

Green Files NEWSLETTER

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Green Files, our quarterly newsletter reflects recent environment news, events at iCED, publications and specific success story of relevant environment projects. It also highlights emerging trends, innovation, initiatives and efforts of different organizations to protect and rejuvenate the environment.

Editorial

Green Files, a quarterly newsletter published by iCED features glimpses of recent environment news, events, publications, persons and environment projects in focus. Emerging trends, innovation, initiatives and efforts of different organizations to protect the environment also find reflection in this newsletter.

During the quarter January-March 2020, iCED organized the Second International Training Programme on 'Environment Audit' under Indian Technical and Economic Cooperation (ITEC) programme of Ministry of External Affairs (MEA), Government of India. Apart from this iCED conducted five days International Workshop on "Sustainable Development-The Concept and Audit".

Two National Training Workshops on topics such as "Natural Resources Accounting" and "Plastic Waste Management" were conducted during January- March 2020.

iCED also conducted a National Training Programmes (NTPs) on "Environmental Management in Indian railways and PSEs". Due to unfortunate event of Corona virus outbreak and orders issued from Government in this behalf, other programmes / events during the quarters were postponed.

Apart from world environment news and brief about World Sustainable Development Summit 2020, this newsletter features article on Piplantri: The Village that plants trees for women and Covid 19 and Nature Conservation. The newsletter also features an awareness article on the recent pandemic titled "Don't panic, but prepare" for Covid 19.

We at iCED, look forward to your suggestions to make Green Files more relevant and appealing to the readers. Contributions in any form within the broad scope of the newsletter will be highly appreciated. These may be mailed to iced@cag.gov.in

With regards,

Manish Kumar
Director General, iCED

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iCED News



TRAINING & WORKSHOPS

During the first quarter of the year 2020, iCED conducted important International Training Programmes and Workshops as well as National Training Programmes on auditing environment issues.

The Second International Training Programme on 'Environment Audit' under Indian Technical and Economic Cooperation (ITEC) programme of Ministry of External Affairs (MEA), Government of India was conducted from 10 February to 06 March, 2020 at iCED. Shri Rakesh Jain, Former Dy. Comptroller & Auditor General inaugurated this training programme.



This training Programme was attended by 35 participants from 23 countries across the world viz. Bhutan, Botswana, Chile, Colombia, Congo, Ecuador, Egypt, Ethiopia, Fiji, Iran, India, Jordan, Kingdom of Eswatini, Mali, Mozambique, Myanmar, Peru, Sri Lanka, Sudan, Tanzania, Trinidad & Tobago, Turkey and Zimbabwe. The course included a field visit to Dravyavati River Project, Jaipur. As part of Study Tour, participants visited TERI GRAM and some Monuments at Delhi, Taj Mahal at Agra, Keoladeo National Park at Bharatpur and Sariska National Park at Alwar. Shri A.W. K. Langstieh, Dy. Comptroller & Auditor General (HR & Trg.) chaired the valediction and distributed the course completion certificates to the participants.

As a Global Training Facility of INTOSAI WGEA, iCED conducted five day **International Workshop on “Sustainable Development-The Concept and Audit”** from 24 to 28 February,



2020 involving participants from 08 countries viz. Bahrain, Bhutan, Botswana, Finland, Oman, Sudan, Venezuela and Vietnam. Valedictory session was chaired by Ms. Tytti Yli-Viikari, Chair of INTOSAI WGEA and Auditor General, National Audit Office of Finland. Shri Manish Kumar,

Director General (iCED) and Dr. Vivi Niemenmaa, Deputy Director (National Audit Office of Finland) also graced the occasion.

A National Training Programme (NTPs) on “Environmental Management in Indian railways and PSEs” was conducted from 06th January to 10th January 2020.

A two days’ **National Workshop on Natural Resource Accounting (NRA) on Water Sector** was organised on 16 and 17 January 2020 at iCED. Ms. Anita Pattanayak, Dy. CAG (RC) and Chairperson-GASAB inaugurated the workshop. Principal Accountants General/Accountants General from nine Accounts & Entitlement/Audit offices participated in the



workshop. During the two day workshop, the participants deliberated on issues such as Valuation of Ecosystem Services, Government's approach to Economic/Statistical Accounting of Natural Resources and Use of Technology in Accounting of Natural Resources, etc.

A National Workshop on "Plastic Waste Management" was also held on 02nd March, 2020. Total 23 participants including 14 IA&AS officers participated in this workshop. Experts from INTOSAI Secretariat, Indian Centre for Plastics in the Environment (ICPE), IIT Kharagpur, United Nations Development Programme (UNDP) and Ministry of Environment, Forests and Climate Change, Government of India shared their experiences with participants during the workshop.

iCED also hosted UNVMC Audit teams conducting Remote Access Audit during March, 2020.



A Memorandum of Understanding (MoU) was signed between iCED and the Energy and Resources Institute (TERI), New Delhi. The Memorandum covers areas such as joint research projects, internship at iCED for TERI interns, joint seminars, workshops and conferences, nomination of research scholars/ faculties, as and when needed by iCED in relation to research projects undertaken by TERI and iCED and other activities that will promote research and academic ties between both the institutions.



SDG coordination meeting in Vienna¹

In its capacity as the SDG coordination and information platform within INTOSAI, the INTOSAI General Secretariat organized an SDG coordination meeting in Vienna on 13 February 2020. The coordination meeting was attended by representatives of the most important global INTOSAI players involved in the SDG implementation process. The meeting focused on exchange about past and current activities of the different players involved in the SDG implementation process, a brainstorming on the central questions arising from the experiences made to date, such as the definition of an "SDG audit" and a discussion about the most important future challenges in the SDG implementation process, such as the review of the impact of SDG audits. The central outcome of the meeting was an action plan, which contains a list of planned actions until the next INCOSAI scheduled to be held in 2022.

 **Manoj Kumar**
AAO, iCED

¹<https://www.intosai.org/news/sdg-coordination-meeting>

State/Union Territory in Focus



PUDUCHERRY

The Union Territory of Puducherry² comprises the former French establishments of Puducherry, Karaikal, Mahe and Yanam, which lie scattered in South India. Puducherry, capital of the Territory was once the original headquarters of the French in India. It is situated on the Coromandel Coast of the Bay of Bengal. It is bounded on the east by the Bay of Bengal and on the three sides by Tamil Nadu. The Union Territory with legislature extends over an area of 479 Sq. Kms.

<i>Population</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
<i>Puducherry</i>	610485	633979	1244464

Forests³

The Union Territory of Puducherry has a recorded forest area of 13.00 sq. km, constituting 2.71 % of Union Territory's geographical area⁴. Forest cover in the Union Territory is 52.41 sq km which is 10.70 % of the UT's geographical area. In terms of forest canopy density classes, an area of 17.66 sq km is under Moderately Dense Forest (MDF) and 34.75 sq km under Open

² <https://www.py.gov.in/>

³ <http://fsi.nic.in/isfr19/vol2/isfr-2019-vol-ii-puducherry.pdf>

Forest (OF). Forest cover in the UT has decreased by 1.26 sq km as compared to the previous assessment reported in India's State of Forest Report⁵ (ISFR), 2017.

Environmental Concerns⁶

Poor waste management systems coupled with discharge of raw untreated sewage of the city drains into Thengaithittu lagoon is posing a serious environmental and health hazard. Grand Canal, built in 1765 has also turned into an open drain. A Coastal Regulatory Zone (CRZ) notification in 2011 mandated that untreated sewage should never be let into the sea as it would damage the marine ecosystem. However, the discharge of sewage has not only compounded the groundwater pollution but also increased pollution of the coast endangering the mangroves and the marine life. All the major canals that originally carried rainwater⁷ are now choked with sewage and solid waste. During dredging, the sludge, which is highly contaminated with heavy metals, is disturbed resulting in secondary pollution. The lagoon has now turned in to a stinking cesspool located right in the middle of the city. This raises serious concern as all the raw sewage and plastic waste draining into the sea have been polluting the beaches on the southern side. During summer, the ocean currents move from the fishing harbour towards the city bringing along with it all the sewage that has accumulated in the lagoon. The sludge again flows towards the beaches on the southern side when the ocean current changes its flow during the northeast monsoon.

 Virendra Jakhar
Sr AO, iCED

⁵ A biennial publication of Forest Survey of India

⁶ <https://www.thehindu.com/news/cities/puducherry/polluted-thengaithittu-lagoon-an-environmental-hazard/article28236868.ece>

⁷ Originally, water from Aayikulam, Murungampakkam and Kanagan Lake from the city's north flowed through the Marappalam canal, which was earlier a rainwater canal that drained into the Thengaithittu lagoon

Environmental News



Indian Railways commissions first Waste to Energy Plant in Bhubaneswar

Indian Railways has commissioned country's first governmental Waste to Energy Plant, having capacity of 500 Kg waste per day, in Mancheswar Carriage Repair Workshop at Bhubaneswar in East Coast Railway. This Waste to Energy Plant, a patented technology called POLYCRACK, is first-of-its-kind in Indian Railways and fourth in India. It is world's first patented heterogeneous catalytic process which converts multiple feed stocks into hydrocarbon liquid fuels, gas, carbon and water. Polycrack Plant can be fed with all types of Plastic, Petroleum sludge, Un-segregated Municipal Solid Waste (MSW) with moisture up to 50%, E-Waste, Automobile fluff, Organic waste including bamboo, garden waste etc., and Jatropha fruit and palm bunch. The process is a closed loop system and does not emit any hazardous pollutants into the atmosphere. The combustible, non-condensed gases are re-used for providing energy to the entire system and thus, the only

emission comes from the combustion of gaseous fuels. This process will produce energy in the form of Light Diesel Oil which is used to light furnaces.

POLYCRACK has the following advantages over the conventional approach of treating solid waste:-

-  *Pre-segregation of waste is not required*
-  *High tolerance to moisture hence drying not required.*
-  *Waste is processed and reformed within 24 hours.*
-  *Working environment is dust free.*
-  *Biological decomposition is not allowed as the Waste is treated as it is received.*
-  *Area required for installing the plant is less compared to conventional*
-  *Zero Discharge Process.*
-  *Gas generated in the process is re-used to provide energy to the system thereby making it self-reliant and also bring down the operating cost.*
-  *No atmospheric emission except for combustion gases which have pollutants less than the prescribed norms the world over.*
-  *Safe and efficient system with built-in safety features.*

More Wetlands from India get the Ramsar site tag

The Ramsar Convention signed oldest inter-governmental countries to preserve the wetlands of international list is to develop and wetlands which are global biological diversity and maintenance of their ecosystem



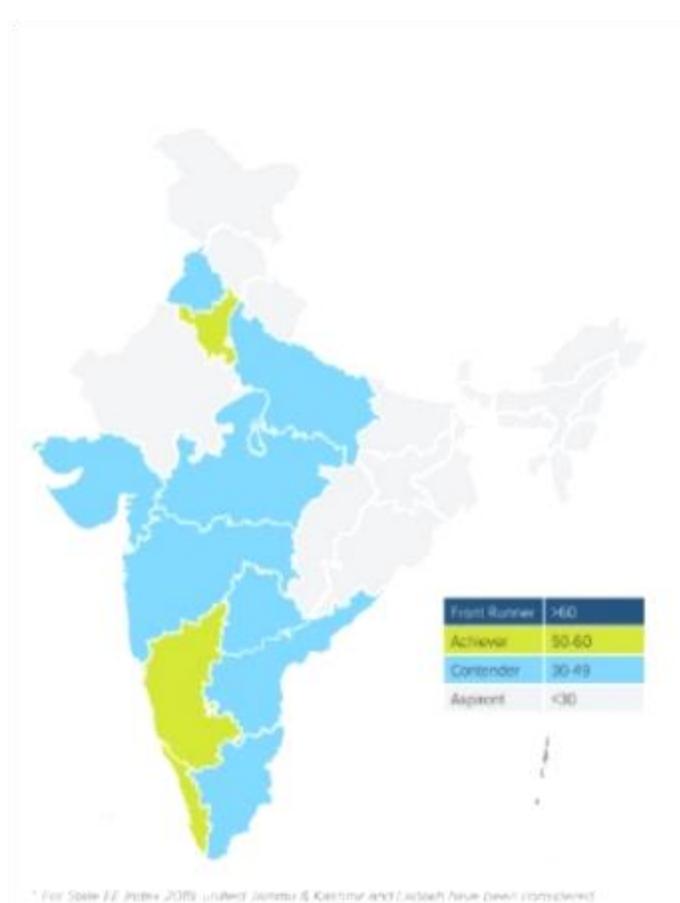
on February 2, 1971, is one of the accord signed by members ecological character of their importance. The aim of the Ramsar maintain an international network of important for the conservation of for sustaining human life through the components, processes and benefits.

Ramsar has declared⁸ ten more wetland sites from India as sites of international importance. Wetlands declared as Ramsar sites are protected under strict guidelines of the convention. The number of Ramsar sites in India is now 37 covering the surface area of 1,067,939 hectares. Maharashtra got its first Ramsar site (Nandur Madhameshwar), 3 sites were included from Punjab (Keshopur-Miani, Beas Conservation Reserve, Nangal) and 6 from UP (Nawabganj, Parvati Agra, Saman, Samaspur, Sandi and SarsaiNawar).

State Energy Efficiency Index (2019)

State Energy Efficiency Index 2019⁹ tracks the progress of Energy Efficiency (EE) initiatives in 36 states based on their efforts and achievements in policy and regulation, financing mechanisms, institutional capacity, adoption of energy efficiency measures and energy savings achieved.

State EE Index 2019 shows¹⁰ that majority of the initiatives taken by states are related to Policies and Regulations. Most of the first-generation energy efficiency policies prepared by Bureau of Energy Efficiency (BEE) under programmes on Standards & Labelling (S&L), ECBC, Perform Achieve & Trade (PAT), etc. are understood by states and as the next steps they should focus on ensuring greater compliance



⁸ <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1600857>

⁹ <https://www.aeee.in/state-energy-efficiency-index-2019-portal/wp-content/uploads/2020/01/State-Efficiency-Index-2019.pdf>

¹⁰ <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1599010>

Guidelines for implementing Wetlands (Conservation & Management) Rules, 2017

The provisions of Wetlands Rules apply to:

-  Wetlands designated by the Government of India to the List of Wetlands of International Importance under the provisions of the Convention on Wetlands (Ramsar Convention).[Ref. Rule 3 (a) of Wetlands Rule]
-  Wetlands notified under the rules by the Central Government, State Government and UT Administration. [Ref. Rule 3 (b) of Wetlands Rule]



The Guidelines¹¹ support in the implementation of the Rules by providing guidance on:

-  Preparing a list of wetlands in the State / UT
-  Identifying wetlands for notification under Wetlands (Conservation and Management) Rules, 2017
-  Delineating wetlands, wetlands complexes and zone of influence
-  Preparation of Brief Document
-  Determining 'wise use' and ecological character
-  Developing a list of activities to be regulated and permitted
-  Developing an Integrated Management Plan
-  Constitution and operational matters of the Wetlands Authorities
-  Overlapping provisions.

 Vijendra Singh Tanwar
AAO, iCED

¹¹ <http://moef.gov.in/wp-content/uploads/2020/01/final-version-and-printed-wetland-guidelines-rules-2017-03.01.20.pdf>

Article



PIPLANTARI: NURTURING THE ENVIRONMENT WITH GIRL CHILD

While the Indian societies are regularly blemished with cases of female feticide, infanticide and other abuses, a village from Rajasthan brings a fresh wave of hope and subtle revolution. Piplantri village in Rajasthan was suffering from problems like industrial pollution from marble factories, water scarcity, and lack of electricity, child marriage, female foeticide, illiteracy and crime. In a country that still favours the birth of a son, Piplantri village in Rajasthan not only embraces daughters but has created a tradition that benefits both the local people and the planet. This endearing village makes a conscious effort to save girl child and the green cover which is a brilliant exercise in eco-feminism¹², which should inspire India and the rest of the world. This is a live example of transformation of a village brought about by a systemic approach and a committed community.

¹² Eco-feminism involves philosophy and movements that connect feminism with ecology

Story Behind

Shyam Sunder Paliwal a young ‘Sarpanch¹³ in 2005, is the man who has revolutionized both regressive social outlook as well as the ecology of a state. In the memory of his daughter, Paliwal started an initiative of planting 111 trees when a girl is born. To safeguard the child’s future, villagers commonly make a donation of INR 21000, which along with parental sum of INR.10000 is fixed in a bank account under the name of the child for 20 years. Parents also sign an affidavit to ensure that the money can only be withdrawn for education of their daughters, at marriage only after attaining the legal age and care for the trees they planted.

This has not only helped in securing the future of girls but also helped in improving the water level thus eradicating the water scarcity, lowering pollution and providing employment. Over a million trees stand tall in and around Piplantri village, as a symbol of this amazing bonding between social issues and the environment.

Impact on Employment & Economy

In the first six years, 250,000 neem, sheesham, mango, amla, and other trees have been planted, along with aloe vera plants to protect the trees from termites. Once the village realized that aloe vera was not only useful for protecting trees but also a marketable commodity, they brought in outside experts to train women to turn the plant into juice, gel, pickles, and other goods that could be sold for a profit. This also gave rise to increased economic activity and source of livelihood, as locals have set up units to produce Aloe Vera products. The village has toilets, safe drinking water, electricity, streetlights, lower crime rate and above all peace and harmony. So the community now produces and markets aloe-based products like juice and gel, among other things. Paliwal’s vision along with the efforts of villagers has finally helped Piplantri earn the prestigious “Nirmal Gram Award”. On 4th May, 2007 for his rigorous efforts and far-sighted vision, Shri Shyam Sunder was also honored by the President’s award. The “Piplantri Model” is now being followed by many Panchayats of the country and the Piplantri Gram Panchayat is now openly inviting the villagers, professionals and other individuals to study this model and implemented it in their villages

¹³ A sarpanch or pradhan is a decision-maker, elected by the village-level constitutional body of local self-government called the Gram Sabha in India. The sarpanch, together with other elected panchayat members, constitute the gram panchayat

Social Impact

This successful reforestation effort owes its success to community involvement. Girls celebrate rakhi in their own unique way by tying rakhi thread to the trees as the protector of their lives, like their own real brothers. Women and nature have always been connected since ages. Piplantri is living example of that fine and exotic combination. Piplantri has “banned alcohol, open grazing of animals and cutting of trees,” the 2011 census reported a gender ratio of 990:1000 females to males higher than the overall Rajasthan ratio of 929:1000 females to males. Even though it might be long before India celebrates the birth of little girls and boys with equal delight, Piplantri’s motivating story is surely triggering a slow but steady domino effect.

References:

-  Ministry of Women and Child Development | GOI
-  Wikipedia
-  <https://www.ohmyrajasthan.com/piplantri-village-rajasthan>
-  <http://yris.yira.org>
-  <http://bhoomimagazine.org>

 **Vikas Dheer**
AAO, iCED

International Event



WORLD SUSTAINABLE DEVELOPMENT SUMMIT 2020

Towards 2030 Goals: Making the Decade Count

The World Sustainable Development Summit (WSDS), the annual flagship event of TERI was held from 29-31 January, 2020 under the broad rubric, 'Towards 2030 Goals: Making the Decade Count', laying focus on the global efforts being made to meet our 2030 targets.

The Summit in its 2020 edition addressed the broad themes of- circular economy, water, energy, industry transitions, and e-mobility. The summit became a common platform for discussions on topics such as - Air pollution, e-mobility, renewable energy, energy efficiency, green finance, blue economy, sustainable consumption, among a range of other environmental related topics during the three-day event. Prof. Jeffery D. Sachs, University Professor and Director, Center for Sustainable Development, Columbia University, was felicitated with the Sustainable Development Leadership Award at WSDS 2020.

On January 29, at the World Sustainable Development Summit 2020, The Energy and Resources Institute (TERI) along with Swiss Agency for Development and Cooperation (SDC) announced CAP India to improve air quality. The project has been initiated in Uttar Pradesh's Lucknow and

Kanpur and Maharashtra's Pune and Nashik and will be implemented in partnership with the city authorities¹⁴.

The thematic track 'Forest – A Tool for Adaptation and Mitigation of Climate Change' had discussions focused on the major challenges being faced in the forestry sector which are deforestation, degradation, overgrazing, conversion to other land uses, forest fires, excessive fuel wood collection, weak institutions and poor governance, socio-economic factors, and the impacts of globalization.

Policy brief on 'Carbon Finance - Solution for Mitigating Human-Wildlife Conflict In and Around Critical Tiger Habitats of India' and a strategy brief on 'Meeting the Challenges of Human-Wildlife Conflict Reconciliation in Dudhwa Tiger Reserve' were released.

Important issues were highlighted on India's Nationally Determined Contribution (NDC) targets, specifically emphasizing on creating an additional carbon sink of 2.5 to 3 billion tonnes of CO₂ equivalent through additional forest and tree cover by 2030, the need to work on reducing the fuel wood dependence on forests for energy needs of the local communities and the importance of climate modelling as a tool for regional studies in determining climate scenarios.

The thematic track 'Energy Management Solutions for SMEs'¹⁵ focused on developing sustainable, low-carbon pathways for the growth of the Small and Medium Enterprise sector. Professor Kazuhiko Takeuchi briefed about Japan-India Technology Matchmaking Platform (JITMAP) which has supported B2B through awareness/capacity building events, feasibility studies of new technologies, and policy dialogue.

Three key measures to significantly reduce the burden of air pollution at the national level were identified during the summit¹⁶ were LPG penetration to the underprivileged, vehicle fleet modernisation, and agricultural residue management. The findings were presented at a thematic

¹⁴ <https://swachhindia.ndtv.com/world-sustainable-development-summit-2020-clean-air-project-launched-to-reduce-air-pollution-in-four-cities-41304/>

¹⁵ <http://wds.teriin.org/news.php>

¹⁶ <https://www.teriin.org/press-release/benefits-outweigh-costs-needed-addressing-air-pollution-india-teri>

session on "Multi-level Actions to Strengthen NCAP" at the World Summit on Sustainable Development 2020.

During the Mobility Talk Corporate Conclave on 30th January 2020, NITI Aayog CEO Mr Amitabh Kant said that electric vehicles should become much cheaper than combustion vehicles in three years. Mr Kant further said that the price of battery packs of EVs is expected to fall to \$76 per kilowatt hour (or unit) in three years, down from the present day \$156/unit. At that point, he said, even the upfront cost of electrical vehicles will become cheaper than combustion vehicles, with the total cost of ownership already competitive¹⁷.

There were discussions on various challenges such as, to ensure new form of urbanisation which is based on public transportation, and to ensure India doesn't lose out among global manufactures of tomorrow. Representatives from the auto industry discussed ways to sought clarity on pathways and policy that the Government is looking to take on Electronic Vehicles.

 **Ajit Singh Choudhary**
AAO, iCED

¹⁷ <https://www.teriin.org/press-release/evs-should-become-cheaper-traditional-vehicles-within-three-years-amitabh-kant>

Critical Review



PLAN OF ACTION BY COMMITTEE FOR CHECKING ILLEGAL MINING AND CONSERVATION OF GHARIALS IN SONE RIVER

Background of Action Plan

Large scale illegal and impermissible mining activity in the protected area of Sone, Gharial Sanctuary (SGS) in River Sone is rapidly killing many of the scarce adults and many sub adults. Earlier studies (Rao 1988, Sharma et al. 2011) have noted the suitability of the SGS for gharial. As per the Study report conducted by Gharial Conservation Alliance, Madras Crocodile Bank Trust the excessive, irreversible loss of riverine habitat caused by the construction of Bansager Dam, changes in river course, artificial embankments, large scale illegal and impermissible mining of Sand, riparian agriculture, and domestic and feral livestock, are also the cause of drastic decline of Gharial Population in the Sone Gharial sanctuary.

The National Green Tribunal (NGT) has been hearing the petitioner Shri Nityanand Mishra and others on threats faced by Sone Ghariyal Sanctuary (SGS)¹⁸ from different quarters. NGT issued

¹⁸ Original Application No. 456/2018 for protection of population of Gharials in the context of unregulated sand mining in the area of 200 km stretch of Sone River.

several interim orders for saving SGS during 2015-18 for constituting committees, movement of vehicle, mining, river flow, conservation of turtles and gharials.

NGT *vide* its order dated 31st July 2018, constituted a Committee comprising of representatives from the Indian Institute of Forest Management (Bhopal), Wildlife Institute of India (Dehradun), Indian School of Mines (Dhanbad), National Judicial Academy (Bhopal), Ministry of Environment Forest and Climate Change and the District Collector of Sidhi – to prepare an action plan for checking illegal mining, conservation of gharials and turtles and maintenance of minimum ecological flow downstream the Bansagar Dam. After review of research studies, available documents, field visits and discussions with all stakeholders, the team identified the problems and proposed the plan.

The Plan of Action recommended by committee

The main objective of this report was to propose conservation action plan for SGS based on which a management plan can be developed for improved conservation and scientific management of the Sanctuary. Accordingly, the Committee recommended that

-  SGS should be equipped with a restructured staff and a new, technically sound management plan to help the managers in operation of the sanctuary.
-  Forming of eco-development committees (EDC) for every village to carry out activities like
 -  Water harvesting to reduce the dependency on the river water
 -  Inland fisheries and poultry farms to provide alternatives to river fish so as to reduce illegal fishing,
 -  Managing sand quarries which are outside SGS so that a portion of the generated revenue can then be utilized for the development of the EDCs.
-  Settlement of rights and obtaining the final notification of SGS be initiated and completed at the earliest. Till then Forest department should involve local people by creating awareness regarding the integrity of the SGS, and the need to protect it.
-  Fishing be also considered a crucial factor to be dealt with for its potential in causing disruption to existing population of threatened fauna within the SGS.
-  A cumulative impact assessment of all existing and proposed projects to formulate a more holistic strategy of maintaining eco-flows for SGS.
-  The flow regime to be followed to maintain the ecological flows of the Sone River.

- At least seven crucial areas must be accorded full protection and intensive management inputs to facilitate propagation of wildlife. All future gharial, mugger and turtle conservation and breeding program must be centered around these sites.
- De-notifying any stretch of SGS would be disastrous for survival of Gharials, turtles and Indian Skimmer in SGS.
- Creation of a special task force comprising of armed Police personnel and armed Forest Guards to curb sand mining in SGS. Major roads that are used for transportation of the sand should be fitted with infra-red cameras to monitor the movement of vehicles in night, as all the illegal sand mining happens only during night.
- No new release of gharial, mugger or any species of freshwater turtles be carried out in SGS until such time that all the recommendations and suggested mechanisms are in place and that the habitat in the SGS has recovered to acceptable levels. The distribution of flora, fauna, and various development activities including sand mining sites and intensive fishing zones should be mapped using GIS domain.



NGT on December 12, 2019 directed the Additional Chief Secretary, Forest, State of Madhya Pradesh to ensure the compliance of all the recommendations made by the Committee constituted by the Tribunal within a period of 30 days as the issue involved herein are of urgent nature i.e. of survival of the gharial in the Sanctuary and it requires priority from the State of Madhya Pradesh.

■ Pavan Meena
AAO, iCED

National Audit Report



Union Government (Commercial)
Ministry of Coal
No. 12 of 2019
(Performance Audit)

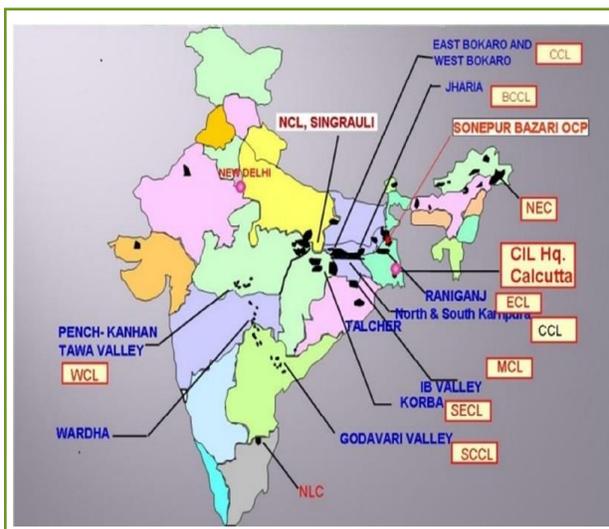
ASSESSMENT OF ENVIRONMENTAL IMPACT DUE TO MINING ACTIVITIES AND ITS MITIGATION IN COAL INDIA LIMITED AND ITS SUBSIDIARIES

Large scale extraction of coal from opencast (OC) as well as underground (UG) mines involves serious environmental and social concerns, including, air, noise, water pollution, land degradation and far reaching consequences on local bio-diversity. The Performance Audit was conducted to thrust upon the issues relating to the adequacy and effectiveness of the efforts made by the public sector coal companies to address important environmental issues.

Audit Objectives

The objectives of the Performance Audit were to:

- (i) Examine adherence to the relevant laws, rules and regulations
- (ii) Assess the implementation and effectiveness of sustainable development for environment protection in the mining area; and



(iii) Assess adequacy of monitoring mechanism for taking up remedial measures to control environmental degradation.

The Performance Audit also sought to examine the effectiveness of measures adopted for mitigation of land degradation, land reclamation, hazardous substance management, Corporate Social Responsibility (CSR) and occupational health and safety that impinge on environmental aspects.

Key Audit Findings

 **Environment Management System:** Although guidelines containing the responsibility and delegation at different levels in environment discipline were formulated by CIL, the same were not dovetailed in their operating manual by the subsidiaries for a well laid down Environment Policy duly approved by the Board of Directors (BoD).

 **Air Pollution and Control Measures:** Absence of required number of monitoring stations. Those which are established were not complying with directives regarding online monitoring of ambient air quality. Concentration of PM₁₀ and PM_{2.5} exceeded the prescribed levels in three subsidiaries. Transportation of coal through road and non-operationalization of silos were also contributing to air pollution

 **Water Pollution and Control Measures:** Audit observed that untreated water being discharged in nearby water bodies. Pollutants exceeded the limits prescribed by Bureau of Indian Standards (BIS). Sewage Treatment Plants were not installed at residential colonies thereby contaminating the ground water. Spillage from overload trucks/dumpers were not cleaned periodically and drained into the river.

 **Land Management: Mitigation of Land Degradation and Reclamation:** Basic records of topsoil indicating quantity and areas of stacking were not maintained. Year-wise internal targets for biological reclamation of mined out area through plantation activities were not set.

 **Non adherence to other regulator conditions for Protection of Environment:** No mine closure reports were maintained in 35 mines. There was no uniform policy for dumping of fly ash. Nine units were operating without valid Environmental Clearance. One unit was operating without Consent to Establish and Six were operating without Consent to Operate.

■ **Rehabilitation and Resettlement of mine fire:** Firefighting activities commenced only in 25 project against 45 projects identified and thus endangering lives of the people.

■ **Monitoring of Environmental Activities:** There were inconsistencies in deployment of manpower for environmental activities. Air and Water quality parameters were monitored fortnightly but Reports prepared by Central Mine Planning and Design Institute Limited on quarterly basis and communicated to subsidiaries thereby offering no scope for initiating remedial measures on the basis of adverse fortnightly readings record.

■ **Recommendations**

■ To put in place an Environment Policy duly approved by respective BoD as mandated by MoEF&CC.

■ The capital works relating to pollution control measures may be completed expeditiously and plantation works may also be taken up simultaneously to increase green cover and restore ecological balance in and around the mines.

■ Uniform and scientific policy towards use of fly ash to ensure environmental sustainability.

■ Corporate Social Responsibility (CSR) expenses may be dovetailed to ensure sustainable community development as mandated under.

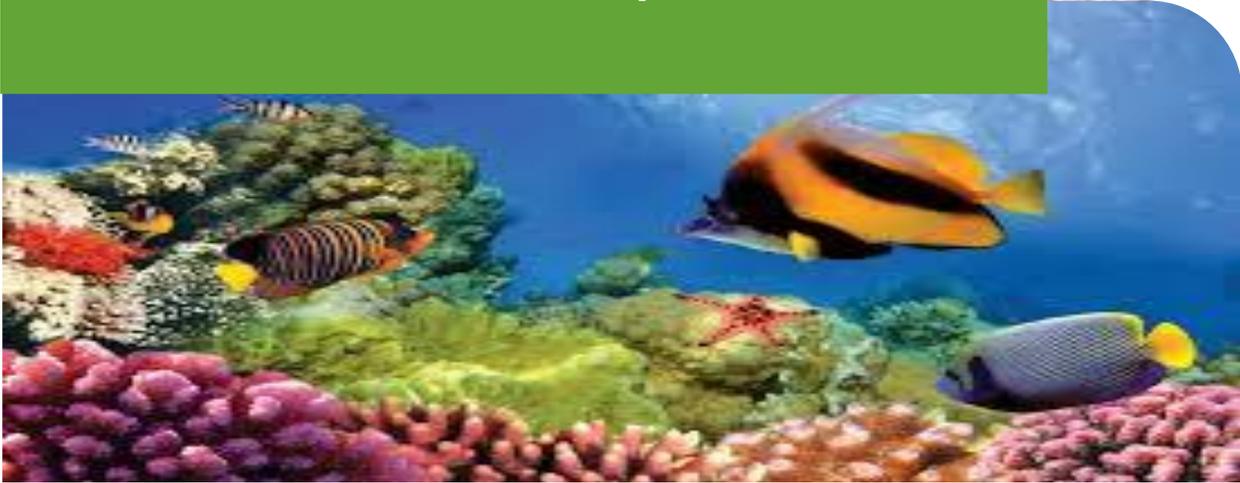
■ Solar power project may be put on fast track so that the environmental benefits fructify as envisaged.

■ Rationalizing the Manpower in the Environment Department and Environmental Manual be formulated to serve as a guide in the operations in specific mines under their control.

■ The monitoring mechanism in the subsidiaries may be strengthened by streamlining the existing reporting process for maintaining neutrality and to ensure proper checks and balances in the system of compliance mechanism. The oversight role of CIL be directed to ensure compliance to prescribed environmental standards.

■ Deficiencies observed in mitigation of environmental pollution were based on audit of sample mines which may be reviewed in other mines to ensure compliance of environmental rules and regulations.

International Audit Report



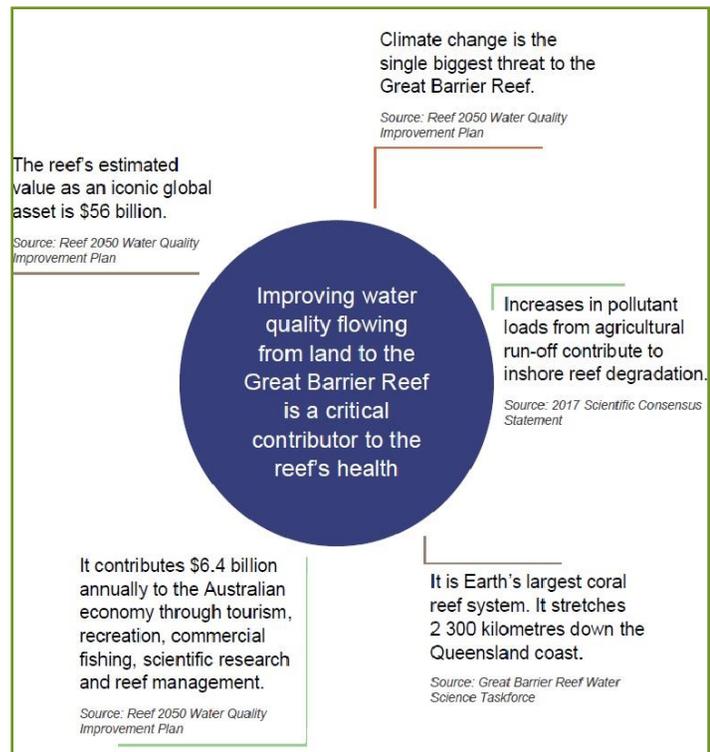
FOLLOW-UP OF MANAGING WATER QUALITY IN GREAT BARRIER REEF CATCHMENTS

Background

On 10 June 2015, report *Managing water quality in Great Barrier Reef catchments* (Report 20: 2014–15) was tabled in the Queensland Parliament. In the report, Queensland Government's contributions to improving the quality of water entering the Great Barrier Reef (the reef) from adjacent catchments, specifically agricultural run-off were examined.

It was observed that Queensland's response lacked urgency and purpose. It was characterised by disparate projects with no central authority

and no clear accountability for their delivery or achievement. The fragmented program



response and unclear governance arrangements meant there was no strong accountability for program expenditures.

- Land management programs to improve agricultural practices in the sugarcane and grazing industries were not achieving the changes needed to realise the Reef Water Quality Protection Plan’s goal within established timelines. The state had not achieved the right balance between industry-led voluntary approaches and regulatory enforcement of land management practices.
- The limited number of water quality monitoring sites across the catchments restricted government departments’ ability to verify modelled outputs against measured results. This provided uncertainty and variability (low levels of confidence) in modelled results. Public reporting on progress did not make this lack of confidence in the modelled results clear, potentially inferring the results were actual measured outcomes.

In original report all recommendations, were accepted by the departments.

■ Audit objective and scope

In this follow-up audit, it was examined whether departments have effectively implemented the recommendations that were made in original report¹⁹. The audit scope included three departments:

- Department of Environment and Science, which includes the Office of the Great Barrier Reef
- Department of Agriculture and Fisheries
- Department of Natural Resources, Mines and Energy

■ Previous findings²⁰ and progress observed in Follow up Audit report are tabulated below:

Original Audit findings in report	Progress observed in follow up Audit
Program management and investment and evaluation	
The state was not evaluating the combined effect of its activities on water quality	The Office of the Great Barrier Reef provides oversight and coordination of the Queensland Reef Water Quality Program. An external program evaluation team was engaged to develop evaluation framework and annual review of the program for three years.

¹⁹ *Managing water quality in Great Barrier Reef catchments (Report 20: 2014 –15).*

²⁰ *Managing water quality in Great Barrier Reef catchments (Report 20: 2014–15)*

Program planning and design	
Many of the projects and activities were not developed or customized to suit the Reef Water Quality Protection Plan.	A review of all programs attributed to the Reef Water Quality Protection Plan was coordinated informed by evidence-based scientific knowledge.
Investment planning and reporting	
The Government did not track or report on the aggregate spend on reef program activities at a state level.	The Office of the Great Barrier Reef coordinated the first Queensland Government water quality annual investment plan and report for the financial year 2015–16
Catchment monitoring	
There was no long-term monitoring in place to determine the full extent of pollutants leaching into ground water.	Engagement of major stakeholders to develop a rationale for Reef Integrated Monitoring, Modelling and Reporting Program (the Paddock to Reef program), which is a collaboration between government and non-government bodies and landowners.
Paddock to Reef program	
There were deficiencies in model inputs and departments did not consistently collect or verify data associated with changes in how producers manage land.	The departments have undertaken a technical refinement of the model. It incorporates updated input layers into the model as they become available. Regional data collection processes and shortcomings in gully and streambank erosion rates are significantly improved. Water quality risk frameworks are being updated.
Land clearing	
There was increase in vegetation clearing rates but data was not available on clearing rates for the riparian corridors that border rivers or streams, which are critical to the health of the reef	Since then, the model input layers include mapping data from the Queensland Statewide Land cover and Trees Study, the Queensland Land Use Mapping Program (on land use patterns and changes across the state).
Management practice methods	
Agencies were not collecting land management practice change data consistently. Also, the data was not verified on the ground or independently audited to provide a high level of confidence in its accuracy	Since the original audit several changes were implemented to improve confidence in management practice data provided by service providers such as natural resource management organisations and industry groups
Management practice results	
Best management practice programs ²¹ were not achieving the changes needed to realise the Reef Water Quality Protection Plan goal within the established timelines	The target for management practice changed from the number of landholders who have adopted improved practices to the area of land managed using best management practices ²²

²¹ Best management practice programs are industry-led, government-supported agricultural programs that encourage voluntary uptake of improved land management practices

²² The area of land managed using best management practices is considered a more meaningful measure. This is because land area is the basis for water quality modelling

Enhancing reef protection regulations²³	
The state had not achieved the right balance between industry-led voluntary approaches and regulatory enforcement.	Releasing of Enhancing regulations to ensure clean water for a healthy Great Barrier Reef and a prosperous Queensland discussion paper for feedback.
Reef report card	
A high level of uncertainty in the modelled outcomes due to the number of assumptions and data limitations in such a complex model	Key indicators measure the land, catchments, and human dimensions affecting water quality The Paddock to Reef program developed a multi-criteria analysis approach to qualitatively score the confidence for each key indicator used in the Reef Report Card.

Audit Conclusion of the follow up report

The Queensland Government now has an overarching program to coordinate and monitor reef strategies and its programs aimed at improving the health of the Great Barrier Reef. The Office of the Great Barrier Reef provides a single point of accountability for the effective and efficient delivery of the Queensland Reef Water Quality Program. This has resulted in stronger governance, coordination, and oversight, providing greater assurance that public funds are spent and monitored in a way that maximises Queensland's ability to reduce the harm to the reef. There is a shared commitment among the departments and program partners to working cooperatively. Greater oversight, monitoring, tracking, and reporting of allocated investment at a whole-of-state-government level means there is now more clarity on how much is spent each year and on what. The increase in water quality monitoring sites, and therefore in measured data, means the government can better validate modelled data.

The significant work done by Queensland Government resulted in a more effective reef program, targeting effort and investment on activities to improve water quality in the Great Barrier Reef catchments, was a positive step towards change. It was linked well with Commonwealth Government reef efforts and initiatives.

The program and supporting activities will, however, take time to establish results. Water quality outcomes will take even longer to determine, and the reef remains vulnerable to threats—including water quality from broad scale land use.

Recommendations

²³ The Environmental Protection Act 1994 is the primary state legislation relevant to the improvement of water quality in catchment areas

It was recommended that the Department of Environment and Science:

- Acquits actual expenditure against planned investment for Queensland's Reef Water Quality Program, in future annual investment reports, to increase transparency and accountability.
- Obtains reliable, timely, and adequate practice change information from relevant industry groups to understand the progress made, measure the degree of practice change, and account for outcomes for the public funds invested works with the Commonwealth Department of Environment and Energy, to refine over time the land management targets in the Reef 2050 Water Quality Improvement Plan 2017–2022 to define the increase in the percentage of riparian vegetation and the increase in stakeholder engagement targeted.

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Article



COVID-19 AND NATURE CONSERVATION: SOME CONCERNS AND CONSIDERATIONS FROM AN EVOLUTIONARY PERSPECTIVE

COVID-19 outbreak: Setting the Context

Origin and global spread of “Covid-19” virus amid high economic growth and scientific advances, is indeed something unprecedented and unconceived to many of us. It coincides with completion of **200 years since acceleration of economic growth in the Western Europe**²⁴. The year 2020 is also the culminating year of **UN Decade on Biodiversity**²⁵ 2011-20. Though coincidental; these events also reflect contesting approaches to contemporary ways of living and instigates better understanding of developments in the realm of society, economy and nature. Knowledge about the level of integration, influences and evolving approaches becomes critical for evaluating humanity’s tryst with destiny.

Evolution: A Perspective on Change

For a predominant part of human history, humanity’s quest for creating conditions for their wellbeing were constrained by the limits of nature. Changes emanating from **renaissance** and

²⁴ Angus Madisson (1926-2010), *Contours of the World Economy, 1–2030 AD: Essays in Macro-Economic History*, Oxford University Press, 2007. The author highlights that until 1000 AD, per capita of Asia was higher than the West, but from 1820s onwards there has been persistent economic growth led by western world.

²⁵ To promote the implementation of a strategic plan on biodiversity and its overall vision of living in harmony with nature. The main goal was to mainstream biodiversity at different levels.

reformation, commercial, scientific, political and industrial revolutions steered a great leap forward from the recurrent episodes of **Malthusian trap**²⁶. Rate of change in population and the GDP per Capita during different periods is depicted in the **Chart 1** below:

Chart 1

Table 1–1. Level and Rate of Growth of Population: World and Major Regions, 0–1998 A.D.

	0	1000	1820 (million)	1998	0–1000 (annual average compound growth rate)	1000–1820	1820–1998
Western Europe	24.7	25.4	132.9	388	0.00	0.20	0.60
Western Offshoots	1.2	2.0	11.2	323	0.05	0.21	1.91
Japan	3.0	7.5	31.0	126	0.09	0.17	0.79
Total Group A	28.9	34.9	175.1	838	0.02	0.20	0.88
Latin America	5.6	11.4	21.2	508	0.07	0.08	1.80
Eastern Europe & former USSR	8.7	13.6	91.2	412	0.05	0.23	0.85
Asia (excluding Japan)	171.2	175.4	679.4	3 390	0.00	0.17	0.91
Africa	16.5	33.0	74.2	760	0.07	0.10	1.32
Total Group B	202.0	233.4	866.0	5 069	0.01	0.16	1.00
World	230.8	268.3	1 041.1	5 908	0.02	0.17	0.98

Source: Appendix B.

Table 1–2. Level and Rate of Growth of GDP Per Capita: World and Major Regions, 0–1998 A.D.

	0	1000	1820	1998	0–1000 (1990 international dollars)	1000–1820	1820–1998 (annual average compound growth rate)
Western Europe	450	400	1 232	17 921	–0.01	0.14	1.51
Western Offshoots	400	400	1 201	26 146	0.00	0.13	1.75
Japan	400	425	669	20 413	0.01	0.06	1.93
Average Group A	443	405	1 130	21 470	–0.01	0.13	1.67
Latin America	400	400	665	5 795	0.00	0.06	1.22
Eastern Europe & former USSR	400	400	667	4 354	0.00	0.06	1.06
Asia (excluding Japan)	450	450	575	2 936	0.00	0.03	0.92
Africa	425	416	418	1 368	–0.00	0.00	0.67
Average Group B	444	440	573	3 102	–0.00	0.03	0.95
World	444	435	667	5 709	–0.00	0.05	1.21

Source: Angus Madison, *The World Economy, Development Centre Studies, OECD, 2006*

However, rising prosperity, increase in life expectancy, growth of cities, technological inventions, extension of franchise, quality of leisure, etc was also accompanied by environmental degradation and increasing economic inequality (**Chart 1**). Adoption of **Transforming Our World: The 2030 Agenda For Sustainable Development** by the United Nations in 2015 marked a decisive shift in approach towards society, economy and nature by centralizing the importance of people, planet and prosperity. Fourteen of the 17 Sustainable Development Goals are underpinned by nature²⁷ and 93 indicators involve environmental dimensions. The outbreak of

²⁶ A condition explained by Thomas Robert Malthus (1766-1834) whereby excess population would stop growing due to shortage of food supply leading to starvation.

²⁷ Inger Andersen, Executive Director, UNEP: When stakes are high: Sustaining all life on Earth

(<https://www.unenvironment.org/news-and-stories/speech/when-stakes-are-high-sustaining-all-life-earth>)

Covid -19 and its growing spectre, reinforces the urgency of bringing transformative changes in our ways and means of living.

Dynamics of change: Nature, Society and Economy

Nature, through its ecological and evolutionary processes provides a number of ecosystem services. Therefore healthy environment is both; a prerequisite and a foundation for economic prosperity, human health and wellbeing²⁸. Value of services provided by nature is estimated to be worth **US\$ 125 Trillion a year**²⁹. The link between “**environmental imbalances**” and “**emerging infectious diseases**” is also well established in the literature (*Daszak et al. 2001, Weiss & McMichael 2004, Jones et al. 2008*), but descriptions regarding factors for emergence of infectious disease are scarce³⁰. The pace and scale of changes in 20th century has been unprecedented as evident from the rising population, levels of waste and pollution, climate change and so on. The value of **ecosystem services lost between 1995 and 2011 is estimated to be US\$ 4-20 Trillion**³¹. Scientists suggest that **degraded habitats may encourage more rapid evolutionary processes and diversification of diseases**, as pathogens spread easily to livestock and humans³². It has been estimated that **75 per cent of all emerging infectious diseases in humans are zoonotic**, which thrive where there are changes in the environment, changes in animal or human hosts, or changes in the pathogen, itself³³. As per **UNEPs Frontier Report 2016**, one new infectious disease emerges in humans every four months³⁴. Economic cost of Covid 19 is also huge. The global economy could shrink by up to 1 per cent in 2020 (**United Nations**) and the total economic loss due to COVID-19 is expected to exceed \$4 trillion, almost 5% of the global GDP (**Asian Development Bank**). India's economy is expected to grow 1.5 to 2.8 per cent (**World Bank**).

Conclusion

Human-induced changes are creating conditions for fast biological evolution, but the management strategies ignore these rapid changes. In the past, several developed countries

²⁸ UNEP, GEO 06, 2019

²⁹ UNEP, GEO 06, 2019 and WWF, Living Planet Report, 2018

³⁰ Cited in Beyond diversity loss and climate change: Impacts of Amazon deforestation on infectious diseases and public health, *Annals of the Brazilian Academy of Sciences*, Printed ISSN 0001-3765 | Online ISSN 1678-2690 www.scielo.br/aabc | www.fb.com/aabcjournal

³¹ UNEP, GEO 06, 2019

³² UNEP: Coronavirus outbreak crisis highlights the need to address the threats to ecosystem and wildlife, 3 March 2020. (Source: <https://www.unenvironment.org/news-and-stories/story/coronavirus-outbreak-highlights-need-address-threats-ecosystems-and-wildlife>)

³³ UNEP: Coronaviruses: are they here to stay? (<https://www.unenvironment.org/news-and-stories/story/coronaviruses-are-they-here-stay>)

³⁴ UNEPs Frontier report 2016, P/8

have succeeded in reducing zoonotic foodborne disease by instituting control mechanisms along food value chain and reducing disease in the animal host³⁵. Heightened uncertainty and risk/s associated with contemporary epoch accords urgency and prioritization to global efforts for nature conservation and measures for mitigation of outbreak of zoonotic diseases. Nature conservation is also imperative because diversity of species make it difficult for pathogen to spread. The notable lessons drawn from the ongoing epidemic can be summarized in following points: **First**, greater synergy and integration is required between researchers, professionals and policy makers. **Second**, need for increased financing. **Third**, with alarming publicity of cause/s and consequences, greater urgency for governments for planning and management of zoonotic diseases is likely to become a public concern. **Fourth**, need for empowering and capacity augmentation of local agencies. **Fifth**, greater efforts are required for abatement of associated drivers including the climate change. **Last**, behavioral change at the individual level in terms of hygiene.

While the perils of past affect the societies, new beginnings continue to be made for their amelioration. A new discipline, **planetary health**, is emerging that focuses on increasingly visible connections among the well-being of humans, other living things and entire ecosystems³⁶. Initiatives such as **UN Decade on Ecosystem Restoration 2021-2030** is a globally coordinated response to the loss and degradation of habitats, which will focus on building political will and capacity. Recognition of the importance of the work of the bodies such as **Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)** and positioning **Convention on International Trade in Endangered Species (CITES)** as a leader in promoting transformative changes are equally encouraging³⁷ to take a great leap forward. Upcoming **UN Nature Summit** (Sept 2020) for developing Post-2020 Global Biodiversity Framework provides another noble opportunity for alignment of ideas and approaches towards achievement of SDGs in line with its vision of **living in harmony with nature**.

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³⁵ UNEPs Frontier report 2016, P/24-25

³⁶ John Vidal, habitat and loss of biodiversity are creating the Perfect Conditions for Diseases like COVID-19 to emerge, We are creating conditions for diseases like COVID-19 to emerge | Ensia (<https://ensia.com/features/covid-19-coronavirus-biodiversity-planetary-health-zoonoses/>)

³⁷ During the 18th meeting of the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, August 2019, Sri Lanka

Article



DON'T PANIC, BUT PREPARE" FOR COVID 19

World Health Organization announced “COVID-19” as the name of this new disease on 11 February 2020, following guidelines previously developed with the World Organization for Animal Health (OIE)³⁸ and the Food and Agriculture Organization of the United Nations (FAO).

What name does WHO use for the virus?

From a risk communications perspective, using the name SARS can have unintended consequences in terms of creating unnecessary fear for some populations, especially in Asia which was worst affected by the SARS outbreak in 2003.

For that reason and others, WHO has begun referring to the virus as “the virus responsible for COVID-19” or “the COVID-19 virus” when communicating with the public. Neither of these designations are intended as replacements for the official name of the virus as agreed by the International Committee on Taxonomy of Viruses (ICTV). Material published before the virus was officially named will not be updated unless necessary in order to avoid confusion. Since there

³⁸ The World Organisation for Animal Health, formerly the Office International des Epizooties is an intergovernmental organization coordinating, supporting and promoting animal disease control.

is no known cure yet and information is key in fighting this virus I have compiled a list of important **Do's and Don'ts** for us to follow.

DO's Steps to be taken as preventive action

-  Wash your hand frequently, especially before taking meals. Also do not touch face without washing hands.
-  Clean and disinfect frequently touched objects and surfaces using a regular household cleaning spray or wipe (e.g Cellphones, Laptops).
-  Stay home, when you are sick; contact your health care provider immediately if you think you've been exposed to Covid-19.
-  Psychological preparation is important too since there might be a 'adjustment reaction'" – that is, the stress, hypervigilance, obsessive reading about a crisis, imagining its effects on your family, and worrying – “is a step that is hard to skip on the way to the new normal,” Lanard and Sandman write. “Going through it before a crisis is full-blown is more conducive to resilience, coping, and rational response than going through it mid-crisis”.

So be forgiving of yourself if you're having an “adjustment reaction” or if your friends and loved ones are. The spread of the coronavirus will be genuinely disruptive, difficult, and for some people dangerous. Taking real steps to mitigate the effects it will have on you or your family isn't a silly thing to do – it's a responsible one.

Don'ts- Things to avoid

-  Avoid close contact with people who are sick. Maintain at least three feet distance between yourself and anyone who is coughing or sneezing.
-  Avoid touching your eyes, nose, and mouth.
-  Be a responsible adult, stay at home if sick, and consult a physician if required. Do not travel if not very urgent
-  Avoid Mass gatherings (suggested by our Prime minister also)
-  You should also avoid shaking hands, since even top world leaders like Vice President Pence and Washington Gov. Jay Inslee taking these simple precautions.
-  You don't need to wear a face mask if you're well, but you should if you are sick

Apart from the above we must maintain a general sense of personal hygiene and also keep our surroundings clean, and also keep our immunity high by having good nutritious food (e.g. Turmeric, Amla etc.) and daily exercise. Also COVID 19 is seen to be affecting persons with underlying conditions such as Diabetic, High Blood Pressure, therefore they need to be more careful in taking preventive measure. Let us remember the important advice of the WHO that we must not panic while the outbreak is a serious health concern but majority of those who got the virus have recovered, still basic precautions must be taken.

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ON WORLD WILDLIFE DAY, 10 CONSERVATION STORIES: WORLD ECONOMIC FORUM³⁹



Whales have seen a resurgence since whaling practices have been banned or monitored. Now humpbacks are a common sight and have almost returned to their pre-whaling numbers. **Grey whales** in the eastern Pacific have also enjoyed a resurgence



Scientists from Israel and neighbouring Arab countries are working together to protect Red Sea coral reefs.



Beavers have been extinct in the UK for over 400 years. Now, there are eight family groups living along the river, and researchers are studying them to see how they help the local ecology.



Mountain gorilla numbers recover, sustained conservation efforts brought the total number of mountain gorillas worldwide from 480 to over 1,000.



Bald eagle; America's national symbol was on the verge of extinction with little hope of recovery. The bald eagle has been removed from the list of threatened species.

³⁹ Source: <https://www.weforum.org/agenda/2020/03/conservation-stories-on-world-wildlife-day/>



India is one of 13 nations working on a common goal to double **tiger** numbers by 2022. It's estimated that India's wild tiger population has increased by 33 percent since 2015.



Brown pelicans have seen a huge turnaround.



After more than four decades, population of **grey wolves** has bounced back significantly due to humans re-introducing them into their old habitats. Now, more than 5,443 grey wolves are thought to be thriving across 48 states in the USA.



In 1990, **Steller sea lions** were added to the endangered species list. There are now more than 70,000 Steller sea lions thriving in the wild.



The latest census counted **1,864 pandas** in the wild as compared to historic low of 1,000 pandas in the 1970s.



International Centre for Environment Audit and Sustainable Development

