

Green Files

Newsletter



December 2020 | Volume 36



Editorial



New Year Greetings.

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 are also included in the newsletter.

During October-December 2020, three National Training Programmes on the subjects such as Audit of Mining and other Extractive Industries, Audit of Sustainable Cities and Communities and Audit of Water Pollution and Marine Biodiversity were conducted online using MS Teams platform. A National Webinar on Bio-diversity Conservation and India's commitment to the Convention on Biological Diversity (CBD) and Aichi Biodiversity Goals was also organized during the same period. The 8th International Training Programme (ITP) on "Introduction to Environment Audit" was conducted in two slots of five-day duration during November-December.

This edition of the newsletter features world environment news, United Nations Biodiversity Summit, articles on Ancient environmental law practices in India and initiatives to protect endangered bird species in Assam.

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. IT may be sent by e. mail to: iced@cag.gov.in

With regards.

A S Lakshmi
Director General

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Trainings & Webinars at iCED

Ajit Singh Choudhary, AAO

During the quarter (October – December 2020), iCED organised following online National Training Programmes (NTPs):

- Audit of Mining and other Extractive Industries
- Audit of Sustainable Cities and Communities
- Audit of Water Pollution and Marine Biodiversity.

A webinar on **Bio-diversity Conservation and India's commitment to the Convention on Biological Diversity (CBD) and Aichi Biodiversity Goals** was organised on 19 November, 2020 for officers of SAG level and above from 20 Offices. They discussed about CBD and Aichi Biodiversity Goals, achievements and challenges in Implementation of India's National Biodiversity Action Plans (NBAPs). Session to discuss the Case study of Ganga River and Use of Geo-informatics for Biodiversity Conservation was also organized. These sessions were led by **Dr. V. B. Mathur**, Chairperson, National Biodiversity Authority (Chennai), **Dr. R. S. Rawal Director**, Director, G.B. Pant National Institute of Himalayan Environment and Sustainable Development (Bhopal), **Ms. Ruchi Badola**, Scientist-G, Wild Life Institute of India (Dehradun) and **Dr. T V Ramachandra**, Indian Institute of Science (Bangalore).

iCED also organized the **8th International Training Programme (ITP) on "Introduction to Environmental Auditing"** online in two slots from 23rd to 27th November, 2020 and 07th to 11th December, 2020 respectively.

Shri Girish Chandra Murmu, Comptroller and Auditor General (CAG) of India inaugurated the first slot of ITP on 23rd November, 2020 and the training was inaugurated by **Ms. Namita Sekhon**, Deputy Comptroller and Auditor General on 07th December, 2020.



Shri Girish Chandra Murmu,
CAG of India

Ms. Tytti Yli-Viikari, Chair,
INTOSAI WGEA and Auditor
General, NAO, Finland



**Participants of the 8th International Training Programme on
Environmental Auditing**

Ms. Tytti Yli-Viikari, Chair of INTOSAI WGEA and Auditor General of NAO, Finland graced the valedictory session of both the slots.

Sessions on subjects such as *Environmental Auditing; Environment Governance; Audit of SDGs; Environmental Impact Assessment; Renewable Energy, Energy Efficiency and its Audit; Biodiversity; Waste and Water issues* were covered by nine experts from five SAIs. **Mr. Colm Friel**, **Mr. Robert Markus** and **Ms. Oana Dumitrescu** (European Court of Auditors), **Ms. Sigrid Rajangu** (SAI Estonia), **Ms. Vivi Niemenmaa** (SAI Finland), **Mr. Sunil S. Dadhe** and **Mr. Pushkar Kumar** (SAI India), **Mr. Amri Lewa** and **Mr. Muhammad Hairil Anwar** (SAI Indonesia) delivered these sessions.

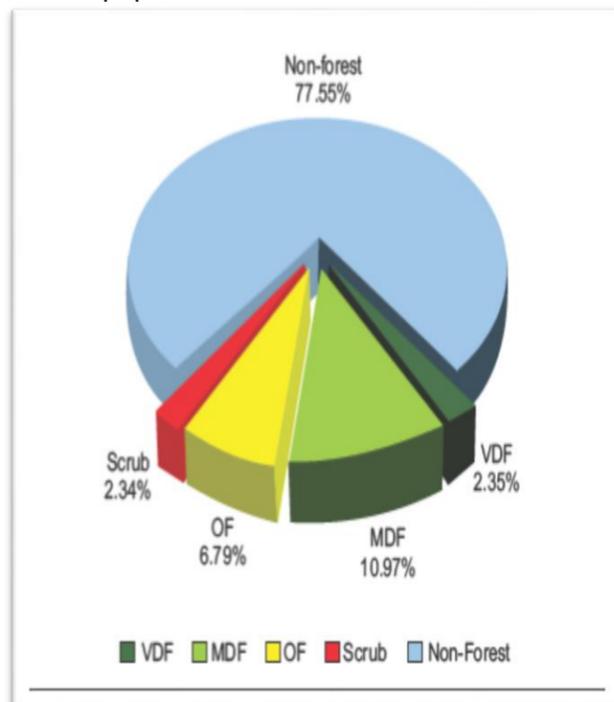
Although it was a virtual training programme organized online, the response has been quite encouraging. The ITP was attended by ever highest number of participants. Total **63 participants** from **36 SAI's** attended the programme.



State in Focus Karnataka

Virendra Jakhar, Sr AO

The state of Karnataka was formed on November 1, 1956 by merging Kannada speaking regions in accordance with the States Reorganization Act, 1956. Currently the state comprises of total 30 districts. Karnataka is situated on a tableland where the Western and Eastern Ghat ranges converge into the Nilgiri hill complex. Karnataka is the 8th largest state holding 5.83% of the total geographical area of India. Its population is 61.13 million, which is 5.05% of India's population.



Forests

As per India State of Forest Report (ISFR) 2019, the forest cover in the state is 38,575.48 sq km which is 20.11% of the state's geographical area. In terms of forest canopy density classes, the state has 4,501.15 sq km under Very Dense Forest (VDF), 21,048.09 sq km under Moderately Dense Forest (MDF) and 13,026.24 sq km under Open Forest (OF). Forest cover in the state has increased by 1,025.48 sq km as compared to the previous assessment reported in ISFR 2017. As per the state wise Count of IUCN Red List Species, there are 147 mammal, 82 amphibian and 102 reptile species found in Karnataka.

Land Degradation– Mining and Quarrying



Karnataka is endowed with rich deposits of mineral wealth. Land degradation due to mining/quarrying in the state is found to be the highest in the country. Excessive riverbed mining, over the years, has caused several alterations to the physical characteristics of the river and the riverbed. Mining impacts landscape by bringing about changes in topography and land scenario, land-use pattern, drainage pattern, topsoil composition, run-off from overburden dumps, removal of vegetation, etc. Discharge of toxic/contaminated waste water, mineral transportation, etc. lead to health related problems. A large number of mines have not only violated the approval conditions related to environmental conservation but also encroached upon the adjacent lands illegally.

Air, Noise and Water pollution

Karnataka has seen dramatic shift in terms of air quality during the period 2011-2015. The PM10 has significantly increased over the years in certain locations due to use of old vehicles, possible fuel adulteration, re-suspension of dust due to increased traffic, absence of water spraying, emission from traffic jams, obstruction to movement of pollutants, use of DG sets during power cuts, low wind velocity and inversions during winter and nights. There is increase in the number of high rise buildings in obstructing wind movement, thereby making pollutants almost stagnant. The emission of mercury from solid waste, and medical activities in the state, needs further in-depth monitoring and documentation; so does the emission from incineration/crematorium.



Noise pollution continues to cause serious health impacts in urban areas. Road traffic is the greatest contributor to noise exposure in Karnataka, apart from music, sports, marriage, rallies, crackers, construction, demolition, drilling etc. Whilst its potential to contribute to dangerous impacts is clear, tackling noise pollution is a challenge.

Because of rapid urbanisation, especially in the metro cities of Bangalore and nearby towns, the total demand for domestic consumption of water in urban areas is projected to increase to about 84 TMC by 2030. Bengaluru is likely to account for about two-thirds of urban water demand by 2030 and hence needs highest attention of policy-makers; consumptive demand for water is only about 20%;

Waste water management is also critical from the perspective of sustainability; and there are significant variations in water supply, availability across urban areas, reflecting the need to focus attention on selected medium and small cities facing acute water scarcity.



The monitoring results reveal that the quality of River water is affected due to the discharge of sewage. Most of the River stretches fall under "C" category which means that the water is fit for domestic use after physio-chemical treatment and disinfection.

Pollution is a curse on quality of life. Unless adequate precautionary measures are taken, the state has to bear huge burden in terms of financial and loss of human resources. With 55 STPS all over the state it is definitely not possible to cater to the excreta of more than six crore people. The effluent from industries is comparatively lesser than sewage from increased population. Pollutants do not respect political boundaries and hence in addition to air pollutants generated within the state it is also entering from other states.



Environmental news

Vijendra Singh Tanwar, AAO



The Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance, 2020

An ordinance has been promulgated on 28 October 2020, which provides for constitution of a Commission for Air Quality Management (CAQM) in National Capital Region (NCR) and adjoining areas.

The commission replaces 22 year old Environment Pollution (Prevention and Control) Authority (EPCA) and envisages to streamline the public participation, the inter-State cooperation, the expert involvement and persistent research and innovation. The Ordinance seeks to create an overarching body to consolidate all monitoring bodies, and to bring them on one platform so that air quality management can be carried out in a more comprehensive, efficient, and time-bound manner. Functions of the Commission would be: (i) coordinating actions taken under the Ordinance by concerned state governments (Delhi, Haryana, Punjab, Rajasthan, and Uttar Pradesh),

(ii) planning and executing plans to prevent, control and abate air pollution in the region, (iii) providing a framework for identification of air pollutants, (iv) conducting research and development through networking with technical institutions, (v) training and creating a special work force to deal with issues related to air pollution, and (vi) preparing various action plans such as increasing plantation and addressing stubble burning.

Government constitutes High-level Inter-Ministerial Apex Committee for implementation of Paris Agreement (AIPA)

Ministry of Environment, Forest and Climate Change (MoEFCC) has constituted a high-level inter-ministerial Apex Committee for Implementation of Paris Agreement (AIPA) under the chairmanship of Secretary, MoEFCC.



The purpose of AIPA is to generate a coordinated response on climate change matters that ensures India is on track towards meeting its obligations under the Paris Agreement including its Nationally Determined Contributions (NDC). Another key function of AIPA would be to operate as a National Authority to regulate carbon markets in India under [Article 6 of the Paris Agreement](#), formulate guidelines for consideration of projects or activities under Article 6 of the Paris Agreement, issue guidelines on carbon pricing, market mechanism, and other similar instruments that have a bearing on climate change and NDCs. It will take note of the contributions of the private sector as well as multi-/bi-lateral agencies in the field of climate change and provide guidance for aligning their climate actions with national priorities.

Union Cabinet approves Ratification of seven Persistent Organic Pollutants listed under Stockholm Convention on Persistent Organic Pollutants (POPs)

The Ratification of seven chemicals listed under Stockholm Convention on Persistent Organic Pollutants (POPs) has been approved. The powers to ratify chemicals under the Stockholm Convention has been delegated to Union Ministers of External Affairs (MEA) and Environment, Forest and Climate Change (MEFCC) in respect of POPs already regulated under the domestic regulations thereby streamlining the procedure.

Reinforcing Commitment to Protect Health & Environment

Ratification of 7 Persistent Organic Pollutants (POPs) under Stockholm Convention Approved



Powers to ratify chemicals under Stockholm Convention delegated to Union Ministers of External Affairs & MEFCC* in respect of POPs to streamline the procedure



Demonstrates India's commitment to take action on POPs by implementing control measures, action plans for unintentionally produced chemicals



Will enable India to access Global Environment Facility (GEF) financial resources in updating the NIP**

*Ministry of Environment, Forest & Climate Change
**National Implementation Plan

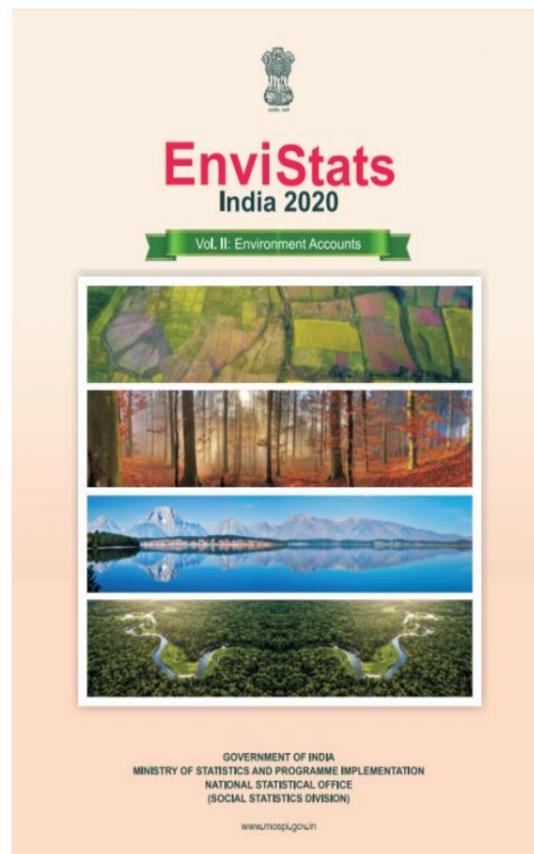
India had ratified the Stockholm Convention on January 13, 2006 as per Article 25(4), which enabled it to keep itself in a default "opt-out" position such that amendments in various Annexes of the convention cannot be enforced on it unless an instrument of ratification/ acceptance/ approval or accession is explicitly deposited with UN depositary.

Considering its commitment towards providing safe environment and addressing human health risks, the Ministry of Environment, Forest and Climate Change (MoEFCC) had notified the 'Regulation of Persistent Organic Pollutants Rules, on March 5, 2018 under the provisions of Environment (Protection) Act, 1986. The regulation inter alia prohibited the manufacture, trade, use, import and export seven chemicals namely (i) Chlordecone, (ii) Hexabromobiphenyl, (iii) Hexabromodiphenyl ether and Heptabromodiphenylether (Commercial octa-BDE), (iv) Tetrabromodiphenyl ether and Pentabromodiphenyl ether (Commercial penta-BDE), (v) Pentachlorobenzene, (vi) Hexabromocyclododecane, and (vii) Hexachlorobutadiene, which were already listed as POPs under Stockholm Convention.

EnviStats India 2020, Vol II: Environment accounts

Ministry of Statistics & Programme Implementation (MoSPI) has released EnviStats India 2020, Vol II: Environment accounts. NSO India with the support of the IMG and the technical guidance provided under the EU-funded project, in 2018, had released "EnviStats India 2018 – A Supplement on Environment Accounts". The subsequent publication was released in 2019.

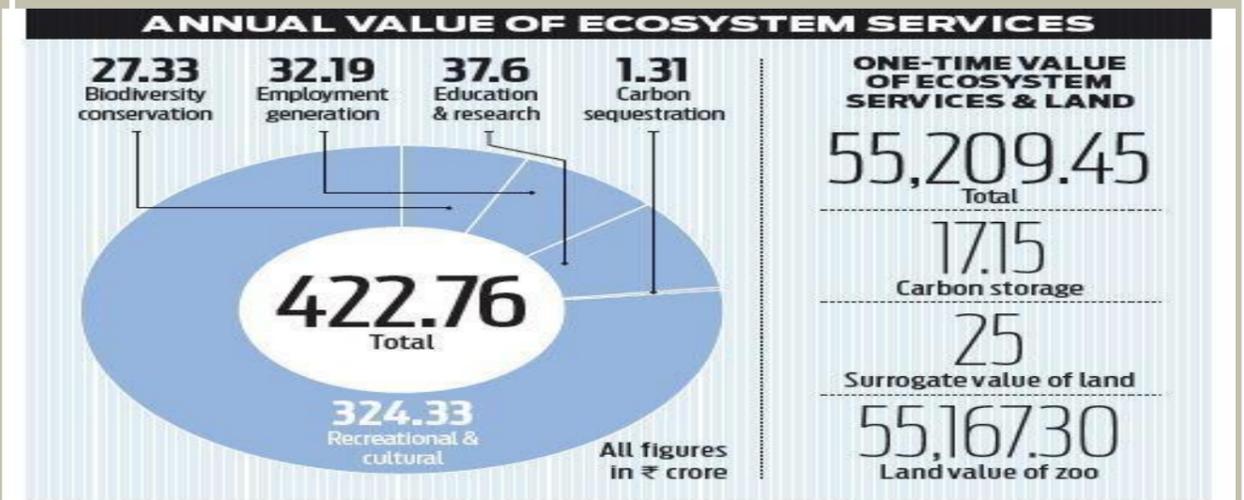
Recognizing the fact that the relationship between the environment and economy is multi-layered, this year's publication includes not just updates of some of the previously published accounts, like those of Land Cover, but also includes some fresh ecosystem extent and condition accounts and estimates of ecosystem services.



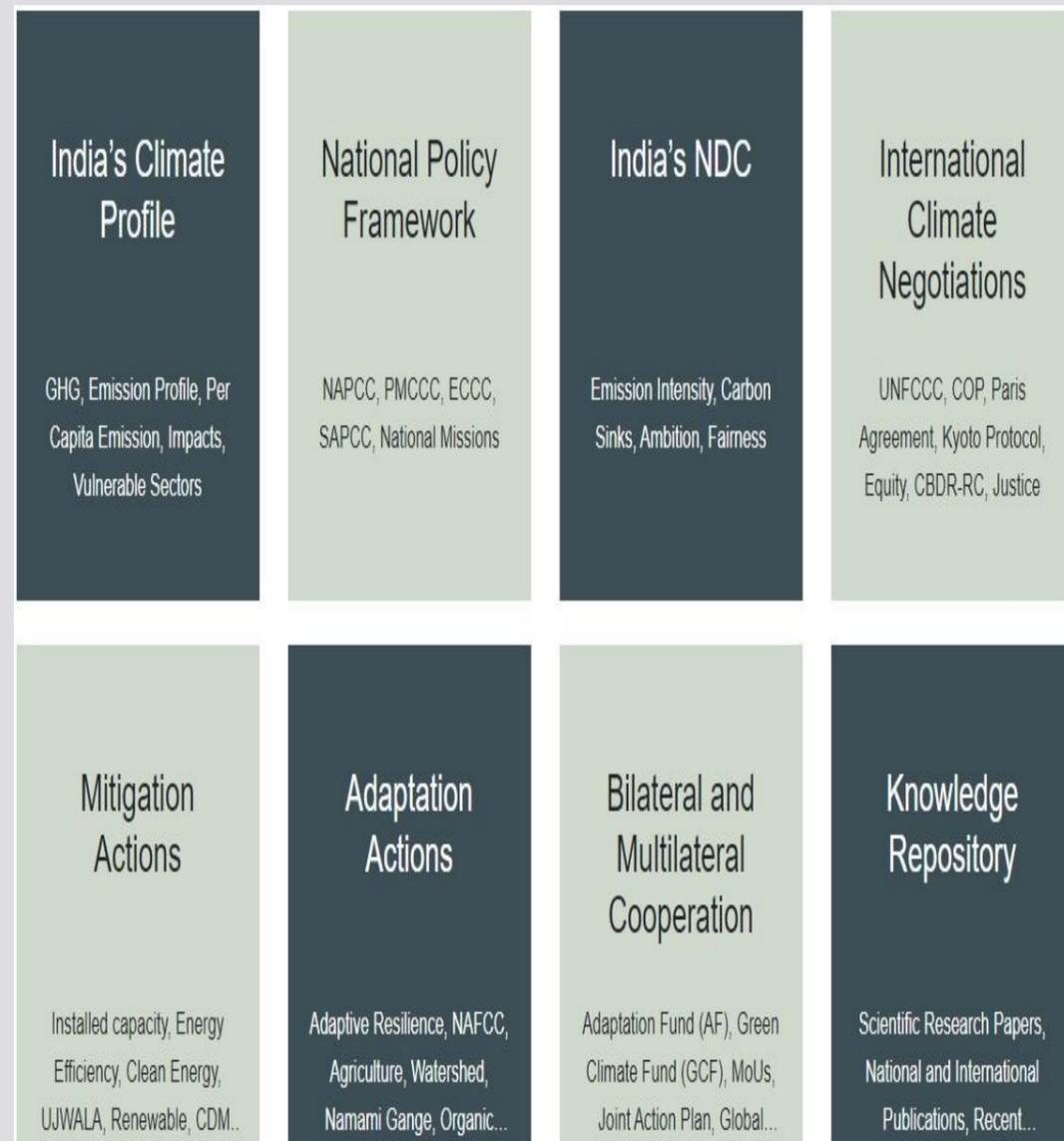
Economic valuation of Ecosystem Services of National Zoological Park, New Delhi

The Central Zoo Authority (CZA) in association with The Energy and Resources Institute (TERI) has developed a Report on the "Economic Valuation of Ecosystem Services of National Zoological Park, New Delhi".

Economic valuation of ecosystem services provides a way of valuing many benefits that nature provides and helps 'make the contribution of nature to livelihoods and economies visible'. The valuation of ecosystem services provides a powerful tool to enable rational decision-making and eases the incorporation of ecological values into economic policies.



The National Zoological Park in New Delhi is one such unique park spread across an area 176 acre and based around the cultural landscape of the Old Fort. The annual value of key ecosystem services comprising of use and non-use values such as carbon storage and sequestration, employment generation, recreation, education and research, biodiversity conservation, the surrogate value of land has been evaluated in this study. The total annual economic value of the ecosystem services (biodiversity conservation, employment generation, carbon sequestration, education, and research, recreational and cultural) is estimated to be INR 422.76 crore (2019-20). The total value of the one-time cost of services such as carbon storage and land value provided by the zoo is estimated to be INR 55,209.45 crore. Almost 77% of the contribution comes from the recreational and cultural service which indicates the significance of this service to the zoo. Education and research, the next most important service, contributes 9% to the total economic value.



India's single point information source on Climate Action "India Climate Change Knowledge Portal" launched

Ministry of Environment, Forest and Climate Change launched the "India Climate Change Knowledge Portal" in November 2020. This web portal will be a "single point Information resource" which provides information on the different climate initiatives taken by various Line Ministries enabling users to access updated status on these initiatives.

The eight major components included in the knowledge portal are:

1. India's Climate Profile
2. National Policy Framework
3. India's NDC goals
4. Adaptation Actions
5. Mitigation Actions
6. Bilateral and Multilateral Cooperation
7. International Climate Negotiations
8. Reports & Publications

The portal captures sector-wise adaptation and mitigation actions that are being taken by the various line Ministries in one place including updated information on their implementation. The knowledge portal will help in disseminating knowledge among citizens about all the major steps Government is taking at both national and international levels to address climate change issues.



India Meteorological Department Commissions Flash Flood Guidance Services for South Asia

Ministry of Earth Sciences dedicated Flash Flood Guidance services, first of its kind for South Asian countries namely India, Bangladesh, Bhutan, Nepal and Sri Lanka on 22 October 2020.



Guidance for flash floods in the form of Threats (6 hours in advance) and Risks (24 hours in advance) will be provided by Regional Centre to National Meteorological & Hydrological Services, National and State Disaster Management Authorities and all other stake holders for taking necessary mitigation measures to reduce the loss of life and property in the South Asian Region countries. These include, apart from India, Bangladesh, Bhutan, Nepal and Sri Lanka. This will enable all the member countries for issuing impact-based forecasting at watershed and also city level, of floods which are very sudden and of short duration. The Flash Flood Guidance is a robust system designed to provide the necessary products in real-time to support the development of warnings for flash floods about 6- 12 hrs in advance at the watershed level with resolution of 4kmx4km for the Flash Flood prone South Asian countries viz. India, Nepal, Bhutan, Bangladesh and Sri Lanka.

India remains in top 10 countries in Climate Change Performance Index (CCPI) 2020

India remains in the top 10 for the second year in a row in the latest global Climate Change Performance Index. The biggest current emitter of greenhouse gases (GHG) China figures at 33rd rank while the largest historical polluter the USA, appears at the bottom of the list.

The CCPI is developed by not-for-profit organisations Germanwatch and NewClimate Institute (Germany) together with the Climate Action Network (CAN International).



It is an important tool to enhance transparency in international climate politics and enables comparison of climate protection efforts and progress made by individual countries. The list is prepared by assessing performances of 57 countries and European Union (as a whole) in four categories - GHG emissions (40%), renewable energy (20%), energy use (20%) and climate policy. These 57 countries and the EU collectively are responsible for about 90% of global GHG emissions.



UN Summit on Biodiversity

Ajit Singh Chaudhary, AAO

President of the United Nations General Assembly convened a summit on biodiversity on Wednesday, 30 September 2020 involving the Heads of State/Governments. The theme of the summit was “*Urgent action on biodiversity for sustainable development*”. The summit was also guided by the theme of the seventy-fifth anniversary of the United Nations “*The future we want, the United Nations we need: reaffirming our collective commitment to multilateralism*”.

The summit consisted of an opening segment, a plenary segment for general discussion, two leaders’ dialogues on “*Addressing biodiversity loss and mainstreaming biodiversity for sustainable development*” and “*Harnessing science, technology and innovation, capacity-building, access and benefit-sharing, financing and partnerships for biodiversity*”, and a brief closing segment.

During the opening session there was discussion on how biodiversity and ecosystems are essential for human progress, prosperity, food security, nutrition and health, including its importance for achieving the 2030 Agenda and implementing the Paris Agreement. It was emphasized that despite repeated commitments, national and global efforts have not been sufficient to meet the biodiversity targets set for 2020. The participants asserted that nature-based solutions must be embedded in the COVID-19 recovery and wider development plans. The participants agreed on the point that the Aichi Biodiversity Targets and the targets of the post-2020 global biodiversity framework should become a central component of the national sustainable development plans and SDG implementation strategies of all countries, and fully reflected in the Voluntary National Reviews.

The main issues addressed during the plenary session included the following:

- a) Political commitment and guidance to support terrestrial and marine biodiversity and their integration into national sustainable development plans and the post-2020 global biodiversity framework
- b) Connections between biodiversity, societies and economies
- c) Linkages between the 2030 Agenda and other biodiversity-related MEAs
- d) Biodiversity and climate change
- e) Zoonotic diseases and COVID-19

Heads of State and Government from several countries signed the Leaders Pledge for Nature, and many countries called for concluding the negotiations for an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.

Accelerated actions and initiatives in providing benefits and solutions to people from biodiversity

The participating countries called for urgent global actions to hold everyone accountable and ensure that all citizens participate in preserving and restoring biodiversity.

All countries reported on their national commitments and initiatives. There was emphasis given to the need for redoubled efforts to counter negative trends and protect ecosystems. Following themes were discussed:

Leaders’ dialogue 1: Addressing biodiversity loss and mainstreaming biodiversity for sustainable development:

- a) Detrimental effects of biodiversity loss
- b) Progress and efforts on biodiversity goals and targets, especially those with a 2020 maturity date
- c) Risks and underlying causes of biodiversity loss and solutions
- d) Accelerated actions and initiatives
- e) Circular economy and sustainable public procurement
- f) Roles of all stakeholders and their integration and contribution in fighting biodiversity loss

Under Leaders' dialogue 2: Harnessing science, technology and innovation, capacity building, access and benefit-sharing, financing and partnerships for biodiversity the following main issues were addressed:

- a) Importance of multilateral action and collaboration
- b) Role of science, technology
- c) Examples of capacity building
- d) Incentives for scientific research
- e) Measures undertaken for fair and equitable sharing of benefits while facilitating access to genetic resources
- f) Economic recovery after COVID-19
- g) Effective and new financing instruments
- h) Nature-based solutions
- i) Partnerships for biodiversity



3:00 PM

Leaders' Dialogue 1 - Addressing biodiversity loss and mainstreaming biodiversity for sustainable development

Co-Chairs: H.E. Ms. Angela Merkel, Chancellor of the Federal Republic of Germany and H.E. Mr. Imran Khan, Prime Minister of the Islamic Republic of Pakistan

Participating States to deliver statements

Mr. Qu Dongyu
Director General - Food and Agricultural Organization

Ms. Audrey Azoulay
Director-General - UNESCO

Dr. Bruno Oberle
Director General - IUCN

Ms. Gabriela Cuevas Barron
President - Inter-Parliamentary Union

Mr. Pavan Sukhdev
President - WWF International

4:20 PM

Leaders' Dialogue 2 - Harnessing science, technology and innovation, capacity building, access and benefit sharing, financing and partnerships for biodiversity

Co-Chairs: H.E. Mr. Ralph Gonsalves, Prime Minister of St. Vincent and the Grenadines and H.E. Ms. Isabella Lövin, Deputy Prime Minister and Minister of Environment and Climate of Sweden

Participating States to deliver statements

Mr. Guy Ryder
Director-General - International Labor Organization

Mr. David Malpass
President - World Bank Group

Mr. Thomas Buberl
CEO, AXA Group

Ms. Shinta Kamdani
CEO - Sintasa Group

Mayor Valérie Plante
Mayor of Montreal, Canada and Local Governments for Sustainability (ICLEI) Global Ambassador

Ms. Hindou Umarou Ibrahim
Indigenous Leader, SDG Advocate

Performance audit of Sewage Management in Urban Areas (Report on social, general and economic sectors, government of Himachal Pradesh for the year ended 31 march 2018)

Anil Kumar Beniwal, Sr. AO

A performance audit of Sewage Management in Urban Areas was conducted with the objective to evaluate the planning for sewage management, financial management, execution of sewerage schemes, treatment and disposal of sewage through sewerage and septic tank systems and effectiveness of monitoring mechanisms. The performance audit covered Urban Development Department (UDD), Irrigation & Public Health (IPH) Department and Himachal Pradesh State Pollution Control Board (HPSPCB). The period covered in audit was 2013-18.

The important findings of the audit are given below-

- **Deficiencies in planning:** There was no macro-level plan or strategy document for establishment of sewerage systems in urban areas. This led to a practice of ad-hoc approval of schemes and resulted in nine ULBs not having any sewerage systems in the State.
- **Lack of planning for land acquisition/ transfer:** The Detailed Project Reports (DPRs) for the schemes did not specify any details about the total area and location of land to be acquired/ transferred for sewerage schemes. As a result, there were cases of land dispute, unsuitable site selection, excess land acquisition and litigation which led to running delays.
- **Lack of planning for encumbrance-free access for laying of sewerage network:** No mechanism for obtaining NOC/ affidavits from land-owners to ensure encumbrance-free access to private land for laying of sewer lines was envisaged. It resulted in a large number of land disputes resulting in delay of 11 sewerage schemes.
- **Delay in preparation and approval of DPRs:** The process of preparation and approval of DPRs took long time. Besides, the Department had not stipulated any timeframe for preparation/ approval of DPRs.
- **Lack of funds:** Three schemes sanctioned between March 1992 and July 2014 remained incomplete/ delayed due to lack of funds.
- **Low household connectivity with sewerage networks:** Due to non-providing of sewer lines up to the required distance of six meters of houses, additional cost to households and non-initiation of penal action by the ULBs/ divisions concerned resulted in low connectivity to sewerage networks.
- **Grey water pipes** not connected with the sewerage network were flowing either into the storm-water drains or into the open. This also meant that the anticipated volume of sewage was not flowing into the sewerage network resulting in underutilization of STPs.
- **Capacity utilization of STPs:** The divisions concerned had not demonstrated urgency to address the issue of underutilized and overstressed STPs which was adversely impacting the sewage treatment process resulting in the quality parameters of treated effluent being below standards.
- **Functioning of STP components:** Nonfunctioning of STP components led to organic load beyond design parameters, and poor quality of effluent. Sludge was not being dewatered adequately before disposal.
- **Deficiencies in STP design:** DPRs did not contain any analysis of variation between peak and average flow of sewage to assess whether flow equalization tanks were required or not. There was no provision of flow equalization tanks, primary clarifier and tertiary treatment/effluent disinfection which resulted in reduced efficiency of sewage treatment and discharge of effluent into surface water bodies directly or indirectly, tertiary treatment/ effluent disinfection was strongly advisable.
- **Adherence to norms for treated effluent:** The treated effluent was not being re-used and was instead being discharged into surface water bodies. This would not only have an adverse impact on the ecosystem but also on the health of populations residing and using such water in lower riparian areas.
- **Infrastructure in STPs:** Generators had not been installed in many STPs and there was no provision for maintaining uninterrupted power supply in these STPs. A few STPs had no laboratory.
- **Community-level septic tank systems:** In most cases the effluent was being discharged into water bodies without any treatment thereby causing greater pollution to water bodies.
- **Domestic-level septic tank systems:** Septic tanks and soak pits were not constructed by many households and sludge was being disposed in the open, which was indicative of poor supervision of domestic-level septic tank systems by ULBs.
- **Monitoring:** The monitoring, reporting and inspection mechanisms for facilitating removal of bottlenecks at planning stage, timely completion of schemes, and exercising control over functioning of STPs were not functioning as envisaged, thereby contributing to the deficiencies in the sewage management in urban areas.

Recommendations

- The State Government may ensure holistic planning through formulation of strategy for sewerage systems, initiate timely action for addressing sewerage network and STP capacity issues, devise mechanisms for securing encumbrance-free land before sanction/ execution of schemes, and ensure strict control over disposal of sludge from septic tank systems.
- The State Government may ensure land acquisition/ transfer and availability of encumbrance-free land at the planning stage, stipulate a time-frame for preparation and approval of DPRs and provide adequate funding for schemes.
- The State Government may ensure laying of sewer lines up to the required distance from houses and initiate action against defaulting households, not connecting to sewerage networks, in order to improve sewerage connectivity.
- The State Government may ensure optimum utilization of capacity of STPs by upgrading capacity of over-stressed STPs and improving sewerage connectivity in the case of underutilized STPs; and address the issues of design deficiencies and non-functional components in order to improve the efficiency of sewage treatment.
- The State Government may ensure construction of septic tank systems as per norms. Further, ULBs should exercise supervision and control over domestic-level septic tank systems and provide services for treatment of effluent and sludge before discharge/ disposal either themselves or through outsourcing.
- The State Government may take steps to strengthen the monitoring mechanism and ensure corrective action where required.

Environmental Governance in Ancient India

Manoj Kumar, AAO

The evolution of Homo sapiens and environmental pollution has walked hand in hand since the time immemorial. Implementation and practices of environmental laws has been one such means to slow down its impact and ultimately deter it.

Ecological conservation mind set of Indus valley civilization, around 40th Century BCE, can be traced to the remains of wild animals like peacocks, tigers, elephants, bulls in the seals and mud pots. The sacred tree called as Ficus religiosa can be seen in the seals of the Indus civilization, which were protected by many kings and religions.

*(Ficus religiosa It is a species of fig native to the Indian subcontinent https://en.wikipedia.org/wiki/Ficus_religiosa - cite note-EB1911-2 that belongs to the fig or mulberry family. It is also known as the **Bodhi tree**, **pippala tree**.)*

The Vedas, Puranas, Upanishads, and other scriptures also uphold the importance of nature in the life of a common man. Rig Veda, written around 1200 BCE, underline the significance of nature in effecting the climate, increasing fertility and improvement of human life. Atharva Veda (1000–900 BCE), show how trees are considered as sacred abode of various gods and goddesses. Yajur Veda (1200–800 BCE), give the impression of the concept of symbiosis among living beings.

Manusmriti (2nd century BCE to 3rd century CE), distinguishes the living forms into Chara (movable living world) and Achara (immovable- plant kingdom). Utmost importance was given for conserving animals, protection of biodiversity, vegetarian food habits. Killing of asva (horse), ustra (camel), mriga (deer), Khara (ass), ibha (elephant), Aja (goat), ahi (snake), ahisa (buffalo) was considered a sin.

*(The **Manusmriti** is an ancient legal text. It was used to formulate the Hindu law by the British colonial government.)*

As per Arthashastra (written between 321 and 300 BC) the ruler shall not only protect produce-forests, elephant-forests but also set up new ones. It informs about penal provisions which are to be imposed in case of any damage to natural resources viz. for cutting of tender sprouts of trees in city parts that bear flowers on fruits or yield shade the fine shall be six panas , for cutting small branches twelve panas; for cutting of stout branches twenty four panas.

There were provisions for punishing persons responsible for entrapping, killing or injuring deer, bison, birds or fish which were under state protection. There were reserved forests for wild animals, on the borders of localities where these animals could live peacefully. Forests were considered as a treasured resource, to be used in a sustainable manner.

Even, special positions were occupied by directors of forests, superintendents of cattle, horses, elephants, and pastures, supervisor of animal slaughter. They were delegated the task to protect and safeguard wildlife, prevented the act of poaching of wild animals.

(Pana is a variety of earliest Indian coins, which were stamped bars of metal)

During the period of Maurya's, king Ashoka made several laws for protection of the environment. The 5th Pillar Edict describes that the fish are not to be caught or sold during first full moon days of the three four-monthly seasons, and for three days when the full moon falls on the star Tisya, fourteenth and fifteenth of the bright fortnight, and the first of the dark and regularly on fast days. During same period, other classes of animals must not be killed in the elephant-park and fisheries. The cattle and horses were not to be branded.

(Tisya or Tishya, now known to us as Pushya, is an important star in the Vedic as well as Puranic literature. It has been identified by most scholars with this star Delta (δ) Cancri in the constellation Cancer.)

How important were trees?

Even 2,000 years ago, trees such as Ficus religiosa were considered sacred. It was an important tree and had one of its branches removed on the order of Indian emperor Ashoka the Great. It was under this very tree that the Buddha is said to have attained enlightenment. Ashoka bestowed kingship on the branch, and planted it in a thick-rimmed solid gold vase. He then took the branch over mountains and down the Ganges River to the Bay of Bengal. There, his daughter carried it aboard a ship and sailed for Sri Lanka to present it to the king. Ashoka loved the plant so much that he shed tears

During the Mughal era, an administrative post "Muhtasibs" were vested with the duty of prevention of pollution. Hunting, especially of the lion and tiger, was restricted to the members of the royal family only. Efforts made by Akbar in promoting better management of water resources and disapproval of killing animals contributed to environmental conservation in India.

Hence, environment has been an important concern in every era of human civilization and laws and regulations have acted as important tools to prevent its over exploitation and destruction. Environmental laws have been enacted and modified over time to meet the need of environmental protection in this country.

Green initiatives - Hargilla army- protecting rare bird in India

Vikas Dhir, AAO

The Greater Adjutant Stork has been identified as one of the endangered or close to extinction (Evolutionarily Distinct and Globally Endangered) species by Zoological Society of London in 2014. This is a bird that has been considered by many as disease carrying creature found across wetlands in South East Asia. They are locally named as “Hargila” (derived from the Bengali words for “bone-swallower”). Loss of nesting and feeding habitat through the draining of wetlands, pollution and other disturbances, together with hunting and egg collection has caused massive decline in their population. The world population was estimated at less than 1,000 individuals in 2008. The Greater adjutant is now restricted to a much smaller range with only three breeding population grounds; two in India, with the largest colony in Assam, a smaller one around Bhagalpur; and another breeding population in Cambodia. At present, less than 1,200 are left in the world of which more than 75 per cent are residing in Assam. Since birds are higher up in the food chain, hence they act as good indicators of the biodiversity.



Mobilising a movement “Hargilla Army”

Under the leadership of Purnima Devi Barman, a PhD student, a “Hargilla army of women” was established in 2015 to protect the species from extinction. It consisted of 70 odd women. At present there are about 400 members, out of which 200 are active. The army worked by spreading awareness about the “Hargila” by using innovative slide shows which had a glimpse of their culture and traditions. The army devised ingenious public relation plans to change the mind-set of the people about these birds.

The army has managed to rally a considerable support for the bird especially, among local women so much so that now every women of the region works as the protector of Great Adjutant Stork. The army works on artificial nesting platforms so that birds can analyze their chicks in absence of suitable trees. More villagers are encouraged to join the conservation movement by benefitting them with education and livelihood opportunities in sustainable horticulture. Recent plans which are in progress include collaboration with scientists to develop a 10-year action plan to conserve the species and its wetland habitat, with government.



Initiatives for conservation of Adjutant Stork

Young local students are being educated on how to rescue a Hargila and rehabilitate them for the local eco system. Nearly 15 per cent of the chicks are killed when they fall off the nests and die of starvation. So, the army has used nets positioned below the nests to prevent injuries to falling young. These fallen birds are then fed and raised in enclosures for about five months and then released to join their wild siblings.

In order to spread awareness about protecting the species, Hargila army members weave traditional gamochas and table cloths marked by Hargilla Motifs. The special gamochas woven by the hargilla army feature stork motifs have become popular purchases for tourists who visit the villages. Proceeds from the sales go to the women, while the storks benefit from an enhanced public image. This is adding up to the income of the local women and also making them self-reliant. The district administration and the police department are providing support to the conservation programme by providing transport for the women and injured storks to the zoo rehab center, and they have joined in the effort to provide looms to the hargilla women. Together, the hargilla army and local government officials have started an effort to install nets below nest trees to catch any fallen baby storks and rescue them.

With continued efforts to preserve the habitat of Greater Adjutant, the movement has led to a massive increase in bird’s population. It is playing an important role in maintaining the eco system keeping it free of carcasses and other harmful junk. The initiative of the Hargila Army highlight the significance of people’s movements and participation in conservation of highly endangered species and environmental preservation.

Environmental Audit Report on International RAMSAR Wetlands by National Audit Office, Sri Lanka

Gaurav Jain Sr.AO

Wetlands are unique and biodiversity ecosystems that form the background of human civilization in the world. Due to the uniqueness of ecosystems the international RAMSAR Wetland Convention was established in 1971 as an instrument for the protection and management of wetlands universally. As of 2018 there were 2,331 RAMSAR wetlands identified worldwide and Sri Lanka has claimed 06 Zones.

Approximately 15 per cent of the total land area of Sri Lanka consists of natural and artificial interior wetlands. With the growth of population and urbanization, it was observed that threats to the sustainability of wetlands have been increased.

Audit Objective:

To evaluate whether the relevant institutions have fulfilled their duties with respect to the present situation of the ecologically important RAMSAR wetlands.

Scope of Audit:

Physical inspection of 06 wetlands designated as international wetlands in Sri Lanka

Observations:

- No specific legal Framework.
- Preparation of short term and long term plans have not been undertaken.
- Necessary measures for conservation and replanting of the plant Lemnitzer littorea (Rathamilla) not adequately applied.

- The data and information required to verify the actual ownership of private land in the Madu Ganga sanctuary wetland were not updated.
- There was insufficient attention paid for the conservation of the unique biodiversity of the Madu Ganga.
- Adequate database on sustainability of biodiversity in wetlands had not been maintained. The Central Environmental Authority had not done enough to prepare and implement the conservation strategies and plans for these wetlands.
- The spread of invasive plants in the RAMSAR wetlands is one of the major problems. The co-operation of the government and private institutions was found to be inadequate to prevent the spread of these plants. Technical and financial support was not adequately addressed to control and prevent the spread of invasive alien species in the RAMSAR wetlands.
- Illegal prawn farming business, unauthorized hunting in the protected region and illegal fishing in the sanctuary region is effecting the protected areas.
- There existed no program to protect and conserve the aquatic animals which posed a serious threat to the survival of creatures such as Sea pigs and turtles

- Unauthorized construction of settlements and hotels within the inductive region of protected area and unauthorized garbage disposal had adverse effects on the natural grass lands, the freedom of the animals and the environment of the wetland.
- It was observed that, although a large number of local and foreign tourists visited on yearly basis, there were not enough facilities for them in the RAMSAR wetlands.

Conclusion

Though the wetlands in Sri Lanka is an essential factor, adequate steps to control the various threats were not taken and considerable legal provisions have not been provided for the conservation of the wetlands.

Recommendations:

- Approving and implementing the legal provisions required for the preservation and sustainability of RAMSAR wetlands.
- Conduct research on current status of RAMSAR Wetlands and keep the data system up to date.



- Fixing boundary issues in RAMSAR Wetlands.
- Preparation and continuous implementation of appropriate methods for the management of invasive species of the flora and fauna.
- Taking measures to prevent adverse and unauthorized activities in the RAMSAR Wetlands.
- Preparation and implementation of a plan for conservation and replanting mangroves.
- Preparation and implementation of RAMSAR Wetlands Management Plan.
- Taking action to protect the marine areas of the RAMSAR Wetlands.
- Taking steps to identify biodiversity Wetlands outside the declared protected areas and living areas such as sea pigs and turtles and declare them as RAMSAR Wetlands.

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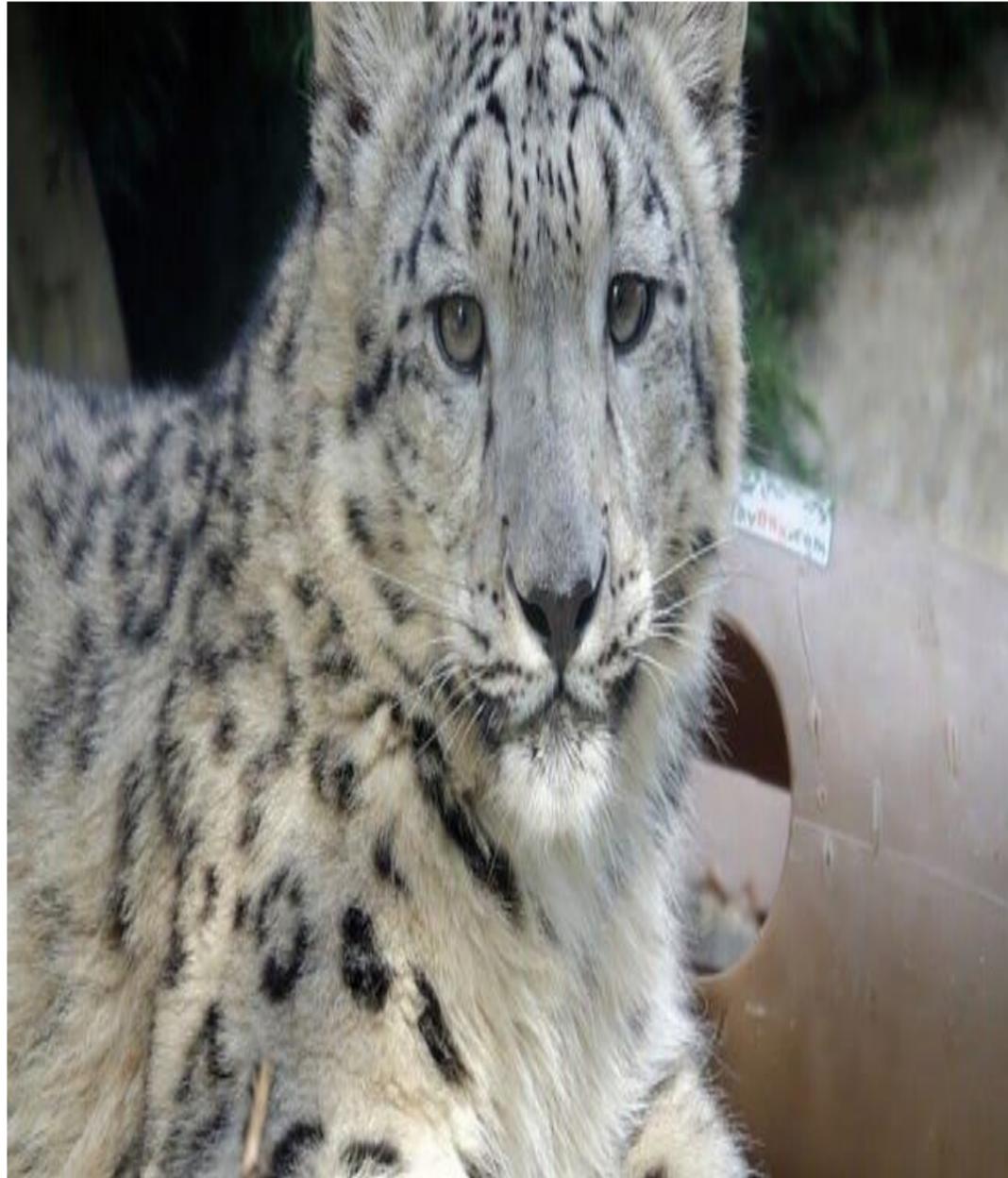
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International Snow Leopard Day: 23 October



(Photographs taken from- © National Geographic Stock / Steve Winter / WWF, © Reinhard / ARCO / naturepl.com, © naturepl.com / Andy Rouse / WWF)



1. SNOW LEOPARDS ARE WELL ADAPTED TO THEIR COLD ENVIRONMENT AND SNOW CONDITIONS
2. HIGH ALTITUDE ACROBATS
3. THEY CAN'T ROAR
4. THEY'RE MORE CLOSELY RELATED TO TIGERS THAN THEY ARE LEOPARDS
5. SNOW LEOPARDS HAVE NATURAL SNOWSHOES
6. THEY CAN NEARLY COVER THE DISTANCE OF A MARATHON IN ONE NIGHT
7. THEY'RE WELL DISGUISED IN SNOW
8. ARE LONG JUMP CHAMPIONS