Green Files

October to December 2021 | Volume 40

Editorial

Green Files, quarterly newsletter published by iCED features glimpses of recent environmental news, key events, emerging trends, innovations, initiatives and efforts of different organizations to protect the environment- which can act as a corpus of information for environment audits in particular.

This edition of the newsletter features highlights of Shri Narendra Modi, Prime Minister of India's address during the Conference of Parties -26 held at Glasgow in October 2021, which gave key insights about India's commitments towards alleviating Climate Change in the coming decades.

The newsletter also covers a gist of the trainings/workshops/other activities at iCED during October-December 2021. iCED organised three National Training Programmes, one International Training Programme and two National Workshops during this period.

We have revived a State-centric look at prioritized sectors related to the environment from this edition. In this issue we examine the State of Meghalaya.

This edition of Green Files includes a write up by Shri Ravikumar U, Sr. AO, O/o Pr.AG (Audit I), Bengaluru of the report of "Storm Water Management in Bengaluru Urban Area" which was selected for the CAG's award on the occasion of the 1st Audit Diwas.

As part of our efforts to sensitize readers on contemporary issues, this edition also features an article about the growing concerns of Air Pollution in Delhi.

Looking at Green Initiatives, we feature an article on the efforts by tribal communities to protect the local flora and fauna in the state of Nagaland.

Audit Reports of NAO Finland on International Climate Finance Steering and Effectiveness and of CAG of India- Solid Waste Management of Manipur are also included in the newsletter. A list of References is also included in this newsletter to provide further reading material on featured themes.

We at iCED, value your suggestions to make Green Files more informative and user friendly. Your contributions within the broad scope of the newsletter will be highly appreciated.

Sayantani Jafa
ADAI and Director General
iCED, Jaipur

MAILBOX

Read your Publication. It's very good and informative. Keep it up.

Green Files Volume- 32

Ms. Sangita Choure, DY.C A G, Finance and Communication, New Delhi

My complements for maintaining the quality of this newsletter. I, in particular like the coverage of NITI Aayog's publication on "Localising SDGs" and Sucheta Deb's article.

Green Files Volume- 31

Shri Sunil Shreekrishna Dadhe, DY.C A G, Railways, New Delhi

Please accept my compliments at yet another interesting and very informative edition of Green Files.

Green Files Volume- 39

Ms. Vidhu Sood, IA & AS

Congratulations on publication of 35th Volume of Green Files. I read some of the articles. My comments are enclosed herewith for your consideration.

Green Files Volume- 35

Shri Rakesh Mohan, DY.C A G, Report Central, New Delhi

This is a fantastic issue. Well done.

Green Files Volume- 37

Shri Kulwant Singh, Principal Director, O/o Principal Director of Audit, Washington DC

Congratulations. It contains good articles and news, well-articulated especially keeping the difficult period of pandemic in view. Keep it up.

Green Files Volume- 37

Shri Manish Kumar (II), Director General, O/o Finance and Communication, New Delhi

The latest edition of Green files is indeed very informative. It has inspired me to write on environmental issues, kindly let me know when you are accepting articles for next green files so I may also contribute.

Green Files Volume- 32

Shri Vivek Sambharya, Director, ITRA-I, O/o Director General of Audit, Mumbai

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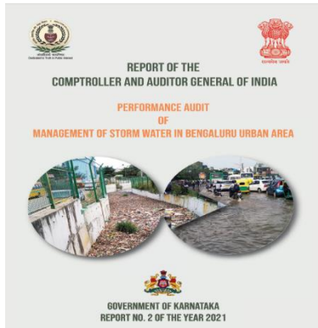
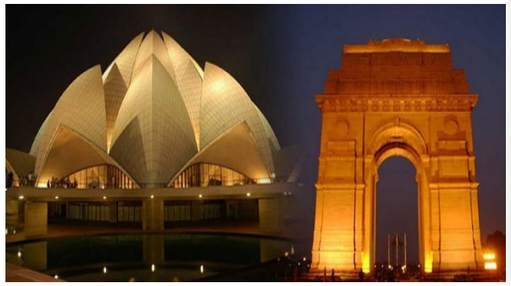
ASOSAI WGEA
The ASOSAI Working Group on Environmental Auditing





ICED NEWS

by Pavan Kumar Meena, AAO

During the quarter October- December 2021, iCED organized one International Training Programme, one National Training Programme and one workshop in online mode and two National Training Programme and one workshop at iCED campus in face to face mode.

Group Photo of participants of NTP on "Audit of Climate Change and Sustainable Agriculture"

Twenty participants from 07 offices attended the National Training Programme on "Environment Audit" organized online from 04th to 08th October, 2021. During same period, National Training Programme on "Audit of Climate Change and Sustainable Agriculture" was organized in face to face mode. There were 18 participants from 07 offices attending this programme.

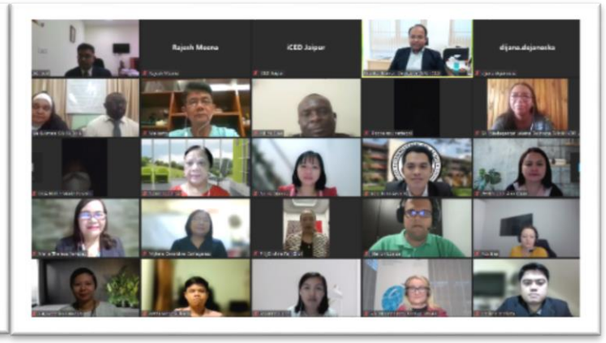
National Training programme on "Natural Resource Accounting with special reference to Water sector and Audit of Water resource management" organized from 25th to 29th October, 2021 at iCED campus, was attended by 20 participants from 08 offices.

Group Photo of participants of NTP on "Natural Resource Accounting with special reference to Waste sector and Audit of water resource management"

Group Photo of participants of the workshop on "Qualitative Review of Annual Accounts, Finalization of time schedule for 2021-22 and Fiscal Indicators" held on 26th Nov, 2021

A one day workshop on "Qualitative Review of Annual Accounts, Finalization of time schedule for 2021-22 and Fiscal Indicators" was organized by Government Accounts (GA) wing of Headquarters at iCED on 26th November, 2021**.** The Workshop was inaugurated by **Ms. Parveen Mehta**, then Deputy. CAG (GA) now Deputy CAG (HR, IR & Co-ordination). The workshop had 27 participants including 16 senior level officers from 9 offices.

The 9th International Training Programme "Introduction to Environmental Auditing" was organized in two batches from 22nd to 26th November, 2021 and 29th November to 03rd December, 2021. Total of 177 participants from 34 Supreme Audit Institutions (SAIs) attended the programme. Eleven experts from SAIs of Estonia, Finland, India, Indonesia and ECA delivered sessions on various modules i.e Environmental Auditing and Sustainable Development Goals (SDGs), Environmental Impact Assessment (EIA), Renewable Energy and Energy Efficiency, Biodiversity, Water and Waste.



Participants of first and second batch of the 9th International Training Programme on "Introduction to Environmental Auditing".

Ms. Pitriyanti, Faculty from SAI Indonesia

Ms. Mona U. Balabaran, Participant from SAI Philippines

Testimonials

It was a pleasure and honor to contribute in the 9th International Training Programme. I and my colleague, Mr. Jarot, from SAI Indonesia are very grateful for the opportunity. We would also like to congratulate all of you at iCED for your success in organizing the wonderful training.

I have learned new things and I thank iCED for this opportunity. Looking forward for a face to face/normal training in the future.

A one day Webinar on "Audit of Smart Cities" was organized on 27th December 2021 which was attended by 20 participant's from 20 field offices. During the workshop, sessions were delivered by experts from Ministry of Housing and Urban Affairs (MoHUA), National Institute of Urban Affairs (NIUA), The Energy and Resources Institute (TERI) and Observer Research Foundation (ORF).

Ms. Sayantani Jafa, ADAI & DG iCED inaugurating the webinar on "Audit of Smart Cities"

Participants of Webinar on "Audit of Smart Cities"

INTOSAI WGEA NEWS

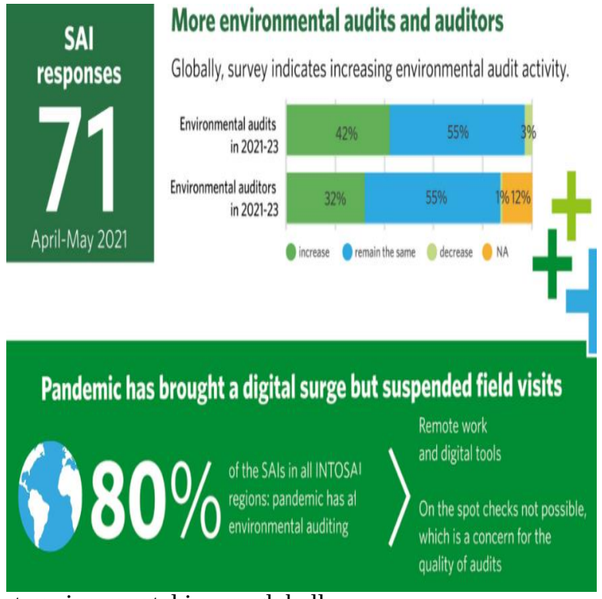
by Manoj Kumar, AAO

10th INTOSAI WGEA survey on environmental auditing

Every three years, INTOSAI WGEA publishes a survey on the state of environmental auditing globally. The report was published for the 10th time on 10th December 2021. The report "Environmental and climate audits on the rise" gives an overview of the audits SAIs have conducted and plan to undertake, the resources SAIs dedicate to the work, the topics they choose, the way they conduct their audits and communicate about them, and how SAIs consider the global frameworks, notably the United Nations Sustainable Development Goals and the Paris Agreement on climate change. The report also explains the main barriers and provides an analysis of how the pandemic has affected SAIs' work on environmental auditing.

Organizing environmental Auditing

The COVID pandemic has brought a digital surge and the field visits have been replaced by desk work. Almost half of the SAIs have a specific mandate for environmental auditing with Performance audit as the most common environmental audit type. The overall volume of environmental audits keeps growing but the pace is decelerating. More staff is working now with environmental audits.



Environment in Audits

- Climate, water and waste are the most important environmental issues globally.
- SAIs in the African and Asian continents perceived water as the top environmental issue.
- Climate, air and atmosphere were more important in the EUROSAI region and Canada & in the US.
- Land use and human activities are the most audited environmental theme.
- Growing audit interest towards circular economy.
- Over half of the SAIs use SDGs to choose audit topics and as audit criteria.
- SDG 13 on Climate Action will replace SDG 6 on Clean Water and Sanitation as the most audited SDG.
- Regional priorities include SDG 6 (Clean water and sanitation), SDG 7 (Affordable and clean energy), SDG 11 (Sustainable cities and communities), SDG 12 (Responsible consumption and production), SDG 13 (Climate action), SDG 14 (Life below water) and SDG 15 (Life on land).

Communication and impacts of audits

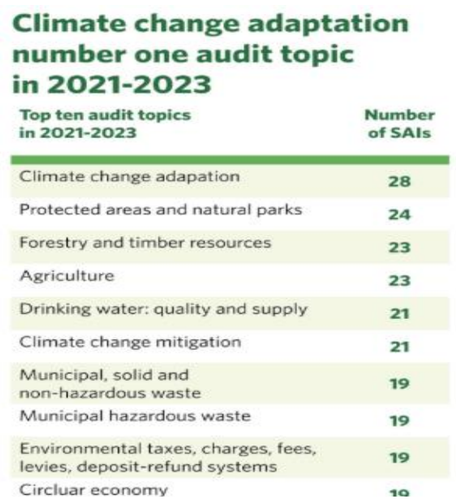
There has been an increase in SAIs communication- more direct briefings, press releases and social media. SAIs most often assess their impact by monitoring the implementation of audit recommendations and consider that their audits improve the functioning of policies and programmes.

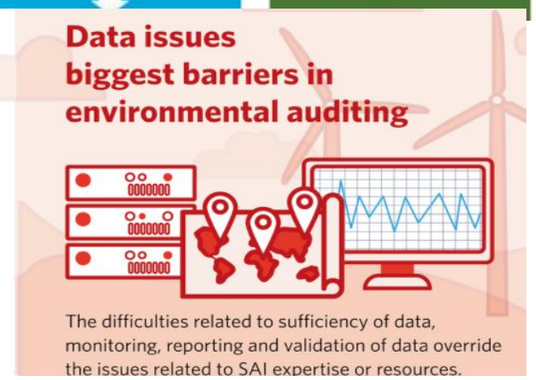
Challenges and future prospects

Data issues are the biggest barriers in environmental auditing and developing environmental expertise central to future developments.

Cooperation between SAIs and expectations for the INTOSAI WGEA

Climate change SDG implementation are top priorities for the next WGEA Work Plan.



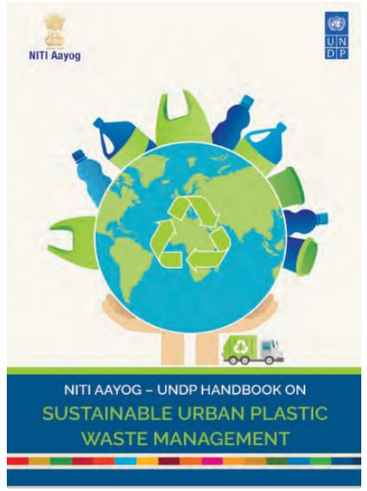


ENVIRONMENTAL NEWS

by Vijendra Singh Tanwar, AAO

Climate Equity Monitor an online dashboard for assessing equity in climate action, inequalities in emissions, energy and resource consumption across the world

The Climate Equity Monitor was launched in October, 2021. The website has been conceptualized and developed by independent researchers from India -- the Climate Change Group at the M.S Swaminathan Research Foundation (MSSRF), Chennai, and the Natural Sciences and Engineering department at the National Institute of Advanced Studies (NIAS) Bengaluru. It provides an online dashboard for assessing, at the international level, equity in climate action, inequalities in emissions, energy and resource consumption across the world, and ongoing climate policies of several countries. The Climate Equity Monitor is aimed at monitoring the performance of Annex-I Parties under the UNFCCC (developed countries) based on the foundational principles of the Climate Convention. The performance and policies of the Non Annex-I Parties (developing countries) will be also provided for comparison. The website is expected to be a valuable tool for policy makers, public institutions, researchers, academics, students, and the general public from developing countries to keep equity and climate justice considerations clearly in view in their perspective.



NITI Aayog – UNDP launched Handbook on Sustainable Management of Plastic Waste for Urban Local Bodies (ULB's)

NITI Aayog and UNDP India launched a handbook to promote sustainable management of plastic waste in the country. The Handbook presents best practices and examples from cities in India and Southeast Asia which face similar infrastructure and plastic waste challenges. The handbook is a repository of 18 case studies/best practices from India, including 4 from south Asian countries divided into four major components, including a) Technical models for recycling, b) Material Recovery Facilities (MRF), c) Governance for effective plastic waste management, and d) IEC and Digitization. The book covers every aspect of the entire plastic waste management service chain.

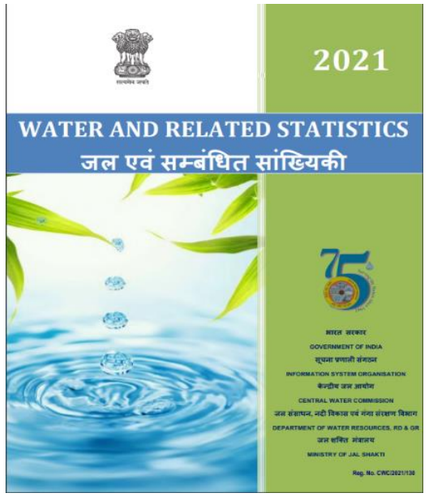
Important Water quality and quantity related publications by Central Water Commission

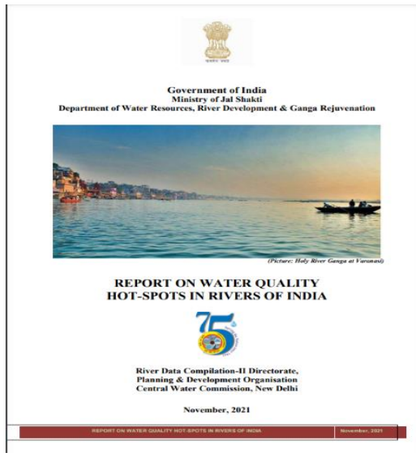
The Central Water Commission (CWC) has released important water related publications during the period October to December – 2021.

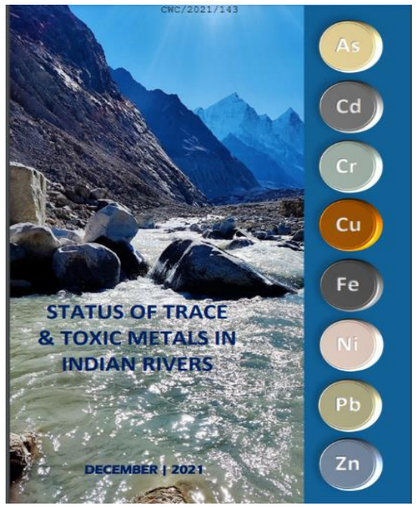
The "**Water and related statistics-2021"** was released by CWC in in October, 2021 is a biennial publication which contains statistics related to water resources potential, irrigation potential, dynamic ground water resources, physical/ financial progress of Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) - Accelerated Irrigation Benefits Programme (AIBP), environmental performance, flood damages, land use, etc.

During November – 2021, CWC has released third edition of the report on **"Water quality hotspots in rivers of India".** It is based on the data of 10 water quality parameters observed during 2010-2020 at 588 water quality monitoring stations out of 764 stations of CWC.

In December – 2021, CWC released a report on **"Status of trace & toxic metals in Indian rivers".** This report comprises the data of eight elements viz. Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Nickel and Zinc for the period from August – 2018 to December – 2020. The report brings out the identified locations having these metal concentrations beyond the exceeding limits according to the BIS 10500: 2012.

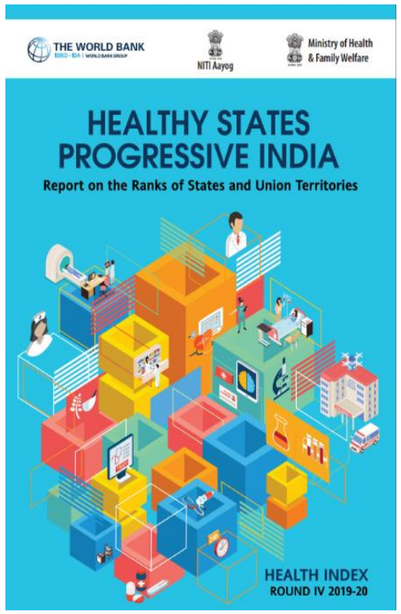






Fourth State Health Index released by NITI Aayog

The NITI Aayog released fourth edition of the State Health Index for 2019–20. The report, titled **"Healthy States, Progressive India"** ranks states and Union Territories on their year-on-year incremental performance in health outcomes as well as their overall status. The State Health Index is an annual tool to assess the performance of states and UTs. It is a weighted composite index based on 24 indicators grouped under the domains of 'Health Outcomes', 'Governance and Information', and 'Key Inputs/Processes'. On overall ranking based on the composite index score in 2019–20, the top-ranking states were Kerala and Tamil Nadu among the 'Larger States', Mizoram and Tripura among the 'Smaller States', and Dadra & Nagar Haveli and Daman & Diu (DH&DD) and Chandigarh among the UTs.

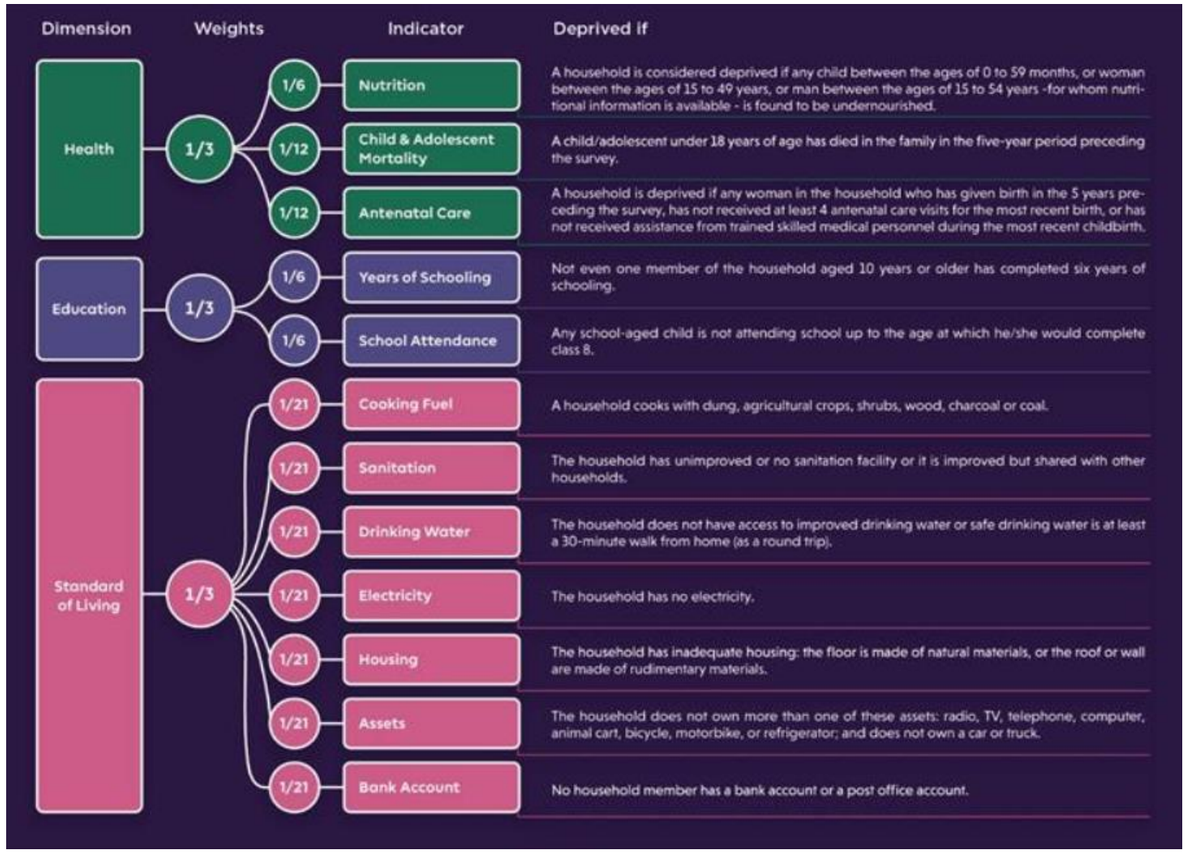


Delhi Homes Record Poor Indoor Air Quality

As per a study that surveyed thousands of Delhi households between 2018 to 2020 across varying socioeconomic strata, on average, found the indoor $PM_{2.5}$ levels to be substantially higher the corresponding value reported by the nearest government monitor. This new study conducted at the Energy Policy Institute at the University of Chicago (EPIC India) has indicated that demand for air pollution information and defensive technologies may be low among India's national capital residents. It was observed that, even when offered a free trial of indoor air quality monitor to track pollution levels inside their homes, the take-up rates were low and the indoor $PM_{2.5}$ levels for low-income and high-income households in Delhi were very high during the wintertime, with mean concentrations of 23 and 29 times the WHO safe limit of $10\mu/m^3$, respectively. Findings suggested that high-income households were 13 times more likely to own air purifiers than low-income households. Still, the indoor air pollution levels in those homes were only 10 per cent lower than those living in disadvantaged settings. The experiment found that in homes with access to real-time indoor air pollution data, about an 8.6 percent decline in indoor $PM_{2.5}$ concentrations was recorded, and modest changes in inexpensive defensive practices and ventilation behaviors were observed.

NITI Aayog released National Multidimensional Poverty Index: Baseline Report

The National Multidimensional Poverty Index: Baseline Report based on National Family Health Survey-4 (2015-16) has been developed by NITI Aayog in consultation with Ministries and in partnership with State governments and the index publishing agencies –Oxford University's Oxford Poverty and Human Development Initiative (OPHI) and United Nations Development Programme (UNDP). The report is a contribution towards measuring progress towards target 1.2 of the Sustainable Development Goals (SDGs). The multidimensional poverty index is calculated using 12 indicators -- nutrition, child and adolescent mortality, antenatal care, years of schooling, school attendance, cooking fuel, sanitation, drinking water, electricity, housing, assets and bank account -- that have been grouped under three dimensions namely, health, education and standard of living.



Climate on track to devastate world's poorest economies: Study

To date, Earth's average surface temperature has risen 1.1C compared to late 19th-century levels. As per a report released at the COP 26 climate talks in Glasgow, the 65 most vulnerable nations will see GDP drop 20 per cent on average by 2050 and 64 per cent by 2100 if the world heats up 2.9 degrees Celsius. This study, which was commissioned by Christian Aid, reveals that, even if global temperature rises are capped at 1.5C, in keeping with the most ambitious Paris Agreement goal, the same countries would take a GDP hit of 13 per cent by 2050 and 33 per cent by the end of the century.

The study further reveals that, more than a third of the world's nations urgently need help to build up resilience if their economies are to withstand the onslaught of heatwaves, drought, floods and storms made more intense and deadly by global warming. The study does not take into account adaptation measures, which could potentially alleviate some of the damage.

Eight of the top 10 most affected countries are in Africa, with two in South America. All 10 face

GDP damage of more than 70 per cent by 2100 under the current climate policy trajectory, and 40 per cent even if global warming is capped at 1.5C. As per the study, country facing the worst GDP loss is Sudan. The report also covers the Least Developed Countries (LDCs) and Alliance of Small Island States (AOSIS). Small island states are especially vulnerable to storm surges made worse by rising seas.

Inefficient use of funds for controlling air pollution in Indian cities

While many parts of the country recorded alarming levels of air pollution, government data has disclosed that the Centre has spent substantial amounts to tackle the menace but all of it appears to have come to naught.

The Centre launched the National Clean Air Programme (NCAP) in January 2019 as a national level strategy for pan- India implementation to reduce air pollution levels across the country. The NCAP is a midterm, five-year action plan. Taking into account the available international experiences and national studies, the tentative national level target of 20- 30% reduction of PM2.5 and PM10 concentration by 2024 is envisaged under the NCAP. Steering, monitoring and implementation committees have been constituted at the central and state levels for monitoring the implementation of the NCAP. Besides, city level nodal officers have been nominated by the Central Pollution Control Board to monitor the ground implementation of the NCAP.

The Centre sanctioned nearly Rs 515 crore under the National Clean Air Programme for 2020-21 and 2021-22. Besides, Rs 4,400 crore was released during 2020-21 as per the recommendations of the 15th Finance Commission to tackle air pollution in 42 cities and urban agglomerates. An amount of Rs 290 crore was allocated under the NCAP and Rs 152.73 crore was released in 2020-21 for expansion of monitoring network, construction and demolition waste management facilities, non-motorised transport infrastructure, green buffers, mechanical street sweepers, composting units etc. For 2021-22 an allocation of Rs 225 crore was made.

Apart from these, there are many central schemes that also focus on tackling air pollution in cities. About Rs 7,365.82 crore was allocated for solid waste management under the Urban Swachh Bharat Mission during 2014-2019. Besides, a provision of Rs 1,41,678 crore over a period of five years from 2021-2026 has been made for Urban Swachh Bharat Mission 2.0 with a focus on air pollution reduction by effectively managing waste from construction-and-demolition activities and bioremediation of all legacy dump sites.

CASE LAW- RECOMMENDATIONS BY MADRAS HIGH COURT FOR CURBING WATER POLLUTION IN AMARAVATI RIVER

by Saurabh Sharma, AAO

Introduction

Rivers are an important source of water which is used for drinking, bathing, agriculture, transportation, power generation, recreation, and other human activities. However, river water is adversely affected by the discharge of untreated or partially treated industrial effluents, municipal wastewater as well as washing clothes and cattle bathing. River Amaravathi, has been facing a stiff challenge in the form of pollution due to untreated effluents discharged from the dyeing units and other industries into the River.

Background of the case

A writ petition no. 34310 of 2017 was filled in Madras High court stating that the permission accorded by the State government to industries near the banks of river Amaravati has resulted in industrial effluents being discharged into the flowing water of the river. It is not only unfit for human consumption, but also turning nearby groundwater toxic. There was an underlying suggestion that industries were not only responsible for the degradation of the water quality in the Amaravati, but also discharge of liquid effluent that can cause severe health problems.

The petitioner further stated that during the recent years due to urbanization and industrialization, groundwater is increasingly laced with pollutants from industries, Municipal sewers and agricultural fields that are treated with fertilizers and pesticides.

Today, human activities are constantly adding industrial, domestic sewage and agricultural wastes in to the groundwater resources at an alarming rate. Groundwater contamination is generally irreversible which means once it is contaminated, it is difficult to restore the original water. The same thing happening in Karur district of Tamil Nadu which is located on the bank of river Amaravathi. The industries of diverse fields such as dying, bleaching, textiles, steel rolling mills, cement and paper are located in and around Karur town. There is no proper management and planning for the disposal of municipal sewage and industrial effluents at Karur. The city generates tonnes of organic and inorganic wastes and the municipal corporation dumps them in the dump yard at Amaravathi River. The typical sewage comprising of domestic and other wastewater are discharged directly into the river without any treatment.

Proceedings of the case

During proceedings, the bench stated that the pollution level in the flowing water has to be reduced to the extent possible. It is the duty of the State and appropriate checks and balances should be introduced by the State to ensure that the dumping of effluents into any flowing waterbody is completely prohibited. A polluted river also renders the groundwater along the banks toxic or at any rate, unfit for use whether in agricultural or otherwise.

In a State which depends primarily on flowing water and the damming of rainwater during the limited period, endeavour should be made to ensure that the quality of the water is not compromised or adversely affected by the discharge of effluents or sewage or the like.

Pronouncement of orders by Hon'ble Madras High Court

The bench in his pronouncement dated-20/04/2021 ordered that:

- State should constitute an expert body with persons having impeccable credentials in such regard to suggest appropriate measures, whether to curb the extent of effluents discharged by the industry or to relocate industries which are close to the banks of flowing waterbodies.
- A set of guidelines need to be formulated with appropriate checks and balances before all flowing water in the State turns poisonous. The State should take the matter seriously and invite the best minds to indicate how the quality of flowing water across the State can be preserved.

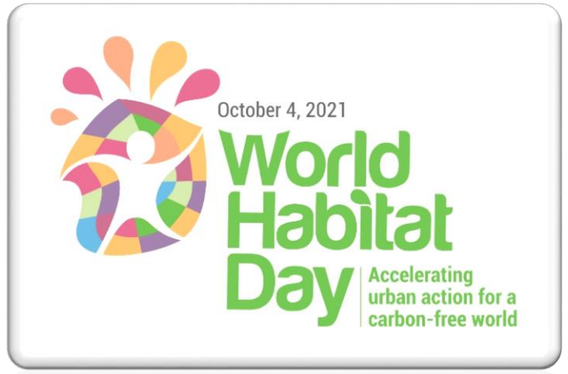
Significance of the order by Hon'ble Madras High Court

It is a serious matter throughout the country. Water bodies are contaminated by industries through discharge of untreated industrial effluents. Many water bodies are completely polluted and they become sewage channels. When the water bodies are polluted, not only the water, but soil is also polluted and the water becomes unfit for drinking purpose as well as for cultivation.

Moreover, because of pollution, the fishes and other living creatures in the water bodies are also killed and the water bodies become unfit to be a living place for those creatures.

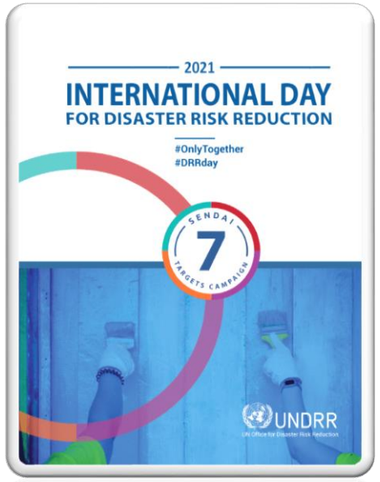
Though the Pollution Control Board is stated to be taking serious steps to inspect and control the pollution caused by the industries and local bodies, still the pollution is increasing rampantly. Unless very stringent measures are taken, it is very difficult to control the pollution of water bodies.

The court judgement may act as a catalyst for Executive Bodies to take concrete steps to safeguard the life of local people who are adversely effected due to this extreme emulsions of effluents in Amaravati River.



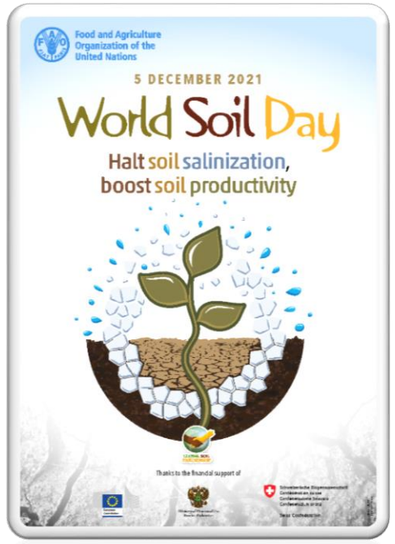
World Habitat Day – 4 October

World Migratory Bird day – 9 October

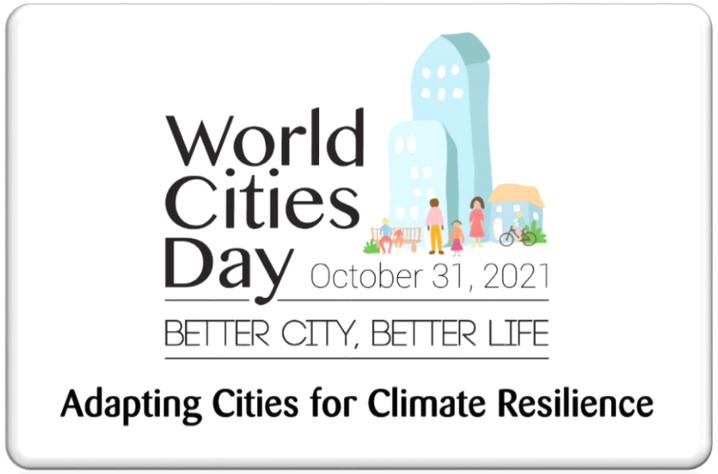


International Day for Disaster Risk Reduction – 13 October

World Tsunami Day – 05 November



World Soil Day – 05 December



World Cities Day – 31 October

CONFERENCE OF PARTIES-26 HELD AT GLASGOW (31st OCTOBER TO 12th NOVEMBER, 2021)

By Neha Jakhar, AAO

The United Nations Climate Change Conference, referred to as COP26, was held at the Scottish Event Centre in Glasgow, Scotland, United Kingdom, from 31st October to 12th November 2021 with the key aims of raising ambition on all fronts and finalizing the agreement's implementation guidelines. It brought together 120 world leaders and over 40,000 registered participants, including 22,274 party delegates, 14,124 observers and 3,886 media representatives.

India's Commitments

The Prime Minister of India, Shri Narendra Modi addressed the COP26 Summit in Glasgow on 2nd November 2021. Shri Modi informed the participants that, despite being 17 % of the world's population, whose responsibility has been only 5 percent in emissions, India has left no stone unturned to show that it has fulfilled its obligations. He emphasised that India ranks 4th in the world in installed renewable energy capacity and that its non-fossil fuel energy has increased by more than 25% in the last 7 years and now it has reached 40% of the energy mix. He informed that target set by Indian Railways is to make itself 'Net Zero' by 2030 and how the massive LED bulb campaign is reducing emissions by 40 million tonnes annually. India's efforts towards making an International Solar Alliance and creating a coalition for disaster resilient infrastructure for climate adaptation was highlighted. Speaking on the importance of lifestyle, he proposed a One-Word Movement called "LIFE" which means Lifestyle For Environment. Shri Modi, emphasised that need of the hour is to have a Mindful and Deliberate Utilization, instead of Mindless and Destructive Consumption and such movements together can set goals that can revolutionize many sectors in diverse areas such as Fishing, Agriculture, Wellness, Dietary Choices, Packaging, Housing, Hospitality, Tourism, Clothing, Fashion, Water Management and Energy. Shri Modi emphasised that with new commitments the transfer of climate finance and low cost climate technologies have become more important. India expects developed countries to provide climate finance of $1 trillion.

Prime Minister Shri Narendra Modi addressing the UN Climate Chanae Conference UK 2021

Shri Modi presented five nectar elements, *'Panchamrit'*, which will be an unprecedented contribution of India to climate action. The nectar elements are given below-

1. *India will take its non-fossil energy capacity to 500 GW by 2030.*
2. *India will meet 50 percent of its energy requirements from renewable energy by 2030.*
3. *India will reduce the total projected carbon emissions by one billion tonnes from now till 2030.*
4. *By 2030, India will reduce the carbon intensity of its economy by more than 45 percent.*
5. *By the year 2070, India will achieve the target of Net Zero.*

COP 26 Decisions:

The package of decisions consists of a range of agreed items, including strengthened efforts to build resilience to climate change, to curb greenhouse gas emissions and to provide the necessary finance for both. Some of the major points agreed on are given below-

Recognizing the emergency

The countries reaffirmed the Paris Agreement goal of limiting the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit it to 1.5 °C.

Accelerating action

The Glasgow Climate Pact called on all countries to present stronger national action plans next year, instead of 2025. Countries also called on UNFCCC to do an annual NDC Synthesis Report.

Moving away from fossil fuels

The participating countries ultimately agreed to a provision calling for a phase-down of coal power and a phase-out of "inefficient" fossil fuel subsidies. However, many countries, and NGOs, expressed dissatisfaction that the language on coal was significantly weakened (from phase-out to phase-down).

Delivering on climate finance

The conference, reaffirmed the pledge and urged developed countries to fully deliver on the US$100 billion goal urgently. Developed countries, in a report, expressed confidence that the target would be met in 2023.

Stepping up support for adaptation

The Glasgow Pact called for a doubling of finance to support developing countries in adapting to the impacts of climate change and building resilience. The COP26 Conference, also established a work programme to define a global goal on adaptation, which will identify collective needs and solutions to the climate crisis.

Completing the Paris rulebook

Countries reached to an agreement on the remaining issues of the so-called Paris rulebook, the operational details for the practical implementation of the Paris Agreement. Negotiations were also concluded on an Enhanced Transparency Framework, providing for common timeframes and agreed formats.

Focusing on loss & damage

Countries agreed to strengthen a network— **known as the Santiago Network** – that connects vulnerable countries with providers of technical assistance, knowledge and resources to address climate risks. They also launched a new **"Glasgow dialogue**" to discuss arrangements for the funding of activities to avert, minimize and address loss and damage associated with the adverse effects of climate change.

The conference concluded on 13th November with a commitment to host COP27 in Egypt in Sharm El-Sheikh on November 7-18, 2022.

Relevance of COP26 for India Inc.

Glasgow Clean Energy Breakthroughs

The International Energy Agency in its India Energy Outlook 2021 highlighted that the nation has the potential to become a "world leader" in battery storage, with 140–200 GW of battery capacity by 2040. This would mean India would need to drive clean industrial process and driving low-carbon industry transitions.

Decisions on Article 6

Article 6 market mechanisms will play a crucial role in driving investments from private and public enterprises into India and help us in achieving our mitigation and adaptation targets. It is projected, that there is a mitigation potential of 200 million tCO2 in the decade from 2021–2030 across all carbon market mechanisms.

Establishment of International Sustainability Standards Board

SEBIs Business Responsibility and Sustainability Report (BRSR) guidelines would motivate many businesses to mainstream ESG and climate action efforts and facilitate institutional capacities for both private and financial sectors. This includes integrating a green lens to long-term investment decisions and climate risks assessments.

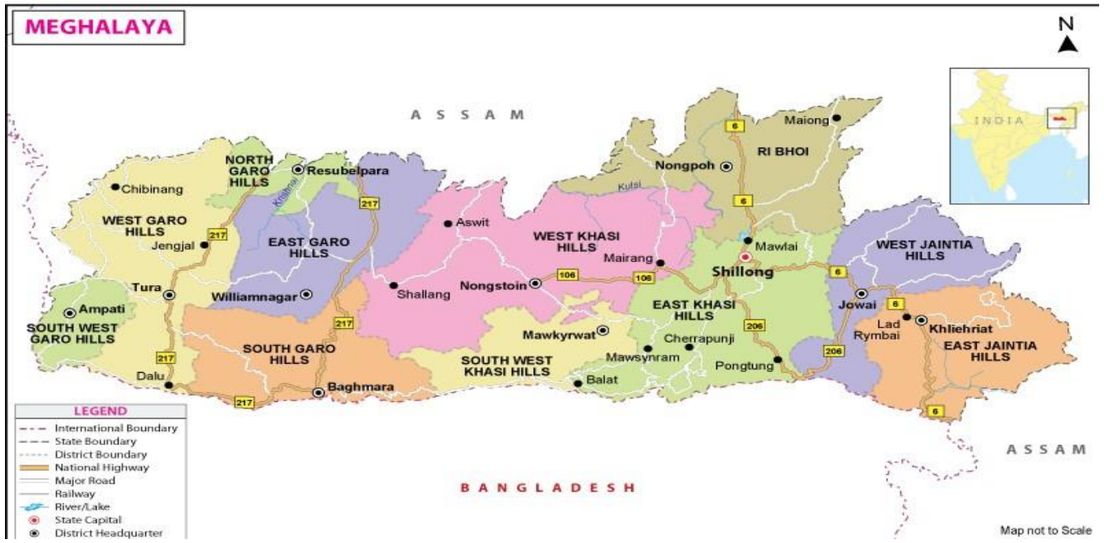
Glasgow–Sharm-el-Sheikh and Focus on Adaptation Initiatives

The prioritization of public private partnerships to support and enhance climate adaptations could provide a strong incentive to the private sector for financing adaptation and resiliency.

STATE IN FOCUS- MEGHALAYA

by Manoj Kumar, AAO

Meghalaya literally meaning "The Abode of Clouds" attained full statehood as the 21st state of India on 21st January'1972 with Shillong as the State capital. Situated in the North Eastern part of the country, Meghalaya covers an area of 22,429 sq km, which is 0.68% of the geographical area of the country. The State lies between 24°58'N to 26°07'N latitude and 89°48' E to 92°51'E longitude and is bordered by Assam in the north and east and shares international boundary with Bangladesh in the south and west. The State has three distinct regions namely, Garo Hills, Khasi Hills and Jaintia hills Meghalaya is basically an Agrarian State with about 80% of its total population depending entirely on agriculture for their livelihood.



Indian state of Meghalaya

On June 30, 2008, India's first National Action Plan on Climate Change (NAPCC) identifying eight core "national missions" representing multi-pronged, long-term and integrated strategies for achieving key goals in the context of climate change. The State Action Plan on Climate Change for Meghalaya was approved by the Ministry of Environment, Forest & Climate Change, Government of India in September, 2014. The prime objective of the State Action Plan on Climate Change is to strategize adaptation and mitigation initiatives towards emission stabilization, develop resilience of ecosystems, climate proofing of the livelihood sector and diversification of the economy by reducing the dependency on natural resources. The State Action Plan on Climate Change serves as a guiding document to take the climate change agenda forward and infuse it into the development planning of the State.

This state in focus attempts to throw light on some of the prioritized sectors of the state of Meghalaya for adaptation planning in respect of climate change in line with the National Action Plan on Climate Change. The prioritized sectors are detailed below-

Agriculture

The economy of Meghalaya is agrarian and the agriculture sector contributes 22% to the Gross State Domestic Product (GSDP) with 80% of the state's population depending directly and indirectly on agriculture. Despite this, the Net Cropped Area is merely 9.76% of the total geographical area of the State. The State is extremely vulnerable to the impacts of changing climate and has faced the wrath of freak weather events in the recent past. The State is also prone to floods and soil erosion making the agriculture sector particularly vulnerable. High rainfall variability, weather shift and projection of water stress during the cropping season may result in decline of grain yield. Low net ground water availability, lack of irrigational facilities along with large number of small and marginal land holdings is likely to exacerbate the impact of climate change.

Habitat

Urbanisation in Meghalaya is lower than the national average with an urban population of only 20.07 % (Census Report, 2011). Majority of the State's population lives in rural areas. The urban population has however maintained a steady growth over the last couple of decades. Census 2011 reports that only 64.7 % of the urban population have access to drinking water from treated sources. Challenges in water supply include improvement in distribution system, inequitable distribution, water resource management and treatment and rationalisation of water use. Sanitation poses major problems with the absence of adequate sewerage system in urban areas resulting in drainage of domestic effluents into nearby rivers and streams leading to contamination of water sources. Absence of storm water drainage poses problems of water logging and flooding, causing landslides and soil erosion. Indiscriminate developmental activities also add to the problem by obstructing drains and encroaching rainwater flow paths. Solid waste is another pressing urban issue for Meghalaya primarily because of its difficult terrain. Inadequate collection and improper disposal currently leads to spillage and contamination of soil and surface as well as groundwater streams. As per the 2011 Census, the condition of house used for residence and other purposes in the urban areas shows that 46.6% are in good condition, 48.2% in liveable condition and 5.2% in dilapidated condition.

Forestry

The Forest Cover in the State is 17,118.79 sq km which is 76.32 % of the State's geographical area. In terms of forest canopy density classes, the State has 488.98 sq km under Very Dense Forest (VDF), 9,267.29 sq km under Moderately Dense Forest (MDF) and 7,362.52 sq km under Open Forest (OF). Forest Cover in the State has decreased by 27.21 sq km as compared to the previous assessment reported in ISFR 2017.

Meghalaya is spread over a geographical area of 22,429 km2. The forest cover of Meghalaya was highest in 1985-87 i.e. 73.41% (16,466 sq. km) and since then it gradually decreased. The 70.78% of forest cover during 1991 had further decreased to 69.48 % by 2001. However, the forest cover of the state has recovered after 2001 and reached back to its earlier level (77-78%) and is stable since last decade with changes observed in forest density. The State forest cover is above the national goal of 33% and also more than prescribed 60 % forested area in case of hilly states

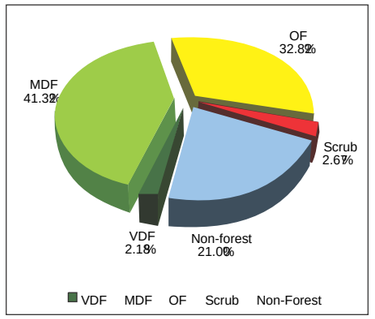
There is a significant potential of setting up forest based industries based on sustainable management of forest. Since forests in the State largely belong to individuals and communities, the foremost requirement is to bring these forests under scientific management so that sustainability and conservation of forest resources are ensured.

There are many sacred groves in the State. These isolated patches of forest are store houses of rich biodiversity. Sacred groves preserved by the communities since ages need special attention in the face of climate change particularly to save them from water stress.

Shifting agriculture, logging, mining and other human activities have also been responsible for fragmentation, destruction and degradation of the forests in the State. High rainfall and hilly terrain have further accentuated the impact of human activities on the forests. Almost the entire State is influenced by age-old practice of slash and burn agriculture, except some pockets of valley bottomlands.

Class	Area	% of GA
VDF	488.98	2.18
MDF	9,267.29	41.32
OF	7,362.52	32.82
Total	**17,118.79**	**76.32**
Scrub	599.83	2.67

Forest Cover of Meghalaya



This practice destroys the protective and productive vegetation in preference to a very brief period of immediate crop production. In order to earn their livelihood people practice shifting cultivation and over-exploit forest resources, causing serious damage to the forests and biodiversity.

Water Resources: The water in these areas is highly acidic with silt and suspended solids were deposited at the bottom of these water bodies. The rivers of the State are rain fed and therefore their discharge dwindles during summer. The river system of Meghalaya comprises mainly of rivers draining to the Brahmaputra basin in the North and the Meghna basin in the South. Important rivers in Garo Hills region are Simsang, Daring, Sanda, Bandra, Bhogai, Dareng, Nitai and the Bhupai. In the central and eastern part of the plateau the major rivers are Umkhri, Digaru, Umiam, Kynchiang (Jadukata), Mawpa, Umiew, Myngot and Myntdu.

Mining: Mining is an important sector contributing significantly to the economic development. Unregulated, unscientific and unsustainable exploitation of minerals in the State has caused widespread destruction of natural resources and thus adversely impacting livelihood of the people. The State has little or no control on mining as most of the mineral deposits fall under the privately owned lands. Unscientific coal mining has caused major damage to the land and water resources.

Energy: In Meghalaya over 90% of energy is produced from hydropower. However, the energy sector also faces threats from climate change, particularly from extreme weather events and increasing stress on water resources. The projected impact of the variation of precipitation level due to climate change will severely impact the hydropower generation which in turn will change the energy supply scenario in the State. Even increased threat of flooding in flood prone area which is projected as a possible impact of climate change will lead the power plant and electricity distribution network vulnerable. Projected increase in temperature and deficit in rainfall is likely to result in increased energy demand triggered by higher use of electric gadgets and farm irrigation putting a pressure on electricity distribution network through increased seasonal demand.

Human Health: Intergovernmental Panel on Climate Change's Fifth Assessment Report concludes that climate change is projected to increase threats to human health and the rural poor are likely to be the worst affected. Exposure to health hazards related to climate change affects different people and different communities to different degrees. Meghalaya with 80% of the people living in the rural areas is the most vulnerable segment of population. The links between a climate variable and a health impact can be very direct, such as physical injuries suffered during an extreme event or increases in respiratory symptoms during high temperature events. Other links are indirect and complex and require careful consideration of the chain of events that lead from climatic variable to health impact. Current and future climate impacts expose more people in more places to public health threats. One very likely impact of climate change in health sector is the State is increased incidence of vector borne diseases.

PERFORMANCE AUDIT OF SOLID WASTE MANAGEMENT BY GOVERNMENT OF MANIPUR

By Gaurav Jain SAO

Background

Waste is any substance which is discarded after primary use, or is worthless or defective and is of no use. Solid waste includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste and other non-residential waste, street sweepings, silt removed or collected from surface drains, horticultural waste, agricultural waste and treated bio-medical waste, etc.

Waste represents a threat to the environment and human health if not handled or disposed properly. The responsibility of solid waste management in the State is vested with the local self-government institutions both in the urban and rural areas. Management of solid waste involves assessment of the generation and collection of waste, segregation, storage, transportation, processing and finally its disposal.

Audit Scope:

The Performance Audit was conducted during the period from April 2018 to August 2018 covering the period from 2013-14 to 2017-18. The audit included scrutiny of records relating to the functioning of Municipal Administration Housing and Urban Development (MAHUD), Manipur Urban Development Agency (MUDA), Planning and Development Authority (PDA) and MPCB in relation with municipal solid waste management.

Audit Objective

The objectives of this Performance Audit were to ascertain whether:

- Planning for the Management of Solid Waste was adequate and effective;


Report of the
Comptroller and Auditor General of India
on
Social, Economic (Other than Public Sector Undertakings),
Economic (Public Sector Undertakings),
Revenue and General Sectors
For the year ended 31 March 2018
GOVERNMENT OF MANIPUR
Report No. 2 of 2019

- Adequate funds were provided in a timely manner and utilized efficiently for the purposes the funds were provided;
- Programmes/schemes for Solid Waste Management were implemented efficiently, effectively and economically; and
- Effective monitoring mechanisms existed and functioned effectively.

Audit Criteria

- Municipal Solid Waste (Management and Handling) Rules, 2000/Solid Waste Management (SWM) Rules, 2016.
- Environment Protection Act, 1986;
- National Action Plan (Revised in conformity with SWM Rules, 2016);
- Standards for air, water issued by Central Pollution Control Board (CPCB) and MPCB;
- Orders and instructions of National Green Tribunal and Supreme Court and High Courts;
- State Action Plan, Detailed Project Reports (DPRs) and Bye-Laws of ULBs and other instructions issued by the Ministry of Housing and Urban Affairs, Ministry of Environment and Forest and those issued by MAHUD;
- Municipal Solid Waste Manual, 2000 and 2016;
- Guidelines of the Swachh Bharat Mission;
- General Financial Rules, 2005 and 2017.

Major Audit Findings

Action Plan for Solid Waste Management: The Action Plan for SWM was prepared in five out of 11 sampled ULBs and documented in the form of DPR. Six out of 11 sampled ULBs had not worked out their requirement of tools and equipment to ensure proper segregation, material recovery, storage, transportation, processing and disposal of waste of their respective areas.

Non-consideration of seasonal variation in Sampling for waste quantification: For the purpose of survey, no data was collected for all the three seasons at the time of preparation of DPRs in five out of 11 sampled ULBs. Thus, data on nature/quantity of disposal of waste lacked analysis on seasonal variation and hence lacked reliability.

Absence of Action Plan for transportation of solid waste: The ULBs did not have any action plan for alternative mode of transportation of solid waste in case of breakdown of tractors.

Non-preparation of budget for solid waste management: None of the sampled ULBs had prepared budget for SWM and thus, the SWM activities were being carried out without any proper financial assessment. Thus, solid waste management in the State lacked financial planning.

Irregularities in procurement of twin bins: The procurement process lacked transparency, efficiency and economy.

Doubtful expenditure on construction of dustbins: During joint physical verification, no trace of construction of the dustbins at the proposed sites were found. Therefore, the actual construction of the structures of dustbins as claimed was highly doubtful.

Assessment of waste generation and collection: None of the sampled ULBs maintained any record on waste generation and its composition.

Storage: Storage facilities created, were not covered and were exposed to open atmosphere. There was no facility created for disposal of the domestic hazardous waste.

Transportation: Waste was being transported in uncovered vehicles and none of the vehicles had "Information and Communications Technology (ICT)" based solution for tracking of municipal vehicles engaged in collection and disposal of solid waste.

Processing and Disposal of Waste: The activities for disposal of waste organised by the ULBs was in violation of the SWM Rules, 2016, as all the sampled ULBs were disposing mixed solid waste in the open dumpsites.

Human Resource: There was acute shortage of manpower which was required for an effective SWM system. There was no training need analysis done in the ULBs.

Conclusion

There was lack of planning for management of solid waste in the sampled ULBs. The ULBs did not prepare separate budgets for meeting the expenditure of solid waste management and also did not prepare plans which limited the effective execution of waste management activities. Moreover, there was no reliable information about the quantum and composition of waste generated in their respective jurisdiction in six out of 11 sampled ULBs. There was huge gap between the quantum of waste generated and disposed. The majority of the waste was disposed of as mixed waste without processing as per existing norm, thereby creating threat to the environment and health of the public.

Recommendations

- State Government should speed up preparation of DPRs for management of solid waste on cluster basis for all the ULBs in the State so that management of solid waste in the State is ensured at the earliest.
- State Government should issue specific instructions to the municipalities for effective utilisation of substantial funds from the State and Central Finance Commission funds for solid waste management as the same was meant for delivery of basic services.
- All ULBs should maintain information on generation, collection and disposal of solid waste in their respective jurisdiction for facilitating management of waste in a systematic manner.
- All ULBs should ensure door-to-door collection of waste on daily basis as this would not only encourage public participation in management of solid waste but also avoid indiscriminate disposal of waste by the public.
- Disposal of garbage in open dumpsites, roadsides, etc., should be stopped immediately and processing of waste scientifically should be ensured at the earliest by the MCs.

ENVIRONMENT SNIPPETS

by Manoj Kumar, AAO

India Achieves Target of 40 Per Cent Installed Electricity Capacity from Non-Fossil Fuel Sources

At COP21, as part of its Nationally Determined Contributions (NDCs), India had committed to achieving 40 per cent of its installed electricity capacity from non-fossil energy sources by 2030. The country has achieved this target in November 2021 itself. The country's installed RE capacity today stands at 150.05 GW while its nuclear energy-based installed electricity capacity stands at 6.78 GW. This brings the total non-fossil based installed energy capacity to 156.83 GW, which is 40.1 per cent of the total installed electricity capacity of 390.8 GW. India is committed to achieving 500 GW of installed electricity capacity from non-fossil fuel sources by the year 2030.

Ten Water Bodies in the National Capital to be Declared Wetlands by the MoEFCC

As many as 10 water bodies in the national capital would be declared wetlands by the Ministry of Environment, Forest and Climate Change (MoEFCC).The identified water bodies are: Sanjay Lake, Hauz Khas Lake, Bhalswa Lake, Smriti Van (Kondli), Smriti Van (Vasant Kunj), Najafgarh Jheel, Welcome Jheel, Daryapur Kalan, Sultanpur Dabas, Poth Kalan (Sardar Sarovar Lake). According to the report, the water quality of these water bodies will be assessed by land agencies that need to do water testing or sampling of all water bodies every month or at least eight times in a year as per Indicative Guidelines for restoration of water bodies of the Central Pollution Control Board(CPCB).

Progress of Ethanol Blended Petrol (EBP) Programme in India

India has managed to save precious foreign exchange outgo worth ₹9580 crore in the last one year thanks to the use of Ethanol Blended Petrol (EBP) in transport. Under the EBP programme, Oil Marketing Companies (OMCs) sell 10 per cent ethanol-blended petrol or E10. Indian Oil (IOC), Bharat Petroleum (BPCL), and Hindustan Petroleum (HPCL) sold 3672 crore litres of EBP between December 1, 2020 and November 14, 2021. Use of E10 petrol cuts hydrocarbon and carbon monoxide emissions by 20 per cent in both two-wheelers and passenger cars while the use of E20 petrol cuts carbon mono-oxide emissions by 50 per cent in two-wheelers and 30 per cent in four-wheelers.

5,809 Smart City Projects under Implementation/Completed till November 2021

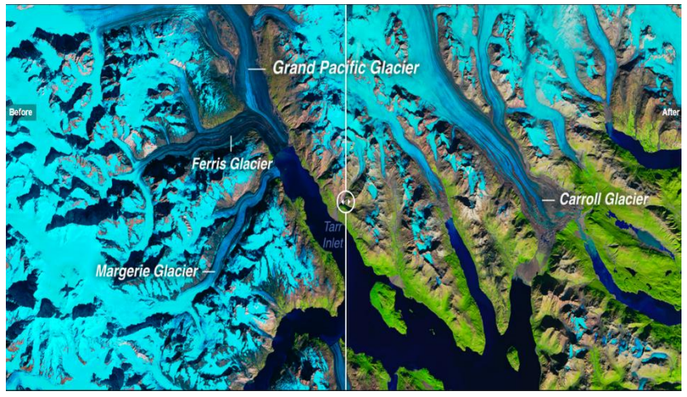
The Government of India launched the Smart Cities Mission (SCM) in June 2015. There has been considerable progress in implementation of projects under the Mission since its inception. As on November 12, 2021, 6452 projects worth ₹184,998 crore (90 per cent) have been tendered, out of which 5809 projects worth ₹156,571 crore (85 per cent) are under implementation/completed. The pace of implementation has increased significantly over the past 39 months with 270 per cent growth in projects tendered and 407 per cent growth in projects grounded/completed.

Deforestation, Climate Change Making Outdoor Work Unsafe

A double-blow of forest destruction and climate change has caused temperatures to soar in many tropical locations, making outdoor work unsafe for millions of workers, according to a study published recently. Between 2003 and 2018, the study found, about 4.9 million people lost at least half an hour per day of working conditions at a temperature recognized as safe. "Tropical locations are already on the edge of being too hot and humid to safely work because of climate change," said Luke Parsons, lead author on the paper published in the journal *One Earth*. Parsons' research further found that 91,000 people lost more than two hours of safe working temperatures per day—the overwhelming majority of them in Asia.

Drastic Effects of Global Warming

Scientists predict that continued global warming under current trends could lead to an elevation of the sea level by as much as 5 m by the year 3000 CE. One of the many effects of global warming is sea-level rise due to the melting and retreat of the Earth's ice sheets and glaciers as well as other sources. A team of researchers from Hokkaido University, The University of Tokyo and the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) explored the long-term perspective for the Antarctic ice sheet beyond the 21st century under global-warming conditions, assuming late 21st-century climatic conditions remain constant.

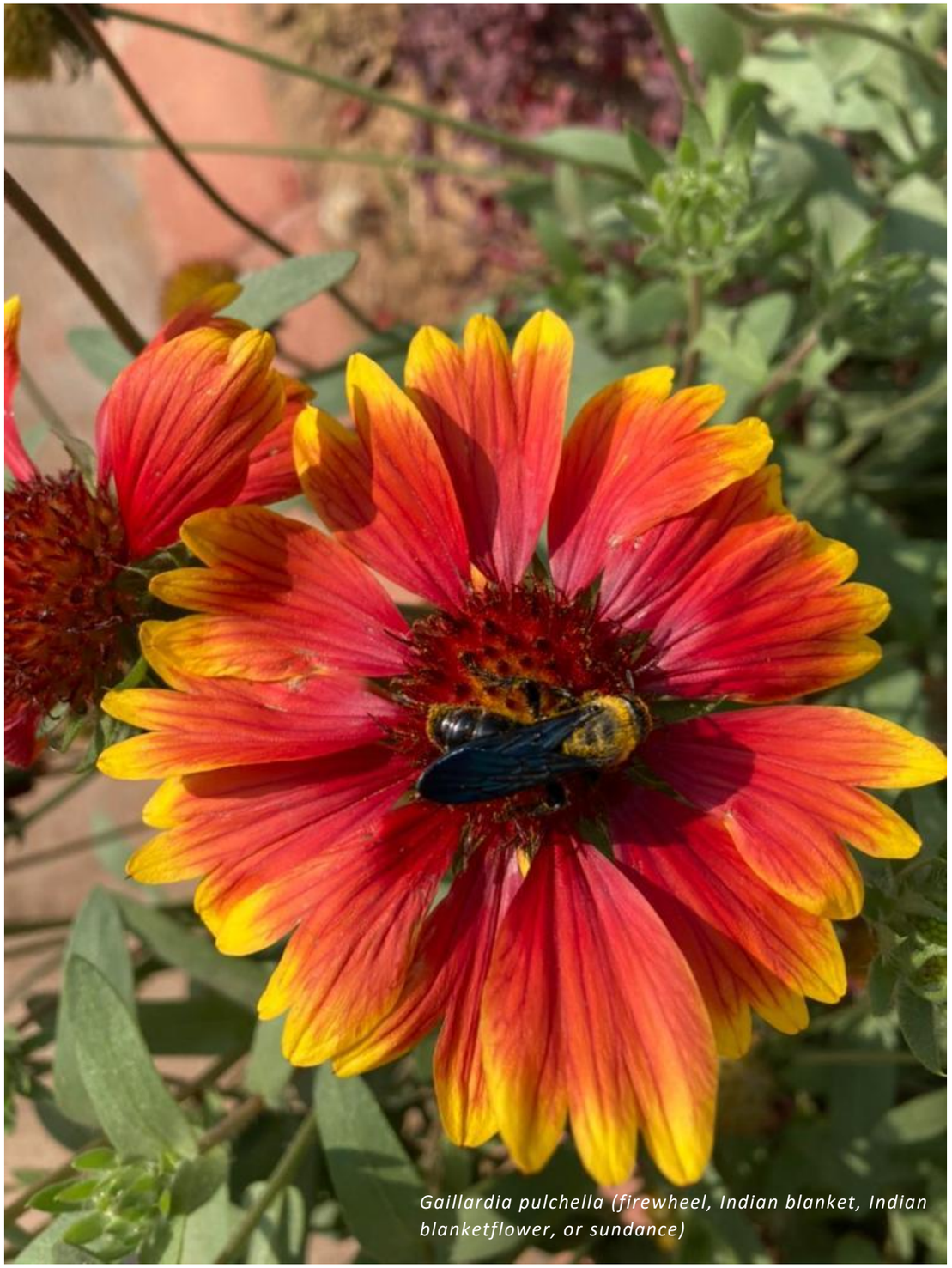


BEFORE AND AFTER

Changes in West Arm of Alaska's Glacier Bay

Sept. 5, 1986 - Sept. 17, 2019. *Source- NASA-Images of change*

Gazania rigens



Gaillardia pulchella (firewheel, Indian blanket, Indian blanketflower, or sundance)

PERFORMANCE AUDIT OF THE MANAGEMENT OF STORM WATER IN BENGALURU URBAN AREA

By Ravikumar U Sr AO
O/o Pr.AG (Audit I)
Karnataka, Bengaluru

Bengaluru city faces a paradoxical situation - urban flooding on one hand and water scarcity, on the other. Performance Audit was undertaken to understand whether better storm water management could be the proverbial silver bullet that can simultaneously tackle both challenges. This needed study/analysis of storm water infrastructure maps over a period of time. The absence of complete maps with various authorities led us to identify satellite imagery as a viable option. We collaborated with Regional Remote Sensing Centre, ISRO to conduct a study of long term changes in land use patterns utilising geospatial inputs to obtain details of changes across specific time periods which affect ground water recharge, simultaneous variations in SWD infrastructure in order to identify weaknesses in their management/monitoring.

This innovation involved:

1. **Technology**: Satellite imagery (with resolution of 2.5m, 2.75m and 5m), time series-based analysis of geospatial images using ArcGIS software.
2. **Partnerships/People**: Built collaboration with RRSC for access to satellite imagery and allied technology, training/capacity building of audit staff in geospatial image analysis.
3. **Process**: Multiple thematic layers such as building foot prints, road network, lakes, drainage network and sewer lines in vector format and cadastral maps spanning about 50 years were analysed. Along with reference to research papers, this analysis led to significant audit observations on changes in drainage structures, water bodies, encroachments, land use patterns, paved area/changes in open areas/green cover *etc*.

This innovation empowered audit by offering a viable alternative to the problems of inaccuracy/incompleteness of physical maps. This "single-source of truth" helped raise scientific, indisputable audit observations. Further, in-house execution enabled building capacity in the application of this new-age technology.

In addition to the above innovation, we attempted an unconventional Reporting feature *i.e.*, videos in the form of QR code (for those reading the paperback version) and you-tube links (for those reading soft copies).

The scope of this PA was, however, not limited to Storm Water Drain infrastructure. We have attempted to address the larger conceptual question of redefining storm water as a critical natural resource worthy of conservation.

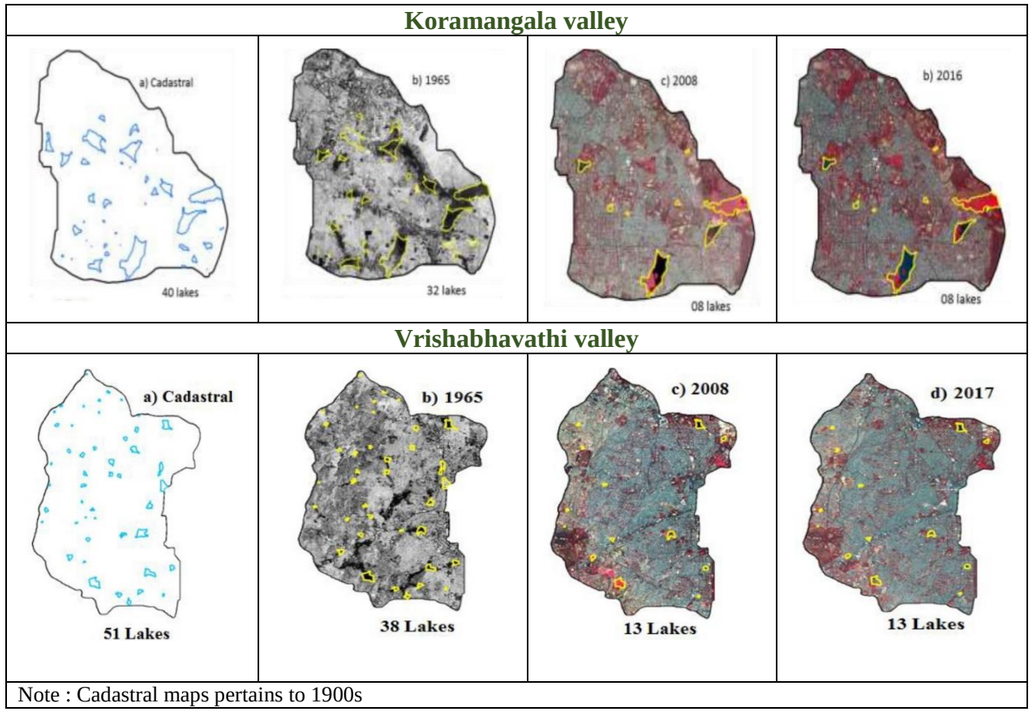


Exhibit 1: Time series maps showing changes in lakes / tanks

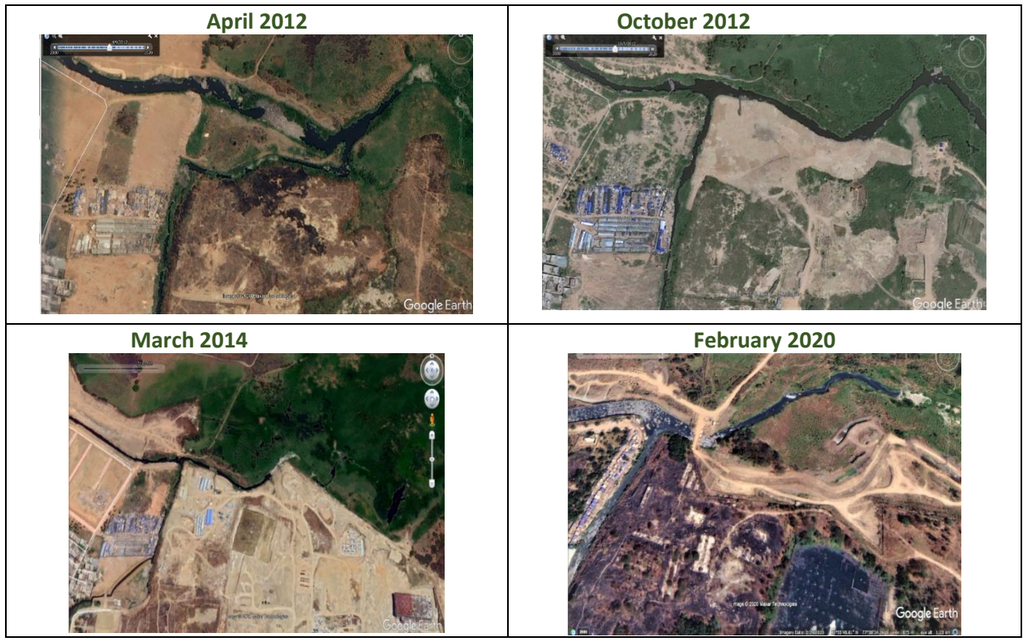


Exhibit 2: Google earth images showing the realignment of drains

Important findings

- Large scale encroachment of lakes/drains, reduction in number of water bodies and depletion of natural drainage systems (**Exhibit 1**). Changes in land use such as decrease in vegetation cover and open spaces and increase in built up area, realignment of drains (**Exhibit 2**) resulted in loss of inter-connectivity between water bodies impacting effective recharge of ground water and increase in runoff of storm water.
- The State did not have a robust policy governing storm water management. The State Government and Bruhat Bengaluru Metropolitan Area (BBMP), the local authority responsible for storm water management did not consider urban surface runoff (average annual rainfall being 969 mm during 2013-19) as a water resource despite the growing scarcity of water in the State/city.
- The local authority did not possess a comprehensive inventory of drains. The absence of proper classification of drains contributed to lack of clarity on critical issues such as the extent of buffer zone to be maintained, *etc*. This in turn hampered maintenance of drains as many utility lines like electrical, telephone, optical cable, *etc*., were laid across the drains in many locations obstructing flow in the drains.
- Rampant mixing of sewage (780 MLD) with storm water was another serious problem. Sewerage lines were drawn inside the SWDs and large quantity of sewage was illegally let into SWDs. As a result, ground water recharge structures were not taken up. Further, water bodies and drains were not inter-connected and linkage between different drains was absent. This affected free flow of storm water leading to frequent flooding in various parts of the city.
- Though statutory provisions stipulated putting in place boundary marks indicating the extent of buffer zone, none of the test-checked drains had such boundary markings. This led to encroachment of drains as well as construction in buffer zone.
- BBMP was yet to act on 714 out of the 2,626 identified encroachments. The completeness and reliability of the data on encroachments available with BBMP was low as we noticed significant instances of encroachments, in addition to those recognised by BBMP. Removal of encroachments was incomplete.
- There were severe blockages of surface drains/SWDs indicating absence of periodical inspections and regular maintenance of drains. BBMP failed to adopt quality monitoring measures and install Sewage Treatment Plants, despite Court directives leading to continuous contamination of water bodies.

https://youtu.be/joRJQi5ElRk

https://youtu.be/_4s2d2Tjw1w

QR codes for utility lines blocking flow and sewage mixing

Important recommendations

- The State Government/BBMP should formulate a comprehensive policy which clearly recognizes urban runoff as a potential source of water requiring clear plan of action for conservation in consonance with the NDM guidelines
- BBMP should prevent further reduction in water bodies and length of the natural drains and ensure inter-connectivity of water bodies for proper conservation of the ecosystem as well as ground water.
- BBMP and BWSSB should jointly prepare a plan of action to prevent sewage flow into SWDs within a definite time schedule and the implementation thereof should be monitored by the State Government.
- The State Government/BBMP should explore the possibility of letting the treated water to the water bodies in the city to prevent drying up of water bodies and to aid in enhancing ground water recharge.
- The State Government/BDA should take immediate action to finalise and notify the revised master plan to prevent encroachments of Government assets such as land, water bodies *etc*., and rectify the omissions with regard to SWDs.
- BBMP should prepare a comprehensive database of SWDs in coordination with parastatal agencies like BDA, BWSSB etc., to serve as a single source for effective planning and management of SWDs.
- BBMP should factor in all parameters such as rainfall pattern, increase in impervious layers, decrease in vegetation *etc*., while designing and executing the roads and drains to increase ground water recharge and prevent flooding. It should ensure strict adherence to the guidelines and norms prescribed for construction of roads/drains.
- BBMP should factor in all parameters such as rainfall pattern, increase in impervious layers, decrease in vegetation *etc*., while designing and executing the roads and drains to increase ground water recharge and prevent flooding. It should ensure strict adherence to the guidelines and norms prescribed for construction of roads/drains.
- BBMP should accord high priority to prevent discharge of sewage into SWDs. There is a need to prepare and execute (i) medium term strategy for complete cessation of sewage contamination of storm water and lakes eventually and (ii) a short term strategy for installation of sewage treatment plants in coordination with BWSSB to prevent contamination of water bodies.
- BBMP needs to escalate its efforts to conduct robust surveys to identify and evict all encroachments on SWDs and maintain the stipulated buffer zone.
- BBMP should put in place an adequate mechanism to conduct and document periodical inspection and maintenance of all categories of drains.

AIR POLLUTION – A GROWING CONCERN FOR DELHIITES

by Manoj Kumar AAO

Our right for clean air is fundamental in nature. However, with increasing urbanization of our cities, the level of air pollution is attaining new records and is showing severe adverse effects. As per report of the interdisciplinary journal Lancet Planetary Health, nearly 1.67 million Indians died due to air pollution in 2019. In India 97% of children breathe air which is below WHO standards and over 25 % of deaths in children under five are directly or indirectly related to air pollution. The situation is alarming in metro cities, especially in Delhi and especially during the winters. Though, Delhi is in the news mostly due to its Capital and metro status.

Delhi's Report Card

According to World Health Organization) WHO, 14 of the world's 20 most polluted cities are in India. In March, 2009, the Central Pollution Control Board (CPCB) of India declared Delhi as "India's Asthma Capital". In 2015, a study conducted by CPCB and Calcutta based Chittaranjan National Cancer Research Centre found that every third child in Delhi had reduced lung function because of air pollution. As per the Air Quality Life Index developed by The University of Chicago's Energy Policy Institute, a Delhiite would be able to add 9.7 years to his life if the air he was breathing were clean.

AQI	Associated Health Impacts
Good (0-50)	Minimal Impact
Satisfactory (51-100)	My cause minor breathing discomfort to sensitive people
Moderately (101-200)	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults
Poor (201-300)	May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease
Very Poor (301-400)	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart disease
Severe (401-500)	May cause respiratory effect even on healthy people and serious health impacts on people with lung/heart disease. The health impacts may be experienced even during light physical activity

Once again Delhi recorded high level of air pollution during the last quarter of the year 2021. Top court had to direct state and federal governments to take further emergency measures.

Although, Delhi has high pollution levels throughout the year owing to contribution of domestic cooking, space heating, water heating, lighting, re-suspended dust on the roads, construction activities, power plants and in-situ diesel generator sets, open waste burning, industrial activities, passenger transport (two, three and four wheelers, buses, and aviation) and freight transport (heavy and light trucks, non-road vehicles, and shipping), wind-blown dust from dry and arid regions etc the pollution is much worse and more visible during the winter season.

So why winter?

Some of the reasons behind increase of air pollution in Delhi during the winter season are given below.

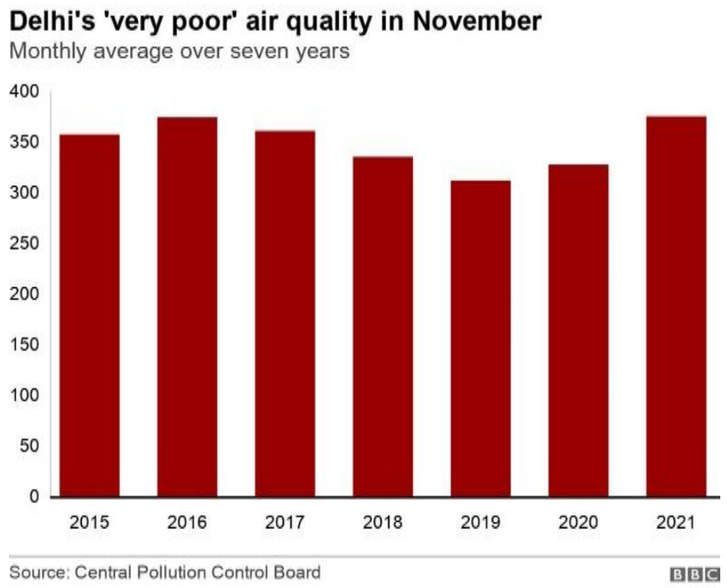
Climatic conditions- During the winter season, the weather gets adverse and the atmospheric conditions in the region become cool and calm. This causes "Thermal Inversion" to take place in the region. Thermal inversion acts like a 'cap' on the upward movement of air from the layers below. That 'cap', which traps cold air under the hot air, acts like a lid and keeps smoke and other pollutants from rising into the atmosphere and dispersing. Thus, inversion traps particulate matter and other pollutants, which mix with condensed water vapour to form smog.

Wind factor- The calmest month of the year in New Delhi is October-November with low average hourly wind speed. A low mixing height (typically observed during winter mornings) coupled with calm wind results in the trapping of emissions near the surface.

Extended monsoon- The extended monsoon period of 2021, also shifted the stubble burning towards the first two weeks of November perfectly coinciding with the winter conditions of the region.

Anthropological factors- Diwali and Farm fires

Waste burning for space, heating and disposal purposes contributes significantly to the pollution burden in the national capital region.



High level of air pollution in Delhi during the month of November 2021

Farm fires- Farm fires have a significant contribution towards air pollution in Delhi during the winter season. It is a recurring story every year. As per the Council on Energy, Environment and Water (CEEW) there have been 90,984 fires cumulatively in Punjab, Haryana and Uttar Pradesh this year, almost 7,000 more than last year's 84,525.

Diwali festivities

The pollution levels in Delhi reached 'Hazardous' levels post Diwali despite appeals to not burst crackers. According to aqi.in, Delhi recorded a booming AQI of 1151 on 5th November 2021, the day after Diwali. The PM2.5 levels in Delhi also shot up to 866 the night of Diwali.

Efforts taken so far to reduce air pollution in Delhi

The first action plan was filed by the Delhi Government in December 1996. In January 1998, MOEF constituted the Environment Pollution (Prevention and Control) Authority (EPCA). The government launched the National Air Quality Monitoring Programme (NAMP), a network of monitoring stations across the country to constantly monitor key pollutants round the year. This was tied with the Air Quality Standards for the ambient air quality to provide a uniform yardstick for assessment of air quality at the national level.

In June 1998, EPCA submitted a report which framed an action plan with a target of reducing air pollution over the next two years. Subsequently, the government issued orders for conversion of vehicles (including the entire city bus fleet, replacement of pre-1990 auto rickshaws and taxis with new vehicles on clean fuels) to run on compressed natural gas (CNG) as an important measure to contain pollution.

During the period from 2010 to 2015-16, the government took a series of steps to control air pollution in Delhi. It implemented BSIV standards in 2010. In 2009, MOEFCC revised the previous standards and notified the National Ambient Air Quality Standards for 12 pollutants.

In 2014, MOEFCC, created the National Air Quality Index (NAQI). In 2015, the Supreme Court delivered a number of significant orders on air pollution in Delhi. These included orders on public transport, clean fuels, vehicular emissions and infrastructure in NCR. Following the 2016 smog incident, Delhi government took steps curb the number of private vehicles operating in the city. The 'Odd-Even' measure, was introduced in the picture, with an intent to reduce vehicular emissions and traffic congestion, thereby improving the air quality.

On January 12, 2017, MOEFCC notified the Graded Response Action Plan (GRAP) containing measures to reduce addition of fresh emission load during high pollution episodes. It is a graded plan, where the severity of action increases on the basis of AQI levels.

To monitor real time ambient concentrations of PM2.5 and PM10 — the primary pollutants in Delhi-NCR — CPCB set up a centralized open access portal that provides data from 52 monitoring stations in NCR.

During the winter months of 2017-18, there was a ban on the use of diesel generator sets in Delhi; the closure of brick kilns, hot mix plants and stone crushers across NCR; and the shutdown of the Badarpur Power Plant. In 2018, the CAP for Delhi-NCR was also notified. This plan contained medium to long-term measures for pollution control, including detailed timelines for implementation.

Our Way Forward

There is an urgent need to improve public transportation system. Promoting the use of electric vehicles in Delhi is one of the ways to curtail vehicular emission. Promoting the use of electricity as the major fuel for industries would reduce the use of coal and pollution. There is need to shift coal power plants to cleaner emission targets by restricting them to use clean fuel for generating electricity. Further, efficient intervention by regulatory authorities by initiating new schemes to handle the seasonal burning of farm stubble would help in reducing the seasonal pollution spikes in Delhi.

GREEN INITIATIVES- EFFORTS BY A VILLAGE TOWARDS PRESERVATION OF BLYTH TRAGOPAN (PHEASANT SPECIES) AND ENVIRONMENT

by Vikas Dhir AAO

Blyth Tragopan (Pheasant species)

Introduction

Khonoma, a tribal village located near Indo Myanmar border in Nagaland has been identified as first green village in 2005 due to its advantages over other villages such as location, flora fauna, forest conservation, ban on hunting, jhoom cultivation, social infrastructure and great history. The Blyth's Tragopan (Tragopan blythii), Nagaland's state bird, is a remarkable sight to witness with its characteristic mottled plumage on its back, vivid red neck, and yellow face. The tragopan is a Schedule I bird as per Wildlife Protection Act 1972 which means it is supposed to be provided absolute protection under this schedule. In 1990's around 300 of these birds were killed in Khonoma Nagaland in a hunting competition, a custom which was common in that region. The village elders campaigned for ban on hunting and invited experts from conservation organisations to begin a dialogue with residents of Khonoma and conduct educational workshops. The efforts culminated in ban of hunting and logging in Khonoma's forests in 1998. Once a hunting ground, the village has now become a sanctuary for the birds.

The sanctuary has become a community led conservation project in India. Around 120 sqkm of wooded lands in Khonoma have been declared as conservation reserve and protected area. Khonoma Nature Conservation and Tragopan Sanctuary (KNCTS) is a unique example for wildlife and environment conservation in India. It has won the India Bio diversity awards 2021 under the category "Sustainable Use of Biological Resources". At present the area is a home to population of 300 tragopian birds but it has also become a safer place for other vulnerable species such as Clouded leopard and Asiatic black bear.

Restoration of Biodiversity

When the wood logging moratorium was enacted, the law specified that if a tree was cut down for construction purposes, it had to be done in such a way that the tree could grow again. There was complete ban on commercial timber logging. Besides fines, the rules were enforced with the help of hired vigilantes whose main work will be reporting such activities and preventing them. The ban on hunting was first implemented in Dzukuo Range. Ban means looking for newer avenues of income. People started looking actively for opportunities due to community spirit and desire to conserve ancestral land and eco system that goes with it. As a consequence, it led to ecotourism, homestays and trout fishing in the region.

Some of the exotic bird species found in this wildlife sanctuary are Mountain bamboo partridge, Crested Finchbill, Assam laughingthrush, Striped laughing thrush, Spot-breasted scimitar babbler, Flavescent Bulbul, Naga wren-babbler are to name few. Mammals like Binturong, Serow, Jungle cat, Barking Deer, Gayal, Pallas's squirrel, Himalayan striped squirrel can be seen in this park.

Sustainable Agriculture: Timber logging in Khonoma has been completely banned. Residents were educated about the importance of sustainable practices and were encouraged to return to agriculture. Khonoma uses Jhoom(shifting) cultivation method where the land of farming is changed every two years. The current crop is intermingled by Nepal Alder trees. The trees have the ability to return Nitrogen to the soil so as to prevent soil erosion and ensuring that its fertility remains high. There is cultivation of rice in terrace farming format without any use of chemical pesticides.

Solid waste Management: The students union in Khonoma have been taking care of the cleanliness and solid waste management. Garbage bins are placed at every junction of the village. The village council has made it compulsory for every household to have dustbins. Sanitation drive is carried out every month. Open defecation has been completely stopped and toilets have been constructed as per Swachh Bharat Scheme. Waste generation in the village is being segregated and disposed by incineration.

Water Management: Fresh potable water pipes are connected to each house through schemes like MGNREGA. Community is also practising rain water harvesting system, reuse if water and underground water recharge through pond and well. Environment impact assessment is being conducted by Centre of environment education. Guidelines, code of conduct and environment indicators are being worked out to prevent environmental damages that may happen due to tourism.

Conclusion

Khonoma has become successful example of initiative towards First green village in India. It is a fantastic example of how community can come together to restore bounty of environment and is a place the world can take inspiration from. The village has successfully been conserving its forest and sustainably using its resources from last two decades. It will surely inspire other villages to conserve ecology and preserve the local biodiversity. Protecting natural resources has essential impact on the life of villagers. Being placed on tourism map, the village has attracted many birders, researchers, conservationists and tourists

PERFORMANCE AUDIT REPORT OF FINLAND'S INTERNATIONAL CLIMATE FINANCE STEERING AND EFFECTIVENESS BY NAO FINLAND

by Anupam Srivastava SrAO

Scope of Audit

Under the Paris Agreement, Finland and other industrialised countries have undertaken to finance developing countries' efforts of both mitigating and adapting to climate change. International climate finance is part of Finland's official development assistance administrated by the Ministry for Foreign Affairs of Finland. In 2017–2019, the climate finance reported by Finland amounted to approx. EUR 47–147 million and accounted for around 6% to 15% of the total spent on development cooperation. The policy of the Finnish Government was to scale up Finland's climate finance and to direct one half of it to climate change adaptation.

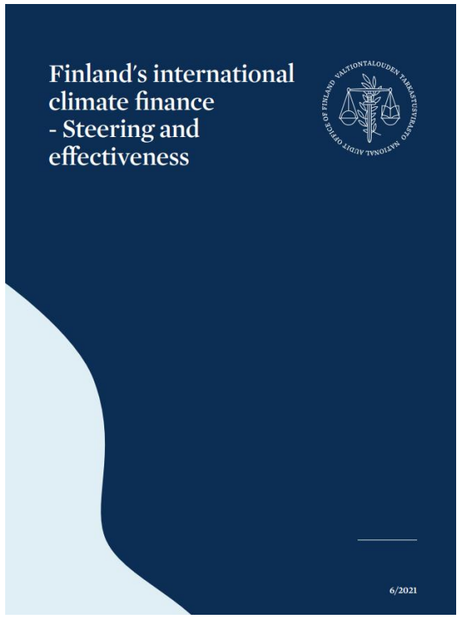
Purpose of Audit

The National Audit Office conducted a performance audit of Finland's international climate finance – Steering and effectiveness, which was included in its audit plan. The purpose of the audit was to determine if the steering of Finland's climate finance has provided good preconditions for its effectiveness. Particular attention was paid to how the Ministry for Foreign Affairs has planned, monitored and evaluated as well as compiled statistics and reported on the effectiveness of climate finance. The audit additionally examined what could be concluded about the effectiveness of climate finance based on the available information. The purpose of the audit is to help the Ministry for Foreign Affairs develop the effectiveness of Finland's international climate finance.

Audit Findings

- The Government has adopted policies on climate finance but there were no clear objectives and implementation plans**.** The audit found that the Ministry for Foreign Affairs has not published a clear plan for how these policies will be implemented as a whole, what kind of choices will be made when allocating the funding, and on what basis it will be allocated. The monetary level of climate finance or other strategic objectives have not been defined publicly, as a consequence of which the planning of the finance is not particularly transparent.
- The steering of climate finance has been decentralised to several units of the ministry without overall coordination.
- The ministry's human resources for the steering of climate finance are meagre, which is a risk to the quality of the steering. Climate finance statistics and reporting are susceptible to errors.
- The Ministry for Foreign Affairs produces and receives information on the effectiveness of climate finance to a variable degree from various funding instruments and organisations that channel funding. The information on the effectiveness of climate finance is partly inconsistent and inadequate, which makes it difficult to obtain an overview of it.
- The Ministry for Foreign Affairs has used the information on the results of climate finance relatively little in its decision-making, evaluations, reporting and communications.

Under the United Nations Framework Convention on Climate Change (UNFCCC) , the developed country Parties shall provide new and additional resources for developing country Parties to help them meet the costs of implementing measures required under the Convention and the costs of climate change adaptation. Under the Paris Agreement , developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation. The Paris Agreement notes that the provision of financial resources to developing country Parties should aim to achieve a balance between adaptation and mitigation, taking into account the priorities and needs of the most vulnerable countries, such as the least developed countries (LDCs) and small island developing States (SIDSs). The finance should also promote such aims as gender equality and the empowerment of women.



Recommendations

- The National Audit Office recommended that the Ministry for Foreign Affairs draw up a public plan for increasing and allocating Finland's international climate finance which justifies the choices, emphases and advocacy objectives contained in it.
- The Ministry for Foreign Affairs should develop operational planning and decision-making related to climate finance.
- The Ministry for Foreign Affairs should improve the monitoring, evaluation and reporting related to climate finance.
- The Ministry for Foreign Affairs should improve the organization of climate finance Steering.

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Biodiversity in iCED, Jaipur

https://en.wikipedia.org/wiki/Grey_francolin

Biodiversity in iCED, Jaipur

Distribution

Grey francolin

Ortygornis pondicerianus

Scientific Classification

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Galliformes
Family:	Phasianidae
Genus:	*Ortygornis*
Species:	*O. pondicerianus*

The grey francolin (*Ortygornis pondicerianus*) is a species of francolin found in the plains and drier parts of the Indian subcontinent. It was formerly also called the grey partridge. They are mainly ground-living birds and are found in open cultivated lands as well as scrub forest and their local name “”*teetar*” is based on their calls, a loud and repeated *Ka-tee-tar...tee-tar*. The grey francolin is normally found foraging on bare or low grass covered ground in scrub and open country, and is rarely found above an altitude of 500 m above sea level in India. The distribution is south of the foothills of the Himalayas westwards to the Indus Valley and eastwards to Bengal. Food includes seeds, grains as well as insects, particularly termites and beetles. They roost in groups in low thorny trees. The species has long been domesticated in areas of northern Indian subcontinent where it is used for fighting.