Volume no. 13, for the quarter ending March, 2015

Green Files

Newsletter on Environment audit and sustainable development issues

International Centre for Environment Audit and Sustainable Development (iCED)

Green Files is a quarterly newsletter compiled by iCED Jaipur. This newsletter highlights issues on environment and sustainable development which can enable audit offices identify areas of audit concern. It comprises results of recent environmental conferences-national & international; "state in focus" where environment issues in a state are highlighted; critical appraisal of national environmental acts; snapshots of recent news on environment ; Supreme Court judgements on environment issues as well as recent national and international audit reports pertaining to environment and sustainable development.

We look forward to your suggestions to make Green Files more relevant. Contributions to the newsletter are also welcome. These can be mailed to iced@cag.gov.in.

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I. 2015 UN-Water Annual International Zaragoza Conference: Water and Sustainable Development: From Vision to Action, January 2015

(1) Background

More than 300 participants from United Nations Agencies and programmes, experts, representatives of the business community, governments and non-governmental organizations met from 15 to 17 January 2015 in Zaragoza, Spain, to discuss the tools for implementing the post-2015 agenda for water. This is also the last year of the International Water for Life Decade, so it is especially important for taking stock of and learning from achievements as well as planning the next steps. The Conference dealt with some of the main implementation challenges related to four main themes (Water, Sanitation and Hygiene, Water Resources Management, Water Quality and Risks) in relation to the targets recommended by the Open Working Group on Sustainable Development Goals and UN-Water. The Conference also dealt with some of the main implementation challenges related to the five main targets recommended by the UN-Water proposal on the global goal for water. These are:

A. Achieve universal access to safe drinking water, sanitation and hygiene;

B. Improve (% to be defined) the sustainable use and development of water resources in all countries;

C. All countries strengthen equitable, participatory and accountable water governance;

D. Reduce untreated wastewater (% to be defined), nutrient pollution (% to be defined) and increase wastewater reuse (% to be defined);

E. Reduce mortality (% to be defined) and economic loss by (% to be defined) from natural and human-induced water-related disasters.

(2) Objectives of the conference

The overall aims of the Zaragoza Conference were:

- To identify the specific pending issues that need to be tackled in relation to the main implementation challenges related to Water, Sanitation and Hygiene, Water Resources Management, Water Quality and Risks.
- To analyze the main opportunities and challenges for the different means of implementation to advance the post-2015 agenda.
- To analyze how lessons learned by the UN during the International Decade for Action can be used in the post-2015 agenda, specifically in relation to water cooperation, and women engagement.

(3) Issues discussed

Water and sustainable development

- Over 1.7 billion people live in river basins where water use exceeds recharge, leading to the desiccation of rivers, depletion of groundwater and the degradation of ecosystems.
- Two-thirds of the world's population will live in water-stressed countries by 2025 if current consumption patterns continue.
- Demand for water will increase by 55% by 2050.
- Economic losses from inadequate delivery of water and sanitation amounts to 1.5% of GDP of the countries included in a WHO study on meeting the MDGs.
- Some estimates suggest over 80% of wastewater is discharged without treatment.
- Water shortages have been identified by industry, government, academia and civil society as one of the top three global risks of highest concern to them.
- Since the original Rio Earth Summit in 1992 floods, droughts and storms have affected 4.2 billion people (95% of all people affected by

disasters) and caused US$ 1.3 trillion of damage (63% of all damage).

Implementing improvements in water quality and protecting ecosystem services

- By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and increasing recycling and safe reuse.
- By 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
- By 2030, expand international cooperation and capacity-building support to developing countries in water and sanitation related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.
- By 2020 achieve environmentally sound management of chemicals and all wastes throughout their life cycle in accordance with agreed international frameworks and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment.
- By 2020 ensure conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
- By 2020 introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems, and control or eradicate the priority species.

Implementing Water, Sanitation and Hygiene--Sustainable Development Goals:

- By 2030 end the epidemics of AIDS, tuberculosis, malaria, and neglected tropical diseases and combat hepatitis, water-borne diseases, and other communicable diseases.
- By 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination.
- By 2030 achieve universal and equitable access to safe and affordable drinking water for all.
- By 2030 achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.
- By 2030 expand international cooperation and capacity-building support to developing countries in water and sanitation related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.
- Support and strengthen the participation of local communities for improving water and sanitation management.

Implementing Risk Management in Water and Sanitation

- By 2030 significantly reduce the number of deaths and the number of affected people and decrease the economic losses relative to GDP caused by disasters, including water-related disasters, with the focus on protecting the poor and people in vulnerable situations.
- By 2030, expand international cooperation and capacity-building support to developing countries in water and sanitation related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.
- Support and strengthen the participation of local communities for improving water and sanitation management.

Implementing Water Resources Management

- By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity.
- By 2030 implement integrated water resources management at all levels, including through trans-boundary cooperation as appropriate.

(4) Outcomes

- A toolkit for implementation;
- Learning and knowledge exchange among Conference participants through interdisciplinary discussions;
- A series of documented case studies, video interviews, information briefs and other materials for World Water Day 2015;
- A Conference report, including lessons from the International Decade for Action 'Water for Life'.

Sources:- *http://www.un.org/waterforlifedecade/waterandsustainabledevelopment2015/index.shtml*

II. M.C. Mehta v. Union of India, Tanneries Case: (Calcutta) 1996

(1) Background

A public interest petition filed under Article 32 of the Constitution of India was initially directed against the tanneries located in the city of Kanpur. The Supreme Court (SC) in 1987 (M. C. Mehta v. Union of India, Kanpur tanneries) issued various directions in relation to the Kanpur tanneries. While monitoring these directions, the scope of the petition was enlarged and the industries located in various cities on the banks of River Ganga were called upon to stop discharging untreated effluent into the river. In this judgment, the SC is concerned with the tanneries located at Tangra, Tiljala, Topsia and Pagla Danga the four adjoining areas in the eastern fringe of the city of Calcutta (the Calcutta tanneries). These areas accommodate about 550 tanneries. The status of the four tannery clusters in Calcutta, according to the NEERI Report was that no appropriate waste water drainage and collection systems were available in any of the tannery clusters. The untreated waste water flows through open drains causing serious environmental, health and hygiene problems. No waste water treatment facilities existed in any of the four tannery clusters. The tannery units were located in highly congested habitations, offering little or no scope for future expansion, modernisation or installation of Effluent Treatment Plants (ETPs). Surroundings of the tanneries were extremely unhygienic due to discharge of untreated effluents in open drains, stagnation of wastewater in low-lying areas around the tannery units, and accumulation of solid waste in tanneries.

(2) Judgment

- The Calcutta tanneries operating in Tangra, Tiljala, Topsia and Pagla Danga areas in the eastern fringe of the city of Calcutta shall relocate themselves from their present location and shift to the new leather complex set up by the West Bengal Government. The tanneries which decline to relocate shall not be permitted to function at the present sites.
- The Calcutta tanneries shall deposit 25% of the price of the land before 28-2-1997 with the authority concerned. The subsequent instalments shall be paid in accordance with the terms of the allotment letters issued by the State Government; tanneries who fail to deposit 25% of the price of the land shall be closed on 15-4-1997. The Board shall issue public notice in two English and two Bengali newspapers for two consecutive days by 31-12-1996 directing the Calcutta tanneries to deposit 25% of the land price before the authority named therein by 28-

2-1997. It shall also be stated in the public notice that the tanneries failing to deposit the amount shall be closed on 15-4-1997.

- The Board shall prepare a list of the tanneries which decline/fail to deposit 25% of the land price by 28-2-1997 and send the same to the Superintendent of Police and Deputy Commissioner of the areas concerned. The Superintendent of Police/the Deputy Commissioner concerned shall close all the tanneries who fail/decline to deposit 25% of the land price. The said tanneries shall be closed on 15-4-1997.

- All the Calcutta tanneries who deposit 25% of the land price shall be permitted to function at the present sites provided they keep on depositing the subsequent instalments in accordance with the terms of the allotment letter.

- The State Government shall hand over the possession of the plots allotted to the tanneries before 15-4-1997.

- The State Government shall render all assistance to the tanneries in the process of relocation. The construction of the tannery buildings, issuance of any licences/ permissions etc. shall be expedited and granted on priority basis.

- The use of the land which would become available on account of shifting/relocation/ closure of the tanneries shall be permitted for green purpose. While framing the scheme the State Government may keep in view for its guidance the order of this Court in M. C. Mehta v. Union of India [(1996) 4 SCC 351] relating to the shifting of Delhi industries.

- All the Calcutta tanneries shall stop functioning at the present sites on 30-9-1997. The closure order with effect from 30-9-1997 shall be unconditional. Even if the relocation of tanneries is not complete they shall stop functioning at the present sites with effect from 30-9-1997.

- The State Government shall appoint an Authority/Commissioner who with the help of Board and other experts and after giving opportunity to the polluting tanneries concerned, assess the loss to the ecology/environment in the affected areas.

- The said authority shall further determine the compensation to be recovered from the polluter-tanneries as cost of reversing the damaged environment. The authority shall lay down just and fair procedure for completing the exercise.

- Pollution fine of Rs. 10,000 each on all the tanneries in the four areas of Tangra, Tiljala, Topsia and Pagla Danga was imposed.

- The compensation amount recovered from the polluting tanneries and the amount of fine recovered from the tanneries shall be deposited under a separate head called "Environment Protection Fund" and shall be utilized for restoring the damaged environment and ecology. The pollution fine is also liable to be recovered as arrears of land revenue.

- The State Government in consultation with the expert bodies like NEERI, Central Pollution Control Board and the Board shall frame scheme/schemes for reversing the damage caused to the ecology and environment by pollution. The scheme/schemes so framed shall be executed by the State Government. The expenditure shall be met from the "Environment Protection Fund" and from other sources provided by the State Government.

- The judgment will be monitored by the "Green Bench" already functioning in the Calcutta High Court

(3) Significance of the Judgment

The SC further stated that some of the salient principles of 'Sustainable Development', as culled out from Brundtland Report and other international documents, are Inter-Generational Equity, Use and Conservation of Natural Resources, Environmental Protection, the

Precautionary Principle, Polluter Pays Principle, Obligation to Assist and Cooperate, Eradication of Poverty and Financial Assistance to the developing countries. It further stated that `The Precautionary Principle' and `The Polluter Pays Principle' are essential features of `Sustainable Development'. The `Precautionary Principle' - in the context of the municipal law means:

i. Environmental measures - by the State Government and the statutory authorities - must anticipate, prevent and attack the causes of environmental degradation.

ii. Where there are threats of serious and irreversible damage, lack of scientific certainly should not be used as a reason for postponing measures to prevent environmental degradation.

iii. The `Onus of proof` is on the actor or the developer/industrialist to show that his action is environmentally benign.

The court further stated that 'The Polluter Pays Principles' has been held to be a sound principle by SC in Indian Council for Enviro-Legal Action v. Union of India [(1996) 3 SCC 212 : JT (1996) 2 SC 196]. The Court observed: that `.... we are of the opinion that any principle evolved in this behalf should be simple, practical and suited to the conditions obtaining in this country'. It ruled that `..... once the activity carried on is hazardous or inherently dangerous, the person carrying on such activity is liable to make good the loss caused to any other person by his activity irrespective of the fact whether he took reasonable care while carrying on his activity. The rule is premised upon the very nature of the activity carried on'. Consequently the polluting industries are `absolutely liable to compensate for the harm caused by them to villagers in the affected areas, to the soil and to the underground water and hence, they are bound to take all necessary measures to remove sludge and other pollutants laying in the affected areas'. The `Polluter Pays Principle' as interpreted by this Court means that the absolute liability for harm to the environment extends not only to compensate the victims of pollution but also the cost of restoring the environmental degradation. Remediation of the damaged environment is part of the process of `Sustainable Development' and as such the polluter is liable to pay the cost to the individual sufferers as well as the cost of reversing the damaged ecology. The Precautionary Principle and the Polluter Pays Principle have been accepted as part of the law of the land."

Sources: *http://www.elaw.org/node/6943, http://newindialaw.blogspot.in/2013/05/precautionary-principle-of.html; http://www.nlsenlaw.org/waterriver-3/domestic-legal-framework/supreme-court-cases/*

III. Critical discussion of rules/laws: Guidelines for Ecotourism in and around Protected Areas, 2011

(1) Background

Ecotourism is defined as 'responsible travel to natural areas that conserves the environment and improves the well-being of local people'. Such tourism is low impact, educational, and conserves the environment while directly benefiting the economic development of local communities. Most wilderness areas across India are fragile ecosystems that provide a whole host of ecosystem services to local residents and people living downstream; and continue to remain important tourist attractions. However, unplanned tourism in such landscapes can destroy the very environment that attracts such tourism in the first place.

These directives and guidelines (2011) for ecotourism are applicable to any Protected Areas, whether rural or urban, including National Parks, Wildlife Sanctuaries, community reserves, conservation reserves, sacred groves, or pilgrimage spots located within protected areas and forested areas. The National Tiger Conservation Authority may lay down normative standards for tourism activities and guidelines relating to

tiger reserves. The main principles of Ecotourism are:

- Adopt low-impact tourism that protects ecological integrity of wilderness areas, secures wildlife values of the destination and its surrounding areas
- Highlight the heritage value of India's wilderness and protected areas
- Build environmental and cultural awareness and respect
- Facilitate the sustainability of ecotourism enterprises and activities
- Provide livelihood opportunities to local communities
- Use indigenous, locally produced and ecologically sustainable materials for tourism activities

(2) Main provisions of Guidelines for Ecotourism in and around Protected Areas

Synergy and collaboration amongst the the main stakeholders like the Central Government, State Governments, hospitality sector, State Forest Departments, Protected Area managements, and local communities and civil society institutions is vital for ensuring successful implementation of the guidelines.

State Governments

- The State Government must develop a State-level Ecotourism Strategy to ensure wilderness conservation in ecologically sensitive landscapes, local community participation and benefit-sharing, sound environmental design and use of locally produced and sustainable materials, Conservation education and training, All States should notify the State level Ecotourism Strategy by December 31, 2011, and put the same in the public domain, in the local language also.
- Ecologically sensitive land use policies should be prescribed for the landscape surrounding protected areas.
- No new tourist facilities are to be set up on forest lands.
- The State Government must develop a system by which gate receipts from Protected Areas (PA) should be collected by the PA management, and not go as revenue to the State Exchequer. This will ensure that resources generated from tourism can be earmarked for protection, conservation and local livelihood development
- The State Forest Department should be the arbiter in case of any dispute regarding the ecological advisability of any tourism plans. The Chief Wildlife Warden of the State must ensure that each PA prepares an ecotourism plan, as part of the Management Plan/Annual Plan of Operation/ Tiger Conservation Plan. A site-specific Ecotourism Plan for each PA must be prepared and approved by the State government by December 31, 2011, and put in the public domain; in the local language also.
- The Chief Wildlife Warden (CWLW) of the State shall develop a monitoring mechanism, estimate carrying capacity, delineate tourism zones, and decide the area open to tourism on the basis of objective, scientific criteria.
- A State Level Steering Committee should be constituted under the chairmanship of the Chief Minister for quarterly review vis-à-vis the recommendations contained in the State-level Ecotourism Strategy.
- As part of the State-level Ecotourism Strategy, the State government should levy a "local conservation cess" as a percentage of turn-over, on all privately-run tourist facilities within 5 km of the boundary of a Protected Area. The rate of cess should be determined by the State Government, and the monies thus collected should be earmarked to fund Protected Area management, conservation and local livelihood development. Each State Government should notify the local conservation cess by December 31, 2011.

- Financial assistance/ incentives should be provided for communities/individuals who own revenue lands outside protected areas, to convert such lands to forest status. The value of such lands for wildlife will be enhanced, even as it improves the income of the landowner from ecotourism.

- A Local Advisory Committee (LAC) must be constituted for each Protected Area by the State government to review and monitor state ecotourism strategy, monitor hotels and tour operators.

PA Management

- Each PA must develop its own Ecotourism Plan which should be consistent with the State Ecotourism Strategy and must be approved by the LAC and the State Government. An ecotourism plan for each PA must be notified by December 31, 2011, and put in the public domain, in the local language also. The plan should identify (using GIS) and monitor the ecologically sensitive areas surrounding PAs, in order to ensure the ecological integrity of corridor/buffer areas, and prevent corridor pinching/destruction; assess carrying capacity of the PA, set a ceiling level on number of visitors allowed to enter a Protected Area at any given time, based on the carrying capacity of the habitat; indicate the area open to tourism in the reserves to be designated as 'ecotourism zone'; develop a participatory community-based tourism strategy, in collaboration with local communities; develop monitoring mechanisms to assess impact of tourism activities etc

- In the case of human animal conflicts, compensation should be paid within a period of 15 days apart from immediate payment of ex gratia.

- For critical wildlife habitats of national parks/sanctuaries and for core/critical tiger habitats of tiger reserves; a) Larger than 500 sq.km, 20% of such areas may be permitted for regulated ecotourism access, subject to the condition that 30% of the surrounding buffer/fringe area should be restored as a wildlife habitat in 5 years. b) Smaller than 500 sq.km, 15% of such areas may be permitted for regulated ecotourism access, subject to the condition that 20% of the surrounding buffer/fringe area should be restored as a wildlife habitat in 5 years.

- Protected Area authorities must ensure that all facilities within a 5 km radius of core/critical wildlife habitats/PAs/reserves must adhere to all environmental clearances, noise pollution norms, and are non-polluting, blending in with surroundings. Severe penalties must be imposed for non-compliance.

- There shall be a complete ban on burying, burning or otherwise disposing non-biodegradable or toxic waste in the tourism area.

Tourist facilities/ Tour operators

- Tourism infrastructure must conform to environment-friendly, low-impact architecture; renewables including solar energy, waste recycling, rainwater harvesting, natural cross-ventilation, no use of asbestos, controlled sewage disposal, and merging with the surrounding landscape. All tourist facilities, old and new must aim to generate at least 50% of their total energy and fuel requirements from alternate energy sources that may include wind, solar and biogas.

- All tourist facilities falling within 5 km of a protected area must be reviewed regularly by the Local Advisory Committee vis-à-vis environmental clearance, area of coverage, ownership, type of construction, number of employees, etc, for suggesting mitigation/retrofitting measures if needed.

Temple/Pilgrimage Boards

- Pilgrim sites located inside PA must be designated as sacred groves, with strict building and expansion controls, in accordance with the Forest Conservation Act, 1980 and the Environment Protection Act, 1986.

- Temple boards must negotiate terms of revenue sharing with local communities, and channel a minimum of five percent of gross revenue collected into development of local communities through the Panchayat and Gram Sabha.

Local Communities

- The first benefit from ecotourism must go to the local people, and in the long-run, capacity-building should be carried out to forge a sustainable partnership between the forest department, tourism professionals and local communities

Public / Visitors

- Must abide by the code of conduct, and 'Do's and Don'ts, as developed by the Protected Area Management. Model "Do's and Don'ts" are detailed in Annexure I.

(3) Critical analysis of the Guidelines

IUCN lists ecotourism as the second major threat to protected areas, as construction of roads and resorts cause habitat fragmentation. Construction of resorts in crucial elephant corridors of the Nilgiris biosphere reserve has caused obstruction in elephant migration leading to a rise in human wildlife conflict. Road kills are common on roads leading to eco tourist places. Resource extraction mainly water and fuel wood to meet the tourism needs are degrading the habitat quality of the region and most of all excess ecotourism is becoming a threat to wildlife - there is insufficient attention being paid to the tourist carrying capacity of each protected area (PA) and there is no limit on the number of vehicles or number of tourist entering a PA per day. Several ecotourism projects opened up in Himalayas in the past have proven to be unsustainable. Places like Nanda Devi Biosphere reserve had to be closed because of high environmental degradation caused by ecotourism activities. Ecotourism activities carried over by private tour operators are generally not overseen by government and are turning largely commercial. There are over 44 private tourist resorts operating on the reserve forests of Masinagudi region in Nilgiris Biosphere reserve. Sometimes the Private resorts do not follow operation guidelines, or serve the purpose of increasing awareness about conservation. With no obligation of private tour operators to involve local people, much of the ecotourism projects here are becoming purely commercial. This leads to economic leakages - significantly reducing the funds available for local people and the protected areas.

- All states/PAs have not made their ecotourism plans
- The Guidelines say "Any core area in a Tiger Reserve from which relocation has been carried out, will not be used for tourism activities." This cannot be implemented as effectively this would mean preventing people from visiting Kanha, Bandhavgarh, Corbett, Nagarahole, Melghat, Tadoba, Periyar, Keoladeo Ghana (Bharatpur), Gir and virtually every other sanctuary and national park. It would also prevent communities that have moved into the periphery to benefit from tourism revenues on their own lands.
- The guidelines state "For critical wildlife habitats of national parks/sanctuaries and for core/critical tiger habitats of tiger reserves a) Larger than 500 sq.km, 20 per cent of such areas may be permitted for regulated ecotourism access, subject to the condition that 30 per cent of the surrounding buffer/fringe area should be restored as a wildlife habitat in five years. b) Smaller than 500 sq. km., 15 per cent of such areas may be permitted for regulated ecotourism access, subject to the condition that 20 per cent of the surrounding buffer/fringe area should be restored as a wildlife habitat in five years." This is difficult to put into practice as PAs like Keoladeo Ghana National Park would be forced to restrict approximately a lakh tourists to a tiny fragment of forest, under five square kilometers, thus effectively damaging the park beyond repair.
- The Draft Guidelines fail to recognize the synergy between conservation and tourism – an extraordinary fact given the subject they are dealing with and the definition presented at the outset.

- The ecotourism plan/guidelines are largely driven by forest departments with little participation of communities in decision making and benefits largely going to state exchequers, ecotourism is nevertheless being promoted as a conservation scheme.

- Community-owned tourism initiatives are still playing a marginal role compared to the other tourism schemes, which are often labelled as ecotourism and developed by large, often global, tour operators. They consider ecotourism as a source of sustainable livelihood supplement and not to compete for markets. It is extremely hard for communities to compete with a market that is fiercely competitive and which controlled by financial interests in tourist destinations. Also, negative impacts on local communities can be significant as operators are very likely to export their adverse environmental impacts, such as refuse, waste water and sewage, to parts of the surrounding area unlikely to be visited by tourists. Most often, governments have overlooked these initiatives and have extended little support. They have also promoted different versions of tourism as ecotourism with no inkling of conservation.

Source:

http://www.moef.nic.in/downloads/public-information/Draft%20Ecotourism%20Guidelines%202%20June.pdf; http://www.sanctuaryasia.com/magazines/conservation/7075-indias-guidelines-for-ecotourism-can-be-turned-around.html; http://www.globalforestcoalition.org/wp-content/uploads/2010/11/ecotourismbriefingpapermarch2007.pdf; http://www.ijacp.org/ojs/index.php/ISG/article/view/161; http://www.sustainabilityoutlook.in/content/making-indian-ecotourism-sustainable;

IV. Snapshots: Environment news

A slew of measures in Railway Minister Shri Prabhu's budget to take Indian railways on green path

These measures include setting up 1000 MW solar plants on railway/private land and railway buildings in the next five years, audit for energy saving, additional water conservation measures, using energy efficient LED luminaries and turning diesel units into a dual fuel mode using CNG. Other efforts will include bringing down noise levels of locos at par with international norms, taking measures to protect wildlife (by avoiding human-animal conflict scenario while laying\maintaining railway lines), creation of an Environment Directorate, initiatives like Bio-toilets, energy audit, water and energy recycling.

Three countries discuss Kanchanjunga project

Government officials from Nepal, India and Bhutan have agreed to develop a regional cooperation framework for conservation and development of Kanchanjunga Landscape, an area that spreads across parts of these countries. Concluding the third regional strategic consultative meeting held in Kathmandu from February 23-24, the officials discussed the one and a half years of preparatory phase of the project for greater collaboration across borders and opportunities for socioeconomic development in the local level.

KSPCB to monitor pollutants from big industries live

KSPCB has installed a large screen at its head office in Bengaluru, from where it will monitor the pollutants discharged by industries. The system will be officially launched in a week. According to KSPCB officials, there are 261 industries across Karnataka which are categorised as 17 highly polluting ones. Under this system, the respective company will have to install monitoring sensors at its chimneys/effluent discharge points like water or air outlets. These sensors will be linked with the KSPCB

monitor in Bengaluru from where the chairman and scientific officers will monitor real-time data who will have the option to send immediate inputs to the company regarding pollution levels. KSPCB will store the data observed for future comparison in case of episodic accidents.

Desi thermal plants worst polluters

A first-ever environmental rating of coal-based power plants has found that India's thermal power generating units figure among the worlds "most inefficient" in terms of compliance to pollution norms, use of resources and overall operation efficiency. Though private sector thermal plants in the country perform better than government owned ones, there is immense scope for improvement in almost all units so that they can pollute less and generate more electricity with efficient use of available resources. Delhi is home to one of the most polluting power plants in the country- NTPC's Badarpur Thermal Power Plant- which has contributed in turning the capital into the most polluted city in the world.

Green curbs on polluting firms still in place, Delhi Pollution Control Committee (DPCC) clarifies

A day after the Delhi government did away with the requirement of "consent to operate" from DPCC for issue of acknowledgment to small enterprises, officials claimed the decision would not trigger a spike in pollution and the onus of ensuring industries don't pollute will remain with the DPCC. DPCC officials will continue to monitor parameters of pollution and ensure action is taken in case of non-compliance of existing green norms during registration, while clarifying that "consent to operate" wasn't akin to registration.

'Illegal' Yettinahole work raises hackles

The State government has quietly started work on the Yettinahole project in the pristine Western Ghats in Sakleshpur taluk of Hassan district, much to the locals' chagrin. The residents are terming the work illegal as the project lacks the necessary green clearances. Through the Rs 13,000-crore project, the government plans to provide drinking water to the Kolar, Chikkaballapur and Tumakuru districts and parts of Bengaluru City.

Govt begins steps to implement environment panel recommendations

Environment Ministry has initiated steps to implement some of the key recommendations made by a high-level committee constituted by it to review laws related to forests, wildlife, water and air. The committee, which reviewed the green laws, has made important observations and 55 recommendations. The important among them outline that the present set up is not structured to make a coordinated attack on the pollutants which debase the air, water, and the land and recommended constituting National Environment Management Authority (NEMA). NEMA is proposed to an effective approach to pollution control which include identify pollutants, trace them through the entire ecological chain, determine the total exposure of man and his environment, examine interactions among forms of pollution and identify where in the ecological chain interdiction would be most appropriate. Functions carried out under various legislations including Water Act, 1974, Air Act 1981, Environment (Protection) Act, 1986, the functions carried out in relation to Solid Waste Management and authority to perform studies relating to ecological systems could be subsumed in the proposed body – NEMA and State Environment Management Authority (SEMA).

Govt keeps Gadgil's report on flawed Environment Assessment reports for mining leases under wraps

A report on the manner in which Environmental Impact Assessments were conducted and Environmental Clearances (EC) given for mining leases has been lying with the State government. The report, commissioned by the Government of Goa, under the guidance of Professor Madhav Gadgil, has indicted the government and project proponents (mining lease holders) of getting legally mandated clearances as quickly and with little effort or involvement of the society at large as possible. The government has chosen not to act on the report, or even acknowledge it, even as it renewed all the 88 leases and then asked the Ministry of Environment and Forests to revoke the suspension of all the EC it had imposed on September 14, 2012. One of its most significant recommendations was that EC should not be once for all, but should be reviewed periodically, for instance, every five years."

First Direct Evidence that Rising CO2 is Heating up the Earth

It has been known for some time that atmospheric CO2 influences the planet's natural energy balance - that is, the equilibrium between incoming energy from the Sun and outgoing heat from the Earth. However, until now, this effect had never been directly observed (outside the lab). A team of scientists from the US Department of Energy's Lawrence Berkeley National Laboratory found their proof from two sites - one in Oklahoma and the other on the North Slope of Alaska - after measuring CO_2's heat-trapping ability over an 11-year period. Between 2000 and 2010, atmospheric CO_2 increased by a staggering 22 parts-per-million, thanks in large part to the burning of fossil fuels, researchers say. And while this shows a rise in CO_2, how does it prove it contributed to the greenhouse gas effect? For this, the team used special spectroscopic instruments to measure radiative forcing - the rate at which the atmosphere warms up. It turns out that because of the recent surge in atmospheric CO_2, radiative forcing has increased two-tenths of a Watt per square meter per decade. This may not seem like a lot, but in relative terms, it's significant. What's even more concerning is that the greenhouse effect doesn't seem to be letting up anytime soon. Just last year, greenhouse gas levels hit a record high, with a 34 % increase in radiative forcing. The findings reveal a directly measured correlation between rising CO2 levels and heating - a link that was mathematically proven just two months ago.

Karnataka to spend Rs 2,000 cr to repair environment damage in mining areas

The Karnataka government has incorporated a new company to undertake ameliorative measures in and around mining areas in the 3 districts of Ballari, Chitradurga and Tumakuru. 3 districts. The new firm, Karnataka Mining Environment Restoration Corporation (KMERC), has come into existence with an action plan for Rs 2,000 crore as per the Supreme Court, in April 2013. The rampant illegal mining in these districts had devastated the environment and agriculture, which was brought to the notice of the apex court through a PIL. Subsequently, the apex court directed the Central Empowered Committee (CEC) to recommend measures for the restoration of the mine ravaged areas. The CEC recommended a Comprehensive Environmental Plan for the Mining Impact Zone (CEPMIZ) and the setting up of a company to undertake ameliorative measures.

Sewage still pours into Tapi downstream

There is no improvement in the quality of water in Tapi river, despite several measures claimed to have been taken by Surat Municipal Corporation (SMC). SMC had in 2013 said there were 1,544 outlets releasing sewage into Tapi river. It later claimed to have stopped 80 % of these outlets from releasing sewage into the river. However, in the downstream of weir-cum- causeway, the dissolved oxygen (DO) levels are still found to be much lower than what is considered ideal for marine life.

Air Pollution Cutting 660 M Lives Short By 3 Years: Report

The latest pointer to the magnitude of the problem is a study by environmental economists from University of Chicago, Harvard, and Yale. Their report, published on Saturday, says that 99.5% of the Indian population breathes air that has pollutants way above the levels considered to be safe by the World Health Organisation. In many parts of the country, including 77% of urban areas, the pollution levels exceed national standards. This is cutting short the lives of 660 million Indians by a little more than three years, the report adds. The 660 million people, or 54.5% of the population, the study refers to live in areas where the level of pollution exceeds the limits set out in National Ambient Air Quality Standard. India's national air pollution sets the permissible PM 2.5 levels at 40 micrograms per cubic metre, which is four times WHO's safe level.

Don't auction Mahan coal block: MoEF

Not for the first time, the Ministry of Environment, Forests and Climate Change has asked the Coal Ministry to not auction the Mahan coal block in Singrauli as it is located in an inviolate forest area. According to an office memorandum obtained under the Right to Information (RTI) Act, the Ministry on December 22, 2014 said "though stage 2 forest clearance to the Mahan coal block has already been accorded, the mining in the block has not been started. The said block may therefore not be auctioned as the block is located in inviolate forest area."

Act against illegal hotels around Gir sanctuary: HC to Gujarat government

The Gujarat High Court has directed the state government to take action against the illegal establishments operating in the buffer zones of Gir wildlife sanctuary, the sole home of the Asiatic lions. The High Court acted on a report of the Gujarat government which said that there are 128 such units, including hotels and resorts that are being illegally run around the sanctuary.

Cooler Pacific has slowed global warming but pause unlikely to last, scientists say

A natural cooling of the Pacific Ocean has contributed to slow global warming in the past decade but the pause is unlikely to last much longer, US scientists said in February, 2015. The slowdown in the rate of rising temperatures, from faster gains in the 1980s and 1990s, has puzzled scientists because heat-trapping greenhouse gas emissions from factories, power plants and cars have hit record highs. Understanding the slowdown is vital to project future warming and to agree curbs on emissions, linked by scientists to heatwaves, floods and rising seas.

Development projects take toll on green cover in Amritsar

Scores of full grown trees along the boundary wall of the historic Company Bagh on the Mall Road were axed today to pave way for the upcoming BRTS (Bus Rapid Transport System). Around 800 trees have been marked for facilitating the BRTS project. The centuries-old trees such as banyan, pipal, mulberry, jamun and shisham were chopped off and saplings of palm trees are being planted in lieu of those.

Green cover in Pune diminishing, birds now build nests with plastic

Birds in the city no longer live on trees or in nests made of twigs and leaves. Plastic threads from cement bags and carry bag strings now line their nests, which they build on electric poles, skyscrapers and mobile towers. Experts trailing bird nesting patterns in Pune have found that the urban setting has robbed birds of their natural habitat of trees, rock cliffs and bushes, and even exposed them to threats. Ornithologist Umesh Vaghela has documented nests of 19 bird species in unusual places in and around the city and attributed the scarcity of natural material that birds used for building nests to human interference with their habitat.

Restore areas destroyed by mining in Alwar, green tribunal tells Rajasthan

After making it mandatory to seek environmental clearances for mining near the Sariska Tiger Reserve in Rajasthan, the National Green Tribunal (NGT) has pulled up the state government for 'shutting its eyes' to indiscriminate mining activities in Alwar. The tribunal directed the state government to file a comprehensive plan for 'restoration, reforestation and reclamation' of the entire area. The environmental body held that indiscriminate mining has affected flora and fauna in Alwar.

More STPF Needed For Tiger Reserves

Against a total of 47 tiger reserves at present including 13 sensitive tiger reserves, Special Tiger Protection Force (STPF) has been raised, armed and deployed only in four tiger reserves. These include Bandipur (Karnataka), Tadoba-Andhari and Pench (Maharashtra) and Similipal (Odisha). This was stated by Environment Minister Prakash Javadekar in a written reply to Rajya Sabha on Thursday. Based on the recommendation of Tiger Task Force, 13 sensitive tiger reserves of the country were to be deployed STPF. However, there has been a delay in setting up this dedicated force that was aimed at protection of tigers/ wildlife and curbing man animal conflict.

3 new plant species found in the Ghats

A research team from SNM College, Maliankara, has reported the discovery of three new plant species from the Pooyamkutty-Edamalayar region, highlighting the rich biodiversity of the Western Ghats. The investigations were part of a UGC-sponsored project on flowering plants of Ernakulam district. The shrub named *Thottea adichilthottiana* was collected from the Adichilthotty tribal colony within the Edamalayar forest range. The other two (grass family) are *Arundinella pradeepiana* and *Garnotia variyamensis.*

Panchayat makes a mark in solid waste management

Puliyur town panchayat has made a sound beginning in solid waste management by generating revenue from the waste collected from the public. Though several other panchayats have already forayed into the process of making manure from waste, Puliyur town panchayat has gone a step ahead by incorporating four other methods to generate revenue. Besides compost yard, it has set up a bio-gas plant, shredding plant, duck rearing pond, and vermin-compost yard. Similarly, an herbal nursery has also been established. Except shredding plant, bio-degradable waste is used as the raw material for all other solid waste management processes.

Source: *http://www.indiaenvironmentportal. org.in*

V. State in Focus: Kerala

With the Arabian Sea in the west, the Western Ghats towering 500-2700 m in the east and networked by forty-four rivers, Kerala enjoys diverse geographical features. Kerala is

divided into three geographical regions: Highlands, which slope down from the Western Ghats onto the Midlands of undulating hills and valleys into an unbroken coastline with many picturesque backwaters, interconnected with canals and rivers. The Western Ghats are nowhere more than 120 kms from the sea.

(1) Environment Scenario

(a) Forests

The recorded forest area in the state is 11,265 km^2 which constitutes 28.99 % of the state's geographical area. Reserved forests constitute 98.74% and protected forests 1.26% of the state's forests. The forest cover in the state is (2009) is 17,300 km^2 which is 44.52% of the state's geographical area. Out of this, 3.71% is very dense forests, 24.17% is moderately dense forests, 16.63% is open forests and 0.15% is scrub.

Invasive alien species: Based on field surveys and using a risk assessment protocol, a study by Forest Health Programme Division Kerala Forest Research Institute identified 38 alien invasive species in the forests of Kerala. Of them, 10 are of high risk, 12 pose medium risk, 10 pose low risk and 6 insignificant as per the risk assessment conducted. There are 5 trees, 11 shrubs, 4 subshrubs, 12 herbs and 6 climbers among the alien invasives found in the forests of Kerala. Most of the introductions of alien species into the forests of Kerala was intentional (31 species).

Impact of development activities: An expert report suggests that 18 % of the forest area in Kerala would be vulnerable by 2030. According to a report by the Indian Network on Climate Change Assessment, forests in Kerala will indicate shifts in boundary, changes in species-assemblage or forest types, changes in net primary productivity, possible dieback in the transient phase, and potential loss or change in biodiversity in 2050's and 2080's. The study also projects enhanced levels of CO^2 to result in an increase in the net primary productivity (NPP) of forest ecosystems in more than 75 % of the forest area. Environmentalists point out that the erroneous policies by the state government is the major reason behind the destruction of forest. The ghats region of Kerala covers nearly 21,856 sq km or 56 % of the total geographical area of the State. According to INCCA report 3934.08 sq km forest area in this region will be under threat of destruction in the coming 15 years.

Mining: The major mining activity in the state is confined to beach placers and china clay deposits. There is also unorganised mining in the state of tile and brick clay, alluvial sands, crystalline rocks, soils etc. Many of the mineral occurrences are in very fragile physical, biological and social environments and therefore the pressure exerted and impacts are high in terms of magnitude and intensity and mostly permanent in nature. In Kerala, sand mining is practiced in all rivers having varied channel morphology, elevation, vegetation patterns, aquatic habitats and aggregate deposits. By directly altering the channel geometry and elevation, sand mining induces marked channel adjustments. Further, continued sand mining disrupts the sediment mass balance in the river environment. In a study of the Ithikkara river (Kollam district) it was found in 2003 that, out of the 25 freshwater fishes recorded in the river, a total of l6 fish species are under threat, mainly, due to habitat loss resulted from sand mining. The demand for river sand is very high and all the rivers and its tributaries are subjected to indiscriminate removal of sand. It is estimated that the total quantity of river sand used in Kerala is about 32 million tons. The annual extraction of sand, on an average, is almost 31 times more than the annual sand replenishment rate. This, in turn, is lowering the river bed by 5 cm/yr to 18 cm/ Yr. In 2014, the National Green Tribunal (NGT) banned

beach sand mining from the sea coasts of Tamil Nadu and Kerala.

(b) Biodiversity

The major habitats of Kerala include tropical rainforests, shola rolling grasslands, scrub jungles, grass lands, wetlands, estuaries, mangroves, coral reefs, marine and agro ecosystems. The varied ecosystems serve as natural habitats for innumerable number of species. The indigenous flora of the state is represented by 14435 plant species including 4575 species of angiosperms, 329 pteridophytes, 226 bryophytes, 428 lichens and 886 algae. The indigenous fauna is represented by 8452 taxa of animal species. The unique and diverse avian fauna in Kerala is represented by 546 species belonging to 66 families, constituting more than 25% of Indian birds. Insect fauna is the most diverse with 6000 species, mammals 145 species, reptiles 176 species, amphibians 105 species and inland fishes 282 species. Kerala also records high endemism. The highest endemics is found among the amphibians (78%) followed by reptiles (62%), fish (53%), mammals (12%) and birds (4%).

Kerala has 22 protected areas-- Periyar Tiger Reserve (PTR Neyyar Wildlife Sanctuary, Peechi-Vazhani Wildlife Sanctuary, Parambikulam Wildlife Sanctuary, Wayanad Wildlife Sanctuary, Idukki Wildlife Sanctuary, Eravikulam National Park, Peppara Wildlife Sanctuary, Thattekkad Bird Sanctuary, Shendurney Wildlife Sanctuary, Chinnar Wildlife Sanctuary, Chimmony Wildlife Sanctuary, SilentValley National Park, Aralam Wildlife Sanctuary, Pampadum Shola National Park, Mathikettan Shola National Park, Anamudi Shola National Park, Mangalavanam Bird Sanctuary, Kurinjimala Sanctuary, Choolannur Pea Fowl Sanctuary and Kadalundi-Vallikunnu Comm.

Some of the threated taxa of Kerala are: Periyar trout, Periyar barb, Cardamona garra threatened due to Heavy soil erosion, pollution and increased pesticide level in the habitat ; Deccan mahseer endangered due to Habitat alteration, pollution, sand mining, over exploitation, fish poisoning, alien invasive fish species, dynamiting and electrocution; Cochin Forest Cane turtle endangered due to Habitat destruction, Green turtle endangered due to Shrimp trawlers: Bengal Monitor lizard at risk due to commercial hunting for its skin, meat and use of fat in traditional medicine; Rhacophorus lateralis Boulenger endangered due to conversion of forest areas to cultivated land (including timber and non-timber plantations; guar or Indian Bison vulnerable due to poaching, loss and alteration of habitat, competition with the domestic cattle, diseases; Crimson Rose threatened due to deforestation, land use change, pollution and illegal trade; Danaid Eggfly threatened due to loss and alteration of habitat, pollution, pesticide, fungicide and weedicide application and industrial pollution; Indian Flap-shelled Turtle threatened due to over-exploitation, loss and alteration of habitat, pollution, pesticide, fungicide and weedicide application and industrial pollution; Glyptopetalum grandiflorum Bedd, Humboldtia unijuga Bedd, Polyalthia shendurunii, Palaancheera, oniothalamus wynaadensis (Bedd.) Bedd, Ixora lawsonii Gamble, Miliusa nilagirica Bedd and Trias stocksii Benth endangered due to destruction of habitat; Asian Elephant; King Cobra; Great Hornbill (Near Threatened).

(c) Wetlands

Geomorphologically, wetlands in Kerala may be divided among 5 major systems at the broadest level as marine, estuarine, riverine, and lacustrine and pinstripe. Kerala has some unique types of wetland ecosystems like the marshy and water-logged areas and vast paddy cultivating areas associated with the backwaters and the MVristica Swamps of Western Ghat forests. Five wetlands of

Kerala-- Vembanad-kol, Ashtamudi and Samsthamkotta, (Ramsar sites); Kottuli and Kadalundi were identified by MoEF for implementing management action plan under National Wetland Conservation Programme.

Wetlands in Kerala are currently subjected to acute pressure owing to rapid developmental activities and indiscriminate utilization of land and water. Infrastructure development in the form of roads, railways, and other lines of communication fragmented the continuity of the wetlands, and destroyed extensive tracts of coastal vegetation thereby upsetting the entire complex ecology; rapid urbanisation encroached into the rich and luxuriant mangrove forests, while industrial development not only caused pollution but prevented any regeneration possibilities as well; modern shrimp farms brought in the final onslaught - the irreversible destruction of wetlands. The major issues facing the wetlands of Kerala are mainly related to pollution, eutrophication, encroachment, reclamation, mining and biodiversity loss.

The major driving forces are: (i) population/households growth and urbanization, (ii) industries (iii) infrastructure (iv) agriculture (v) aquaculture (vi) fishing (vii) poaching (viii) mining (ix) deforestation (x) services (xi) water transport and xii) tourism. The major pressures identified are from (i) industrial effluents (ii) rotting of coconut husk (iii) leachates from agricultural fields (iv) waste disposal (v) petroleum hydrocarbons (vi) land use changes (vii) hydraulic interventions (viii) overexploitation of resources and (ix) weed infestation.

(c) Waste management

Municipal Solid waste management (MSW)

A sectoral status study on MSW management in Kerala in 2007, indicated that the total MSW generation in the state is about 8300 TPD. These studies indicated that 70-80% of the total waste generated is biodegradable in nature and these putrescible waste needs to be managed within 24 hours. 13% of the waste is generated by the five City Corporations, 23% by the 53 Municipalities and the rest by the 999 Gram Panchayats.

Based on the studies carried out by the Centre for Earth Science Studies and data compiled by the Clean Kerala Mission for all the Municipalities and Corporations of the State, the average daily per capita generation comes to 0.178 kg with a very high variation from 0.034 kg for Koothuparamba to 0.707 kg for Thalassery. The generation of MSW by the Guruvayoor Temple is reported to be 3.30 tons/day and that of elephant dung and elephant food is 7.80 tons. The chemical composition of MSW from four major cities of the state indicates high moisture content, low calorific value and high nutrient content making the dominant organic fraction of waste more conducive for recycling in the form of manure. The data reported from other towns also indicate a similar pattern in chemical composition.

Local Governments	Population 2001	Per capita waste generation(g/day)	Waste generation per day (tonne)	
			2001	2006
5 City Corporations	2456618	400	983	1091
53 Municipalities	5810307	300	1743	1935
999 Grama Panchayats	23574449	200	4715	5312
Total			7441	8338

Biomedical waste management

Kerala is a state with considerable medical infrastructure. The advent and surge of medical tourism has also played its part in bringing the medical infrastructure of Kerala in the spot light. But when it comes to managing the waste produced from these healthcare facilities, the State is lagging behind and this presents a serious situation. There is no system of state level registration of Health Care Establishments (HCEs) and State level listing of HCEs. 83 % of

the identified institutions are functioning without authorization. Out of 1,278 HCEs under Government sector, only 14 % had obtained authorization as of March 2007. In the absence of State level inventory of HCEs and non-possession of authorisation by 83 % of identified HCEs, the prescribed authority/State Government have no mechanism to monitor the proper segregation of waste generated. The Government in February 2004 approved the establishment of 3 Common Bio-Medical Treatment and Disposal Facilities (CBWTF) in Kannur, Thrissur and Alappuzha districts. The facilities are to be established at the identified centres on Built-Operate-Transfer (BOT) basis. However, these facilities are yet to be established (May 2007). Indian Medical Association Goes Eco-friendly (IMAGE), erected a CBWTF at Kanjikode in Palakkad District. This Facility with a waste treatment capacity of three MT per day was established in December 2003.

Hazardous waste

Kerala generates of a total of 82899 MTA of hazardous waste, with 59591 MTA being landfillable, 223 MTA being incinerable, 23085 being recyclable. Kerala has a Treatment, Storage & Disposal Facility (TSDF) at Ambalmughal, Earnakulam with 50,000 MTA capacity.

E waste

According to a report published by the Kerala Pollution Control Board (PCB) in 2010, the amount of e-waste generated in Kerala could come to 1,50,000 tonne per year. Despite this, the state does not have e-waste treatment and disposal facility. The Kerala Enviro Infrastructure Limited — which runs the Common Hazardous Waste Treatment, Storage and Disposal Facility (CHWTSDF) at Ambalamedu — is ready with an e-waste collection centre. The company has converted a portion of its 2,000-sq.m storage facility for the collection centre with the capacity to handle four tonnes of e-waste a day. It secured consent from the Kerala State Pollution Control Board to establish the centre last September and is now awaiting the Board's final approval to begin operations. The clearance is likely to come in a few weeks' time.

Another initiative involves Kochi Corporation teaming up with an NGO. Citizens must take e-waste to collection facilities set up by churches located across 22 health circles of the Kochi Corporation; special trucks have been arranged to collect the hazardous waste and transport it to recycling units or processing centres outside the state.

(d) Water issues

Surface water pollution

Kerala is one among the most thickly populated region in the world and the population is increasing at a rate of 14% per decade. As a result of the measures to satisfy the needs of the huge population, rivers of Kerala have been increasingly polluted from industrial and domestic waste and from the pesticides and fertilizer in agriculture. Industries discharge hazardous pollutants like phosphates, sulphides, ammonia, fluorides, heavy metals and insecticides into the downstream reaches of the river. The river Periyar and Chaliyar are very good examples for the pollution due to industrial effluents. It is estimated that nearly 260 million litres of trade effluents reach the Periyar estuary daily from the Kochi industrial belt.

The major water quality problem associated with rivers of Kerala is bacteriological pollution. The assessment of river such as Chalakudy, Periyar, Muvattupuzha, Meenachil, Pamba and Achenkovil indicates that the major quality problem is due to bacteriological pollution and falls under B or C category of CPCB classification. There are local level quality problems faced by all rivers especially due to dumping of solid waste, bathing and discharge of effluents.

Ground water pollution

More than 90 % of wells in Kerala have been affected by pollutants from sewage, and well water still remains one of the major sources of drinking water in Kerala. Ground water quality problems in the coastal areas are mainly because of the presence of excess chloride. Chloride concentration >250mb/l was detected in the well water samples of Azhicode, Kakkathuruthy, Edathinjil, Kadalundi, Chellanum, Nallalam, Mankombu and Haripad. In Alappuzha district, flouride concentration in the wells was observed to be high. In midland region, concentration of flouride iron and chloride were found to be on the higher side. The flouride content was observed to be beyond the permissible limit of 1 mg/1.Deep wells in Chittur taluk and Knajikod areas of Palakkad district are found to contain flouride concentration greater than 1mg/l.

Open wells of Kerala are under threat of bacteriological contamination. In Kerala about 60% of the population relies on ground water for drinking. At the same time studies have shown that faecal contamination is present in 90% of drinking water wells. The open character of the wells, and conventional maintenance habits, and use of buckets and rope to draw water, kitchen wastes and pit latrines with average family load factor (5 members) at a distance of less than 5 meters from wells are some of the factors, which are contributing to the bacteriological contamination. Ground water contamination due to industrial pollution has been reported from places of Kochi (eastern part of Aluva), Palakkad and some parts of Kollam, Kozhikode and Kannur.

(e) Air Pollution

The major causes of air pollution in the state are due to automobiles and industries. The growth of automobile population by 2002 is estimated to rise 20 times that of 1970. Kerala has over 25 lakh licensed vehicles on the road today while the total length of the carriage way is only 21347 km. Vehicular emission and noise from these vehicles are severe in the three major cities of Kerala, viz., Thiruvananthapuram, Kochi and Kozhikode. Pollution from industries are mainly contributed by the four major industrial areas of the state, 3 in Ernakulam (Eloor, Ambalamughal and Udyogamandal) and 1 in Kanjikode at Palakkad. Bulk of the major/medium industries and the maximum number of vehicles are in Ernakulam which has naturally resulted in an adverse impact in the air quality. The Kerala State Pollution Control Board (KSPCB) has brought out 592 large/medium and 2700 SSI units under the consent regime of Air (Prevention Control of Pollution) Act. The ambient air quality monitoring, being carried out by the KSPCB at 11 stations in the state, has reported that Suspended Particular Matter (SPM) and Respirable Suspended Particulate Matter (RSPM) levels exceed the ambient air quality standards. However, SO^2 & NoX levels are within the stipulated standards. The shift in focus in the energy sector from hydel sources to fossil fuel, i.e., 791 MW power generation using fossil fuel out of total generation of 2621 MW also contributes to an increase in air pollution. The unplanned urban growth also augments the air quality and noise pollution considerably.

(2) Laws and Polices

Some of these are:

- Kerala Forest (Amendment Act), 2010
- The Kerala Water (Prevention and Control of Pollution) Appellate Authority Rules, 1977
- The Kerala protection of river banks and Regulation of removal of sand Act, 2001
- The Kerala ground water (control and regulation) Act, 2002
- The Kerala Forest (Vesting and Management of Ecologically Fragile Lands) Act, 2003

- Kerala Municipality Building (Amendment) Rules, 2004 - RAINWATER HARVESTING
- The Kerala Tourism (Conservation and Preservation of Areas) Act, 2005
- The Kerala Irrigation and Water Conservation (Amendment) Act, 2006
- Ban on plastics with thickness below 30 microne
- Kerala Conservation of Paddy Land and Wetland Bill, 2007

(3) Environment Sustainability Index (ESI)

Environmental Sustainability Index (ESI) is a comparative analysis of environmental achievements, challenges and priorities among Indian states. ESI measures the potential of states to maintain their environment in the coming decades given the various environmental resources that a state is endowed with. Dimensions of sustainability both as historical conditions and present efforts are mapped through 40 indicators. Kerala ranks 12th on this scale.

Indicator	Score	Indicator	Score	Indicator	Score
Population Pressure	0.14	Air Quality and Pollution	0.77	Water Quality and Availability	-0.26
Landuse and Agriculture	0.08	Forest and Biodiversity	0.78	Energy Management	-0.08
Environmental Budget	-0.35	Waste Generation and Management	-0.26	Impact on Human Health and Disaster	-0.39

Source: *http://docs.kfri.res.in/KFRI-RR/KFRI-RR255.pdf http://www.keralabiodiversity.org/index.php?option=com_content&view=article&id=71&Itemid=82; http://tropicalgreenschool.org/biodiversity.html; http://www.cpcb.nic.in/upload/NewItems/NewItem_149_Protocol.pdf; http://toxicslink.org/docs/kerala_workshop_report.pdf http://www.kerenvis.nic.in/Database/Waterpollution_834.aspx*

VI. Audit Report Report of the Comptroller and Auditor General of India on Controls and Systems for Sustainable Mining in Karnataka (Government of Karnataka *Report No. 2 of the year 2012)*

(1) Background

Minerals are valuable natural resources which are finite and non-renewable. Mineral exploration and development is closely linked with the development of country's economy and people. However, as it intervenes with the environment and social structure, a harmony and balance is to be maintained between conservation and extraction in the interest of sustainable development.

In India, the responsibility for the management of mineral resources is shared between the Central and State Governments in terms of entry 54 of the Union list and entry 23 and 50 of the State list of the Seventh Schedule of the Constitution of India. The Mines and Minerals Development and Regulation) (MMDR) Act, 1957, enacted by the Central Government, lays down the legal framework for regulations of mines and development of minerals. The Mineral Concession (MC) rules, 1960, the Mineral Conservation and Development (MCD) Rules, 1988 and the Granite Conservation and Development Rules, 1999 have been framed for conservation and systematic development of minerals and for regulating grant of permits, licences and

leases. The state of Karnataka, in India is abundant in mineral resources. It is said to be one of the most mineral rich states of India. The mineral belt covers an area of 1.92 lakh sq.km including 29 districts of the state. Karnataka is also endowed with the green stone belt with valuable mineral resources such as gold, silver, copper, iron-ore, manganese, limestone, dolomite, asbestos, bauxite, chromite, and kaolin and granite rock.

(2) Audit objectives and criteria

The audit objectives were to ascertain whether:

- monitoring and implementation of mining policies of the Government;
- levy and collection of fees, rent, royalty, penalty etc.;
- grant and renewal of mining and quarrying leases for prevention of illegal excavation of minerals;
- estimation of mineral resources and for fixing targets of production;
- ensuring that environmental and ecological concerns were addressed and preventive measures were useful; and
- addressing the socio-economic concerns of the persons affected by mining.

Audit criteria were drawn from central and state laws and rules made under them. Some of these included MMDR Act, 1957; the MC rules, 1960; Water (Prevention and Control of Pollution Act, 1974; Forest Conservation Act, 1980; Environment protection Act, 1986; Mineral Conservation and Development Rules, 1988; National Mineral Policy, 1993 & 2008; Karnataka Mineral Policy, 2000 & 2008.

(3) Audit findings

- A committee for implementation and monitoring of Karnataka Mineral Policy, 2008 was formed in 2009, however, even after a lapse of three years, the Committee did not formulate any time bound action plan to monitor implementation of the Policy.
- Procedural inconsistencies and lack of transparency in the department of Mines and Geology while considering applications for mining leases triggered a number of court cases.
- Quarry plans in 104, out of 120 granite quarry leases test checked, were not available, leading to non-monitoring of activities of lessees as per the mining plan.
- Rules to prevent illegal mining, transportation and storage of minerals were not framed till April, 2011 which resulted in irregular mining and transportation.
- Mining operations were taken up without obtaining statutory clearances from Ministry of Environment and Forests/Karnataka State Pollution Control Board (KSPCB). Further, National Environmental Engineering Research Institute (NEERI), Nagpur had proposed phase wise production of iron ore compatible with environmental preservation. However, the quantity of mineral valued at Rs.562.79 crore produced was more than the quantity prescribed in environment clearances and the consent issued by KSPCB, which resulted in disregard of environmental concerns.
- High level of air pollution contributed to the growth of diseases like tuberculosis and other respiratory infections in the mining areas.
- The area under cultivation and irrigation in Bellary had declined leading to the increase in the barren land. Cases of violation of the Child Labour Act were indicative of prevalence of child labour which was against the principle of sustainable development.
- Afforestation in degraded forest area at one

and half times of the safety zone area was not done to an extent of 281.16 hectare in 81 mines. Regeneration of safety zone area was not done to an extent of 321.51 hectare in 67 mines.

- An area of 900.68 hectare (68.36 percent of 1317.40 Ha covered by overburden waste dumps) was not taken up for reclamation/rehabilitation.
- The authorities did not ascertain the factual position regarding actual number of seedlings raised, as against the total reported seedlings of 35.92 lakh, and their survival rate.
- Waste dumps were not covered with geo-coir mat and plantations were not done on the surface of the waste dumps which led to erosion during rainy season.
- KSPCB did not monitor mandatory spending of two percent of their total turnover towards afforestation, two percent of profit towards road repairing, whether lessees had invested in rainwater harvesting and ground water recharging. Thus, monitoring system of KSPCB was very weak resulting in violation of statutory provisions.

(4) Audit recommendations

Major audit recommendations are as under:-

- The Government may consider putting in place a mechanism to prescribe parameters for fixation of targets of annual production of mines giving due importance to the areas proposed for dumping the overburden in the mining plan so as to discourage unauthorised dumping.
- The Government may issue instructions for taking necessary measures for proper accounting of the plantations raised by the lessees in the mining areas and monitor their periodical survival status in coordination with Forest Department.
- The Government may take up the matter for framing the guidelines/standards for controlling air, noise and water pollution in respect of minor mineral quarries with MoEF.
- The Government may consider evolving a participatory approach by involving local population after a thorough study of likely impact on life, lifestyle and livelihood of the communities for greater common good before grant of mining leases.

Source:

http://saiindia.gov.in/english/home/Our_Products/audit_report/Government_Wise/state_audit/recent_reports/Karnataka/2012/Revenue/Revenue.html

VII. International Audit Report: Performance Audit Report Of The Office of The Auditor General of The Republic of Fiji: Managing Sustainable fisheries

(1) Background and purpose of audit

Fisheries are an important source of food, employment, economic activity and recreation for the people of Fiji. Effective management of fisheries resources is important not just from an environmental perspective but also because of its impact on the country's economy and the livelihood of its population. The audit on "Managing sustainable fisheries" looked into three main areas which include the Planning of offshore fisheries", Economic returns from offshore fisheries" and "Management information is informed by accurate information". The audit focused on the Department of Fisheries as the agency entrusted for regulating, administering and monitoring the fisheries sector.

(2) Audit objective, scope and criteria

The objective of the audit was to assess the effectiveness of the management of off-shore fisheries (in particular the tuna fishery) by national fisheries authorities in accordance with national fisheries policies and frameworks. The scope of the audit was limited to the management of fisheries within Fiji's EEZs and the actions taken by

responsible agencies to manage this resource within the legal/policy framework that applies in Fiji.

(3) Key findings

Planning of offshore fisheries

- The draft decree on Offshore Fisheries submitted to the Attorney General's Office for vetting in November 2010 includes provisions for the management, development and sustainable use of fisheries and marine resource, is yet to be vetted.
- The last Tuna Management Plan developed provided a framework for the conduct of a stable and profitable tuna fishery in Fiji for the years 2006 to 2010. A similar documented strategy for the ensuing years has not been developed.
- There are no formal arrangements between the Department of Fisheries, the Naval Division and the Police Department to define roles and expected outcomes from surveillances conducted and any legal proceedings for incidences of non-compliance with the legislations respectively.

Economic returns from offshore fisheries

- Increase in licences issued over the 4 years 2008 to 2011 resulted in corresponding increases in the revenues earned from issues of such licences for those respective years. However despite the growth in revenues, total catches from offshore fisheries for those years fell short of the annual total allowable catch quotas of 15,000mt.
- There is evidence that the Department utilises information gathered from economic, surveillance and monitoring reports to influence its decisions on maximising economic returns from its tuna industry.
- Observer programs are hindered by a lack of human and financial resources.
- There is no database maintained to record illegal fishing vessels

Despite the lack of an all-encompassing framework on offshore fisheries management and a relevant documented TMP or the current term, planning for offshore fisheries for the two years 2011 to 2012 has been provided for under the Department of Fisheries' Annual Corporate Plans for the respective years.

However there is no evidence to support that the Department utilises information gathered from economic, surveillance and monitoring reports to influence its decisions on maximising economic returns from its tuna industry

(4) Recommendations

The Department of Fisheries should continuously follow up with the Solicitor General's Office in having the draft decree on offshore fisheries management vetted to enable its transmission to Cabinet for endorsement. The Department should also consider developing a TMP for the current term as this document provides strategies which are more descriptive for the management of sustainable fisheries. The Department should continue to make the best use of information gathered from economic analysis, surveillance and monitoring activities to enhance decisions made that will maximise its economic returns.

Source:

http://www.environmental-auditing.org/Portals/0/AuditFiles/202_report_Managing%20Sustainable%20Fisheries.pdf