took the responsibility to clean up the lake in 2002. They gave licence to East India Hotels group to take care of the lake for 15 years.

EIH first decided to have a lake view hotel as well as recreation centre near the lake. But due to local nature lovers efforts this activity has been stopped.

As per the studies conducted to evaluate the quality of lake water it is clear that the water is severely polluted by the incoming untreated sewage streams. And the lake is highly sedimented. This has impact on ground water also.

Is this a typical murder of a water body under the name of development? While getting our skylines to the tallest height is it necessary to scarify our fresh water bodies? Who is guardian of fresh water bodies?

The residences of near by locality are demanding immediate attention as they feel the threat of losing this natural beauty completely.



Water Hyacinth in Hebbal Lake



The dried Hebbal lake

Each Drop of Water - Full of Life! (Photographs by Susmit)



Comparative Statement of Conventional Technologies and Ecotechnology:



Sr. No.	Particulars	BAF	TF	ASP	MBR	SBR	Root zone Technique	Soil Scape Filter	Green Bridge (STAC) System
1.	Wastewater Source	Point Source	Point Sources	Point Sources	Point Sources	Point Sources	Point Sources	Point Sources	Non-Point Sources
2.	Application	For domestic and industrial wastewaters containing non toxic organic matter only	For domestic and industrial wastewaters containing non toxic organic matter only	For domestic and industrial wastewaters containing non toxic organic matter only	For domestic and industrial wastewaters containing non toxic organic matter only	For domestic and industrial wastewaters containing non toxic organic matter only	For domestic and industrial wastewaters containing non toxic organic matter only	For domestic and industrial wastewaters, even for wastewater containing toxic organic and inorganic pollutants.	For domestic and industrial wastewaters, even for wastewater containing toxic organic and inorganic pollutants.
3.	Ancillary units	Eqaulisation tank, neutralization tank, primary settling, aerated filter and secondary settling tanks	primary settling, Trickling filter and secondary settling tanks	4 units Requirement of equalization tank, neutralization, primary settling and secondary settling tanks.	Neutralization tank, Primary clarifier , Aeration Tanks & Membrane Reactor, Sludge Dying Bed	One tank, it is Fill & draw system in which all process carried out sequentially in same tank .	Properly designed treatment tank, Graded filling material, Acclimatized, aerobic, anaerobic & facultative Bacteria, Acclimatized & selected indigenous plants.	One unit only The requirement is of neutralisation if the pH of wastewater is not in the range of 6.5 - 8.5	Only metal screen to remove floating solids like plastics
4.	Hydraulic loading m ³ /m ² .d	1 - 20	1 -10	1 - 3	12 - 14	--	0.06 - 0.25	1 - 2	50 - 200
5.	HRT (h)	1.3	-	4 - 8	2 - 5	9-30	5-10	Nil	Nil

Sr. No.	Particulars	BAF	TF	ASP	MBR	SBR	Root zone Technique	Soil Scape Filter	Green Bridge (STAC) System
6.	Organic loading (COD/BOD) Kg/ m ³ .d	1.5 - 4	1.6	0.32 - 16	0.4 - 1.5	0.08 - 0.24	0.25	5-10	10 - 40
7.	COD/BOD reduction range	75 - 93%	65 - 90%	85 - 95%	85 -95%	85 - 95 %	91%	90 - 98%	70 - 80%
8.	Sludge production (Kg/Kg BOD)	0.15 - 0.25	0.3 - 0.5 or 0.63 - 1.06	0.6	0.0 - 0.3	0 - 0.3	Nil	Nil	Nil
9.	Electricity requirement	200	150	300	200	3 - 10	50	Nil	Nil
10.	Failures	Even small concentrations disturb the process.	Even small concentrations disturb the process.	Even small concentrations disturb the process.	Even small concentrations disturb the process.	Even small concentrations disturb the process.	Even small concentrations disturb the process.	Nil because it is natural process	Nil because it is natural process
11.	Key parameters of process	PH, TSS, BOD, COD & Toxic Substance	PH, TSS, BOD, COD & Toxic Substance	PH, TSS, BOD, COD & Toxic Substance	PH, TSS, BOD, COD & Toxic Substance	PH, TSS, BOD, COD & Toxic Substance	PH, TSS, BOD, COD & Toxic Substance	PH	PH
12.	Maintenance	Skilled	Skilled	Skilled	Skilled	Skilled	Skilled	Simple	Simple
13.	Installation cost per MLD in Rs. lakhs	160	140	120	600	225	180	90	10 - 20
14.	Operational Cost for 1 m ³ /d	6/-	6/-	8/-	25/-	16/-	2/-	2/-	0.07/-

Abbreviations:

BAF - Biological Aerated Filter
 ASP - Activated Sludge Process
 MBR - Membrane Bioreactor
 TF - Trickling filter
 SBR - Sequential Batch Reactor
 STAC - Saprobic Trophic Adsorption & Cycling
 Shrishti Eco-Research Institute, Pune