

# Green Files

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INTERNATIONAL CENTRE FOR ENVIRONMENT  
AUDIT AND SUSTAINABLE DEVELOPMENT  
(ICED), JAIPUR



## GREEN FILES

*Newsletter on Environment Audit and Sustainable Development issues*  
**International Centre for Environment Audit and Sustainable  
Development (iCED)**

### EDITORIAL

Green Files, a newsletter brought out by iCED every quarter, highlights contemporary environmental issues, environmental law, status of environment in Indian provinces, national – international events about environment and sustainable development, comments on national – international environmental audits, etc.

I am happy to present 20<sup>th</sup> issue of Green Files. As in the past this issue features glimpses on the recent environment news, persons and environment projects in focus, to make readers aware of initiatives and efforts of different environment organizations to protect the environment. Judgements on environment issues, recent national and international audit reports on environment and sustainable development, selected international audit activities carried out by SAIs world over are also included in this issue for knowledge sharing among the auditors.

This volume contains a brief on 6th Seminar on Environment Audit of ASOSAI RWGEA held in iCED. This newsletter issue also covers the trainings held in iCED on environmental issues. There were seven National training programs, one international training program and three bilateral training programmes.

Needless to say, comments and suggestions on content, presentation of our Newsletter are welcome. We look forward to your suggestions to make Green Files more useful and appealing. Contributions in any form within the broad scope of the newsletter are encouraged. These can be mailed to [iced@cag.gov.in](mailto:iced@cag.gov.in)

With regards,

**Sunil Dadhe**  
**Director General, iCED**

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**I. 6th Seminar on Environmental Auditing and the 5th Working Meeting of ASOSAI WGEA at Jaipur, India.**

The 6th Seminar on Environmental Auditing and 5th Working Meeting of ASOSAI Working Group on Environment Audit (WGEA) was held at iCED, Jaipur from 17th to 19th October 2016.

The Seminar / Meeting was attended by 48 delegates from 21 Supreme Audit Institutions / international organizations.



*Ms. Rita Mitra, Dy. Auditor General India welcoming address in ASOSAI WGEA Meeting*

**Ms. Rita Mitra,** Dy. Auditor General of India welcomed the delegates and expressed her gratefulness to ASOSAI WGEA to be given the honour to host the seminar and meeting in India.

**Mr. Harry Azahar Azis,** Chairman of SAI Indonesia and the Chair of INTOSAI WGEA



*Mr. Harry Azahar Azis, Chair INTOSAI WGEA addressing to participants*

emphasized the prudent use of natural resources and the regulations evolved by various governments in management of natural resources.

**Ms. Qin Boyong,** Deputy Auditor General of China on behalf of Auditor General of SAI China, the Chair of ASOSAI WGEA emphasized that seminar on environmental auditing of ASOSAI WGEA would be an important forum for member of ASOSAI to share information and exchange experiences in the field of environmental auditing. She informed that in

the next working plan period, the main aim of ASOSAI WGEA will be to consolidate and enhance its existing



*MS. Qin Boyong, SAI China addressing ASOSAI WGEA Meeting*

knowledge sharing mechanisms so that they are more participatory, relevant and economical.

On first day of Seminar, 17 October 2016, the seminar started with the presentations by the External Experts.

**Ms. Aranzazu Guillian Montero,** Inter - Regional Advisor on Public Accountability of UN DESA discussed the challenges and opportunities for SAIs in respect of Agenda 2030 and emphasizes on understanding the Agenda and aligning SAIs' Strategic Framework towards the Agenda so as to take advantage of the opportunities the Agenda has opened to enhance the impact of the work of SAIs.

**Dr. Ajay Mathur,** Director General, The Energy and Resources Institute (TERI) discussed issues and Strategies for Low Carbon Development. He explained the dynamics between per capita energy supply and energy related CO2 emissions and emphasized importance of 'low emission high energy' technologies. He also emphasised the requirement of shifting to new technologies and limitations of the same. He also highlighted that SAIs could validate low carbon goals for various agencies through validation of goal setting methodologies and processes. SAIs might also steer agreement on processes to measure progress on low carbon goals at macroeconomic as well as sectoral levels.

SAI China reported on achievements of ASOSAI WGEA during its Work Plan for 2014-16.

The representatives of INTOSAI WGEA, EUROSAI WGEA and AFROSAI WGEA made presentations to discuss the progress done by respective bodies against their current and future Work Plans, various capacity building and training initiatives taken by them.

Ms. Viire Viss, EUROSAI WGEA informed about the Massive Open Online Course (MOOCs) which was a kind of e-learning course jointly developed by SAI Estonia and University of Tartu. She informed that these courses were prepared so as to suit the students and newly inducted public auditors.



**Mr. Jahangir Inamdar presenting Research Paper on Greening SAI's**

The lead countries for the Research Projects under the INTOSAI WGEA Work Plan 2014-16 has presented their progress of Research Projects.

Mr. Jahangir Inamdar representative from SAI India presents a research paper prepared for project of INTOSAI WGEA in which SAI India was a Lead.

The representatives of SAI Indonesia made presentations on INTOSAI WGEA Research Project on Renewable Energy and on Co-operative Audit on Air Quality initiated by the Netherlands Court of Audit (NCA).

On second day the delegates of various SAIs made presentations on the two themes of the seminar viz. Audit on the Implementation of Environmental Policy and SAI's Role in Promoting National Sustainable Development. All the presentations were very

informative and the delegates actively participated in the discussions about the same.

On 19th October 2016 the delegates visited Taj Mahal.

**Participants visit Taj Mahal**



**Participants of the INTOSAI WGEA Meeting**

- **Bhoopendra Kumar**

## II. The Compensatory Afforestation Fund Act, 2016

### • The background

The Compensatory Afforestation Fund Act, 2016 of Parliament received the assent of the President on the 3rd August, 2016. This act is the culmination of the proactive role of India judiciary which started in 1990s and its subsequent judgements, findings in the Audit Report of CAG of India etc. along with the legislative actions of the Parliament of India. From 1995, the Supreme Court of India began playing a proactive role in the matters of forest policy governance in India. In a case T.N. Godavarman Thirumulpad v/s Union of India (W.P. (Civil) No. 202 of 1995), the Supreme Court took action against large scale illegal felling of timber and denuding of forests in Gudalur in Tamil Nadu. Through the Godavarman case the Supreme Court continued to issue interim orders and judgements around several aspects including tree felling, operations of saw mills, violations of approvals for forest diversion, de-reservation of forests and many other matters related to compensatory afforestation.

The Supreme Court through its various orders issued during last decade led the establishment of institutional framework and procedures with respect to collection and expenditure of amounts collected for compensatory afforestation. Central Empowered Committee (CEC) was established with explicit mandate of monitoring the implementation of the Court's orders, look into cases of non-compliance including those related to encroachments, implementation of working plans, compensatory afforestation, plantation and other conservation issues. An

ad hoc Compensatory Afforestation Fund Management and Planning Authority (CAMPA) was established which was followed by guidelines for utilisation of funds and formation of State Authorities. Based on the above orders, directions and observations of the Supreme Court to ensure safety, security and expeditious utilisation in a transparent manner of funds accumulated with the ad hoc Authority and the funds to be collected by the State Governments, a National Compensatory Afforestation Fund and a National Compensatory Afforestation Fund Management and Planning Authority at the national level and its counterpart in states is created through this act of the Parliament.

This Act provides for the establishment of funds under the public accounts of India and the public accounts of each State and crediting thereto the monies received from the user agencies towards compensatory afforestation, additional compensatory afforestation, penal compensatory afforestation, net present value and all other amounts recovered from such agencies under the Forest (Conservation) Act, 1980; undertaking artificial regeneration (plantations), assisted natural regeneration, protection of forests, forest related infrastructure development, Green India Programme, wildlife protection and other related activities.

### • Salient Features of CAFA, 2016

The Act provides legal basis to National Authority (CAMPA) and State Authorities (State CAMPAs)

The terms like environmental services, net present value, user agency etc, which are relevant in case of compensatory

afforestation are defined through this statute now.

The Compensatory Afforestation Fund at national level and similar Funds at the level of States would be part of Public Account which would bear interest and would be non-lapsable. Ten per cent of the funds realised from the user agencies in respect of the forest land diverted in their favour, which have been credited directly into the State Fund would form part of the National Fund.

There would be a National Authority which would consist of the Governing Body headed by the Minister of MoEFCC and an Executive Committee which would be headed by the Director General of Forests and Special Secretary. An officer of the rank of Additional Director General would be the Chief Executive Officer of both these bodies. There would also be a Monitoring Group which would consist of six experts in the field of environment, economics, wildlife, forest, remote sensing and geographical information system and social sector and the Director General, Forest Survey of India.

The State Authority would be headed by the Chief Minister of the State and a Steering Committee headed by the Chief Secretary of the state. The Principal Secretary in-charge of the Forest Department in a State shall be the Member Secretary of the State Authority. There would also be an Executive Committee headed by the Principal Chief Conservator of the Forest. The Chief Executive Officer of the rank of Chief Conservator of Forest would be Member Secretary for the Steering Committee and the Executive Committee.

The National Fund would be utilized for:

- i. The non-recurring and recurring expenditure for the management of the National Authority including the salary and allowances payable to its officers and other employees;
  - ii. the expenditure incurred on monitoring and evaluation of works executed by the National Authority and each State Authority;
  - iii. the expenditure incurred on specific schemes approved by governing body of the National Authority which may include any institute, society, centre of excellence in the field of forest and wildlife, pilot schemes, standardization of codes and guidelines and such other related activities for the forestry and wildlife sector.
- **The State Fund would be utilized for:**
    - i. for artificial regeneration (plantation), assisted natural regeneration, forest management, forest protection, forest and wildlife related infrastructure development, wildlife protection and management, supply of wood and other forest produce saving devices and other allied activities in the manner as may be prescribed;
    - ii. all monies realized from the user agencies in accordance with the decision taken by the Standing Committee of the National Board for Wild Life constituted under section 5A of the Wild Life (Protection) Act, 1972 or the orders of the Supreme Court involving cases of diversion of forest land in protected areas shall form the corpus and the income therefrom shall be used exclusively for undertaking protection and conservation activities in protected areas of the State including facilitating voluntary relocation from such protected areas

iii. the non-recurring and recurring expenditure for the management of a State Authority including the salary and allowances payable to its officers and other employees may be met from a part of the interest accrued on the amounts available in the State Fund, in the manner as may be prescribed;

Chapter V of CAFA, 2016 deals with the finance, accounts, audit and annual report. The act provides for following provisions:

- i. The National Authority shall maintain proper accounts and other relevant records and prepare an annual statement of accounts in such form as may be prescribed in consultation with the CAG of India.
- ii. The accounts of the National Authority shall be audited by the Comptroller and Auditor-General of India at such intervals as may be specified by him and any expenditure incurred in connection with such audit shall be payable by the National Authority to the CAG.
- iii. The CAG and any other person appointed by him in connection with the audit of the accounts of the National Authority shall have the same right and privileges and authority in connection with such audit as the CAG generally has in connection with the audit of the Government accounts and, in particular, shall have the right to demand the production of books, accounts, connected vouchers and other documents and papers and to inspect the office of the National Authority.
- iv. The accounts of the National Authority as certified by the CAG or any other person appointed by him in this behalf together with the audit report thereon, shall be

forwarded annually to the Central Government by the National Authority.

- v. The CAG shall, within a period of six months from the date of commencement of the Act, audit the accounts of the all monies collected by the State Governments and Union territory Administrations, which has been placed under the *ad hoc* Authority and deposited in the nationalised banks and submit the report to the Central Government under this section.
- vi. The Central Government shall have the power to conduct the special audit or performance audit of the National Fund and of the National Authority through the CAG.

Similar provisions are in the statute to deal with the State Authority.

• **Significance:**

The CAG of India had conducted audit of the CAMPA and the ad hoc Authorities for the purpose of assessing the compliance of various orders, guidelines issued by the Government of India, Supreme Court of India etc. The Audit Report (AR Union Government MoEF No. 21 of 2013) was presented to the Parliament of India on 6th September 2013. The CAG of India had raised concerns over the following issues in this audit report:

While receipts and expenditure under CAMPA were significant there existed no system to report incomes and outgoing regarding compensatory afforestation funds to either the Parliament or the State Legislatures. There were concerns over the transparency and accountability as the Central CAMPA (Ad hoc) had not submitted audited accounts. It was recommended that the funds should be transferred to the respective Public Accounts.

The non-operationalisation of authority as a permanent, independent authority to provide guidance, direction and oversight severely hampered the afforestation activities in India. It was recommended that the authority should be provided a mandate of ensuring compensatory afforestation within the broader constitutional and legal framework.

The mechanism for investment of surplus funds by ad-hoc CAMPA was arbitrary and lacked in fairness and transparency. There were lot of instances of transfer of funds, funds being retained by State Governments, non-remittance to the Fund, delay in transfers, non-recovery / under-recovery of NPV etc.

The broad concerns brought out in the Audit Report of CAG are squarely dealt in by the new Act of the Parliament. The authorities at national and state level as well as various bodies and committees have been established with clear mandate, roles and responsibilities. The provisions with respect to accounts, audit, investments etc. would help manage the fund with more financial efficiency. There is an express mention of the mandate of CAG to conduct the Performance Audit as well. There is also a scope for formulation of various rules under the statute in future as per the needs. These steps would ensure uniform administration of the issue of compensatory afforestation across the nation and also help to solve the dilemma of availability of huge financial resources for the purpose of afforestation on one hand and the inefficiencies in spending on the other hand. However, there are lot of challenges major amongst which would be the availability of land for afforestation. The impact of this legislation on the compensatory afforestation

in India remains to be subject of curiosity for all the stakeholders.

- **S. Prabhakar Rao**

### III. Environmental Case Law *ARJUN GOPAL AND ORS. Vs. UNION OF INDIA & ORS.*

The judgement pronounced by the Hon'ble Supreme Court in the Writ Petition (Civil) no. 728 of 2015 is a landmark environment judgement. The facts of the case were as follows:

- **Background of the case**

In India, air quality standards are measured in terms of the Air Quality Index (hereafter 'AQI'). It consists of a comprehensive set of parameters to monitor and assess the air quality. The AQI considers eight pollutants (PM10, PM2.5, NO<sub>2</sub>, SO<sub>2</sub>, CO, O<sub>3</sub>, NH<sub>3</sub>, and Pb), and based on the levels of these pollutants six categories of AQI ranging from Good / satisfactory (0-50) to Severe (410-500) have been prescribed. The index also suggests the health effects of the pollution category wise. The onset of winter and the festival / marriage season presents to the residents of National Capital Region of Delhi (hereinafter "NCR") severe concerns regarding the air quality standards. Reports indicate that the AQI in Delhi was much above the severe standard, shooting off the AQI 500 mark on many days of November, 2016. On the day after Diwali, it was more than 14 times the safe limits. The air quality standards in early November of this year were the worst in the world. It is reported that the PM 2.5 levels recorded were "beyond scale" values. The 24 hour average of PM 2.5 levels in South Delhi in 2016 were 38% higher than on the Diwali night of 2015. The report further states that the WHO guideline for 24-hour average

PM 2.5 levels is  $25 \mu\text{g}/\text{m}^3$  and with an annual average PM 2.5 level of  $122 \mu\text{g}/\text{m}^3$ , Delhi's air is the worst among global megacities with dense populations. PM 2.5 or particulate matter 2.5 (PM2.5), refers to tiny particles or droplets in the air that are two and one half microns or less in width. It may be noted that the widths of the larger particles in the PM2.5 size range would be about thirty times smaller than that of a human hair. These particles primarily emanate from vehicle exhausts and other operations that involve the burning of fuels such as wood, heating oil or coal, and of course, use of fire crackers.

During the festival- marriage season in Delhi that is between October and February, a report <sup>1</sup> suggests that more than 40 recognized and other dangerous forms of firecrackers are used. These fireworks release a deadly concoction of fumes into an almost-still winter air in Delhi, causing extreme air pollution during this time. These fire crackers apart from causing acute air pollution also cause severe noise pollution. Fireworks emit fine particles of various elements like Copper, Barium, Strontium, Magnesium and Potassium, all of which are used to provide the colour and glitter to fireworks.

The latest report<sup>2</sup> by the Central Pollution Control Board (CPCB) on the ambient air quality during the Diwali period shows that air pollution across the capital has reached record levels and has become intolerable. The air quality in NCR is mostly poor as per the standards prescribed by the Government of India, but it becomes much worse during Diwali. The concentrations of PM 2.5 and PM

10 which are indicators of air quality have shown considerable increase in the region.

The petitioners have approached the Court seeking emergent reliefs in relation to the extreme air pollution in the NCR. The petitioner has sought wide ranging reliefs against the use of fireworks (including fire crackers), prevention of harmful crop burning, dumping of malba and further steps towards environmental purity. The Court, however, restricted this order to grant of interim relief in respect of fireworks. The primary contention of the petitioners is that the use of fireworks in the NCR has posed a serious problem to the inability of the air during Diwali and the wedding season. According to the petitioners, the problem has reached proportions in the NCR which are not tolerable and are causing immense harm to the peace, well-being and health both physical and mental.

#### • Judgement

The Court took cognisance of the CPCB report which indicated that air pollution levels across the region rises by about 4–5 times on Diwali as a consequence of burning of fireworks. Numerous accidents take place due to unregulated manufacture, storage and transport of fireworks resulting in substantial damage to life and property. Further, unsupervised bursting of fireworks also leads to many accidents where unfortunately most victims are children. They are a source of both, air pollution and noise pollution. All this firework, even that which is not noisy, leaves the ambient air thick with noxious particles. Marriage processions, *barats*, passing through an area generated the same kind of noise and leave behind the same kind of air, by the use of fire crackers. The Court observed that

<sup>1</sup> Down to Earth, 4.11.2015

<sup>2</sup> CPCB Deepawali Monitoring Report, 2016

something that is meant to be a celebration seems to be destroying the peace and tranquillity which is necessary for rest.

In its judgement, the Court stated that there was no serious opposition to the impact of fireworks on the ambient air and the unhealthy effects of fireworks on it. The opposition was mainly about the total banning of fireworks in all circumstances. We are conscious that we are dealing with time honoured ways of celebrating certain occasions. The petitioners and every member of the Bench and the Bar also celebrate in the same way. But does that justify the continuance of this manner of celebration, when the quality of air in the region is so poor and injurious to health and wellbeing and is destroying essential components of the freedom to live a healthy life. It is however certain that, now, when the Air Quality Index in the NCR is abysmally and threateningly severe, allowing free trade in fireworks which is a major source of noise and air pollution and is causing immense harm to the lives and health of citizens, and allowing availability of such fireworks or explosives constitutes a serious invasion of the Freedoms and Rights conferred on citizens by Part III of the Constitution of India. Such an invasion is all the more deleterious towards the rights and freedom of the poor and the underprivileged who must breathe such air without any means of protecting themselves.

There is no doubt that protecting citizens (including those who use fireworks) by making these unavailable in the market would require the suspension of trade of a miniscule section of the population. Maybe they have acquired stocks for sale or obtained credit for their business. We are however of the view,

that balancing the vital interests of the vast majority of citizens against the commercial interests of a few, the balance must heavily tilt in favour of citizens in general. What is however indisputable is that the harmful effects of fireworks on the ambient air and the lungs, eyes and ears of people. What is also obvious is the extreme nuisance, noise the fireworks cause to citizens particularly the ailing and the aged. Therefore, though much can be argued as always about the significance and even joy of bursting fireworks. But at the same, prima facie, a just constitutional balance, must overwhelmingly prioritize the harmful effects of this hazardous air on present and future generations, irreversible and imperceptible as they are, over the immediate commercial constraints of the manufacturers and suppliers of fireworks. Secondly, this court recognizes that the duty to ensure a healthy environment not only falls on the State in terms of Article 48-A of the Constitution of India but also on all citizens under Article 51A (g) of the Constitution. This Court has previously held that fundamental duties in Part IV A of the Constitution could be a guiding factor in testing the reasonableness of restrictions under Article 19(2)-(6) of the Constitution of India. The principle of inter-generational equity, recognized and applied by this Court in a number of decisions, beaoning us to the health and needs of the future generation, also favours the issuance of interim directions. Lastly, the precautionary principle mandates that where there are threats of serious and irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. The Court directed the Central Government to:-

- i. Suspend all such licenses as permit sale of fireworks, wholesale and retail within the territory of NCR.
- ii. The suspension shall remain in force till further orders of this Court.
- iii. No such licenses shall be granted or renewed till further orders.

In addition to the above, it directed the CPCB to study and prepare a report on the harmful effects of the materials which are currently being used in the manufacture of fireworks.

#### • Significance of the Judgement

The hazardous levels of air pollution has spared very few from its ill effects. The life of the citizens of NCR was brought to a virtual standstill, not to speak about the plight of the thousands of mute flora and fauna in NCR. Schools were declared shut, denizens of the city advised to stay indoors, construction activities stopped, power stations shut and ban imposed on burning of garbage and agricultural waste. The fall in air quality has had a significant impact on people's lifestyle as well. The rising costs to protect against air pollution are substantial. People are queuing up to purchase protective masks and air purification systems in the wake of dense smog all over the NCR. In short, the capital was 'smogged' into an environmental emergency of unseen proportions.

The adverse effects of these extreme levels of air pollution spare no one- the young, the old, the infirm and even the future generations. A study of the data of the Global Health Depository of the World Health Organization reveals that India has the world's highest death rate from chronic respiratory diseases and that about 1.5 million people in India die annually due to indoor and outdoor pollution. The Kolkata-based Chittaranjan National

Cancer Institute (CNCI), in a study commissioned and handed over to the Central Pollution Control Board, found that key indicators of respiratory health, lung function to palpitation, vision to blood pressure, of children in Delhi, between four and 17 years of age, were worse off than their counterparts elsewhere. It also found that more than 40 percent of the school children suffer from lung damage. There are nascent studies that suggest that pollution can lower children's I.Q., hurt their test scores and increase the risks of autism, epilepsy, diabetes and even adult-onset diseases like multiple sclerosis.

Thus the severe air pollution in the NCR is leading to multiple diseases and other health related issues amongst the people. It is said that the increase in respiratory diseases like asthma, lung cancer, bronchitis etc. is primarily attributable to the worsening air quality in the NCR. The damage being caused to people's lungs is said to be irreversible. Other health related issues like allergies, temporary deafness are also on the rise. Various experts have pointed towards multiple adverse effects of air pollution on human health like premature deaths, rise in mortality rates, palpitation, loss of vision, arthritis, heart ailments, cancer, etc.

When we refer to these extreme effects, we are not merely referring to the inconvenience caused to people, but to abject deprivation of a range of constitutionally embedded rights that the residents of NCR ought to have enjoyed. Needless to state, the grim situation of air quality adversely affected the right to education, work, health and ultimately, the right to life of the citizens, and this Court is

constitutionally bound to address their grave concerns.

In view of the above concerns, the judgement given by Supreme Court assumes vast significance as it seeks to mitigate the overwhelming air pollution problems in Delhi NCR.

Source: [IN THE SUPREME COURT OF INDIA CIVIL ORIGINAL JURISDICTION I.A. NO.4 IN WRIT PETITION \(CIVIL\) No.728 OF 2015](#)

- **Rishi Mathur**

#### IV. Environment News and Snapshots

- **New Facilities in the Guard Van are Environment Friendly**

Minister of Railways introduced newly manufactured Guard Van of Goods (Freight) Train in October 2016. The Guard Vans of Goods Train (8 wheeled) are equipped for the first time with Solar powered Light, Fan, and Mobile Charging Point along with the facility of Zero discharge Bio Toilet. The Solar generation is supported with a battery bank to power the brake van facilities for more than 24 hours continuously even on a rainy day. Thus it is expected to provide uninterrupted comfort of basic facilities to the Guard.

- **₹ 1500 crore released to states as central assistance for 99 prioritized irrigation projects under AIBP**

Union Government released the first instalment of ₹ 1500 crore to the states as central assistance for 99 prioritized irrigation projects under Accelerated Irrigation Benefits Program (AIBP). This amount has been released for 50 projects in the states of Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Odisha, Punjab, Rajasthan and Telangana. Total funds

required for completion of all the 99 identified projects have been estimated at ₹ 77595 crore ( ₹ 48546 crore for project works and ₹ 29049 crore for CAD works) with estimated Central Assistance of ₹ 31342 crore. Likely potential utilization through these projects is estimated to be 76.03 lakh hectare (Lakh ha). These projects will cover almost all drought prone districts of 18 States of country. The government had announced in 2016 creation of dedicated Long Term Irrigation Fund (LTIF) in NABARD with an initial corpus of about ₹ 20,000 crore and an amount of ₹ 12517 crore was provided as budgetary resources and market borrowings during 2016-17. The Union Cabinet in July 2016 has approved establishment of the Mission to ensure completion of 99 prioritized projects in phases by December 2019 including Command Area Development and Water Management (CAD&WM).

- **₹ 10 Lakh for each mandi for setting up Waste Management Plants Under e-Nam Scheme**

Cleaning drives were undertaken in 271 Agricultural Mandis. Further, Swachhta Action Plan has been prepared in which it was decided to make provision of ₹ 10 lakh for each mandi for setting up waste management plants under e-Nam scheme. It was also decided that under Rashtriya Krishi Vikas Yojana one percent funds will be spent on Solid and Waste Management. Compost Machines are being installed in the Mandis in coordination with States.

- **₹ 67.01 Crore Sanctioned under Solar City Programme**

A total amount of ₹ 67.01 crore has been sanctioned for preparation of master plans, solar city cells, promotional activities and

installation of renewable energy projects and an amount of ₹ 24.16 crore has been released, so far, under Solar City Programme.

- **Fitting Of Bio-Toilets In Trains**

Government has planned to fit bio-toilets on all new and existing coaches to maintain cleanliness and hygiene by way of eliminating direct discharge of human waste on track from the train toilets. The additional cost of providing bio-toilets in one coach (4 bio-toilets) is ₹ 4.0 lakhs approximately. For the in service coaches, which require replacement of structural members for fitment of bio-toilets, the additional cost is approximately ₹ 16.00 lakhs per coach. As per the current projections, bio-toilets are required to be fitted in approximately 45000 more coaches as on 31.10.2016. Contracts have been placed for supply and retro-fitment of bio-toilets in 8888 existing in-service coaches, on nine vendors at a total cost of ₹ 355.04 crores. Four sections viz. Rameswaram-Manamadurai (114 Kms), Okha-Kanalus Junction (141 Kms), Porbandar-Wansjaliya (34 Kms) and Jammu-Katra (78 Kms), have been chosen in the first phase for making them Green Corridor i.e. Railway section free from any direct discharge of human waste on track from toilets of trains. Of these, Rameswaram-Manamadurai, Okha-Kanalus Junction and Porbandar-Wansjaliya sections have already been commissioned as 'Green Corridors'.

- **Rivers Under National River Conservation Programme**

The Water Resources Information System (WRIS) database developed by Central Water Commission along with Indian Space Research Organisation includes 15,615 numbers of identified rivers/streams in the country.

Central Pollution Control Board (CPCB) in association with the State Pollution Control Boards is monitoring the water quality of rivers in the country on a regular basis. As per a report published by CPCB in February, 2015, 302 polluted river stretches have been identified on 275 rivers based on Bio-chemical Oxygen Demand (BOD) level in rivers, a key indicator of organic pollution.

Conservation of rivers is an ongoing and collective effort of the Central and State Governments. Presently, NRCP (excluding Ganga and its tributaries) has covered polluted stretches of 31 rivers in 75 towns spread over 14 States at a sanctioned cost of ₹ 4517.82 crore. So far, an amount of ₹ 2056.58 crore has been released to various State Governments for implementation of various pollution abatement schemes and a treatment capacity of 2373 million litres per day (mld) has been created under NRCP (excluding Ganga and its tributaries).

- **Centre assistance of ₹ 489 cr for improving water supply and sewerage networks in Delhi**

Ministry of Urban Development has approved the Annual Action Plan of Delhi for 2016-17 under Atal Mission for Rejuvenation and Urban Transformation (AMRUT) with a project investment of ₹ 266 cr for improving water supply and sewerage networks. Similar Action Plan for 2015-16 of Delhi with an investment of ₹ 223 cr was approved earlier in January 2016. With this, the total investment approved for Delhi under Atal Mission for improving basic urban infrastructure is ₹ 489 cr. Of this, ₹ 215 cr will be invested in improving water supply, ₹ 254 cr for improving sewerage networks and septage management, ₹ 8.00 cr for drainage

networks and ₹ 12 cr for developing open and green spaces.

- **Government Released ₹ 1667.99 Crores and ₹ 366.47 Crores for Installation of Solar and Wind Energy Projects**

The total installed capacity in the country from solar power was 8727.64 MW and from wind power was 28279.40 MW as in October 2016. Ministry has released amount of ₹ 1667.99 Crores and ₹ 366.47 crores for installation of solar and wind energy projects respectively till 31st October 2016 in different State/UTs.

- **New projects under Namami Gange programme in Haridwar and Varanasi have been approved by National Mission for Clean Ganga.**

In Haridwar, approval for 68 MLD sewage treatment plant (STP) in Jagjeetpur and 14 MLD STP in Sarai have been approved at an indicative cost of ₹ 110.30 crore and ₹ 25 crore respectively under Hybrid Annuity based PPP mode. Money has also been allocated for interception-diversion works and tertiary treatment of existing plants at these places which would be undertaken under Design, Build, Operate and Transfer (DBOT) mode. In-principle approval for the implementation of 50 MLD sewage treatment plant at Ramana in Varanasi has been given at an indicative cost of ₹ 120 crore under Hybrid Annuity-based PPP mode.

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- **A new dawn in Renewable Energy- India attains 4th position in global wind power installed capacity**

46.33 GW grid-interactive power; 7,518 MW of grid-connected power; 1502 MW Wind power capacity added; Small hydro power capacity reaches 4323 MW, 92305 Solar Pumps installed, 38,000 crore Green Energy Corridor is being set up; Surya Mitra" mobile App launched, Solar Tariff as low as ₹ 3/unit .The largest renewable capacity expansion programme in the world is being taken up by India. The government is aiming to increase share of clean energy through massive thrust in renewables. Core drivers for development and deployment of new and renewable energy in India have been Energy security, Electricity shortages, Energy Access, Climate change etc.

A capacity addition of 14.30 GW of renewable energy has been reported during the last two and half years under Grid Connected Renewable Power, which include 5.8 GW from Solar Power, 7.04 GW from Wind Power, 0.53 from Small Hydro Power and 0.93 from Bio-power. Confident by the growth rate in clean energy sector, the Government of India in its submission to the United Nations Frame Work Convention on Climate Change on Intended

Nationally Determined Contribution (INDC) has stated that India will achieve 40% cumulative Electric power capacity from non-fossil fuel based energy resources by 2030 with the help of transfer of technology and low cost International Finance including from Green Climate Fund.

In order to achieve the renewable energy target of 175 GW by the year 2022, the major programmes/ schemes on implementation of Solar Park, Solar Defence Scheme, Solar scheme for CPUs Solar PV power plants on Canal Bank and Canal Tops, Solar Pump, Solar Rooftop etc have been launched during the last two years.

Source <http://pib.nic.in/newsite>

- **Pawan Kumar Meena**

#### V. iCED News

#### • 4<sup>th</sup> International Training Programme (ITP) on Introduction to Environmental Auditing.

4th International Training Programme on "Introduction to Environmental Auditing" held from 21st November to 05th December,



Mr. Nand Kishor, Dy. CAG of India addressing the participants of ITP

2016 at iCED was Attended by 15 participants from 10 countries across the world viz. Bhutan, Costa Rica, European court of Auditors, India, Iraq, Saudi Arabia, Sudan, Tanzania, Senegal and Thailand. SAs of Estonia, Indonesia, India and European Court of Auditors contributed trainers for various modules. Course included a field visit to Tarun Bharat Sangh (TBS), a non-governmental organization located at

Kishori-Bhikampura in Alwar district of Rajasthan so as to illustrate practice of sustainable development.

As part of our biodiversity module, we planned a biodiversity trip to Tiger Project Sariska and a session on tiger conservation in the Tiger Reserve. The participants were also



Participants on Tiger Safari in Sariska Wildlife Sanctuary

taken to Keoladeo National Park to see measures for conservation of migratory and local birds, their habitat as well as world heritage wetland which is also a Ramsar site. Participants were overwhelmed by the biodiversity of bird species viz., waterfowl, ducks, Storks, and Cranes, etc.

Each of these modules like biodiversity, waste issues, water issues and climate change issues gave participants a background and introduction as well as steps to audit these effectively. Teaching methods included both formal lectures as well as various individual and group exercises, etc. Each topic was



ITP Participants visit to "Tarun Bharat Sangh"

divided into theory and practical part consisting of case studies. The visit to Tarun Bharat Sangh was woven into the sessions on

sustainable development and served to stimulate discussions relating to sustainability.

Feedback received from the participants showed that the participants learnt a lot from the sessions, that the sessions had improved their understanding of the subject, sessions met their expectations and the sessions were capable of stimulating their interest.

Commenting on the quality and usefulness of the training programme, Mr. Deogratius Beda Shayo, a participant from SAI, Tanzania, wrote "After getting knowledge on environmental audit and sustainable development, all of us will apply theories and practices learnt during the class to conduct environmental audit in our respective SAIs." Ms. María Ivonne Monterrosa Palma from SAI, Costa Rica commented "Memorable learning experience for all of us. We learnt about environment audit and sustainable development issues not only in class room but through interaction with fellow participants from different SAIs, Study trips, etc. Going back to our SAIs we will definitely deliver our experience, our auditing environment experience, and the things we have gained during the programme" The course concluded with a valedictory session chaired by Mr. Nand Kishore, Dy. Comptroller and Auditor General, SAI India. Mr. Nand Kishore, Dy. Comptroller & Auditor General speaking at the Valediction ceremony stated that "Issues in Environment audit are complex, inter-related and cross-boundary. The field of environment management is a constantly evolving discipline. I quote Bob Dylan the noble laureate for Literature for this year. "Don't criticize what you don't understand". It is important that public auditors equip themselves with necessary

skills and techniques so as to meaningfully audit this constantly evolving area. If we don't understand well enough while attempting to ensure accountability in respect of environmental issues, we might end up causing unnecessary roadblocks. As Dr. Stephen Hawking says the enemy of knowledge is not ignorance but the illusion of knowledge. Therefore as auditors we need to guard against not only the ignorance but also the illusion of knowledge."

- **Training for SAI Bhutan on Audit from Gender perspective (7th November to 18th November 2016)**

A Bilateral Training Program was held on "Audit from Gender perspective" for officers of Royal Audit Authority of Bhutan from 7th to 18th November, 2016 at iCED Jaipur. Gender Equality is one of the Sustainable Development Goals and iCED began its journey of conducting trainings on SDGs which are different from conventional



*SAI Bhutan Participants visit to Jaipur City*

environmental audit issues. The content of the training program included different sessions like Gender Concepts, International Conventions and agreements for Gender Equality, Gender Responsive Budgeting, Gender Concepts and Gender Relations in Work Place, and Gender in the criminal justice system, Gender Audit in Local Self Government, etc.

The participants from SAI Bhutan were also taken to Bare Foot College Tilonia for a study

tour. The participants appreciated the training and also enjoyed their stay at iCED and visit to different landmarks in Jaipur city.

- **Bilateral Training Programmes for SAI Afghanistan**

Two Bilateral Training Programmes for Supreme audit Office (SAO) Afghanistan on



**Participants from SAI Afghanistan**

“Audit of State Owned Enterprises” and “Performance Audit” were conducted simultaneously for 20 and 19 officers respectively from 19<sup>th</sup> -30<sup>th</sup> December 2016 at iCED. The training programmes were not related to environmental audit but iCED conducted these trainings with equal effectiveness. The training programmes were customised for the needs of SAO Afghanistan and delivered in such way that the language barrier could be overcome by simultaneous interpretations by few participants of the training programmes. Apart from classroom sessions participants of both the training programmes were taken to Mumbai for field visits and interaction with the auditors of one of the petroleum refining and marketing companies of Government of India and one of the largest Municipal Corporations of India i.e. Municipal Corporation of Greater Mumbai. Participants nominated by SAO Afghanistan came with a positive learning attitude and displayed sincerity and willingness to acquire auditing

knowledge and skills for use in their field of work.

## VI. State in Focus: Chhattisgarh

Chhattisgarh was carved out of MP on 1st November 2000 with 16 Districts as 27th state of Republic of India. The geographical area of the state is 135191 sq. km. The State shares its boundaries with the 6 Indian States i.e. Madhya Pradesh on the northwest, Uttar Pradesh on the north, Jharkhand on the north-east, Orissa on the south-east, Andhra Pradesh on the south and Maharashtra on the south-west. The geological structure of Chhattisgarh mainly consists of Achaean and Cudappah rocks but Dharwad, Gondwana, Deccan Trap and old Alluvial Laterite rock systems are also found in some pockets of the State.

Physiographically, the State is divided into three zones, namely; Chhattisgarh plains, Bastar plateau and Northern hills. In upper part of the landscape the soils are shallow, young with less developed features and are highly eroded. Down the slope, the soils have more developed features. The change in soil properties indicates the difference in drainage conditions, transport of eroded material and translocation and deposition of mobile soil constituents. Moving down the slope, there is increase in soil depth, water holding capacity, cation exchange capacity (CEC), and preponderance of calcium and magnesium ions on exchange sites. The colour also changes from red to dark brown as we move downwards. The texture changes from sandy loam to clayey, consistency from non-sticky to very sticky, and calcium carbonate from none to abundant.

**MAHANADI** is the main and the largest river of Chhattisgarh. It is called the “Life Line of Chhattisgarh”. The main rivers that flow in the State are Mahanadi and its tributaries viz. Seonath, Hasdeo, Mand, Arpa, which drain parts of Raipur, Durg, Rajnandgaon, Bilaspur, Raigarh and Surguja districts. The river Indravati, a tributary of Godavari, drains parts of Rajnandgaon, Durg, Bastar and Dantewada districts. Some, of the tributaries of Ganges drain parts of Sarguja and Korias districts. Parts of Rajnandgaon and Kawardha districts are drained by Narmada river. Most of the rivers are perennial.

The average annual rainfall in Chhattisgarh is 1405.3 mm (maximum average annual rainfall upto 1885.1 mm in Jashpur district).

**Source:** <http://chtnvis.nic.in/pdf/bio%20diversity.pdf>

## (1) Environment Scenario

### (a) Forests

As per Government of India’s Forest Survey Report 2015, total recorded forest area in the state is 59772 sq. km., of which 25782 sq. km. is reserved forest, 24036 sq. km. is protected forest and 9954 sq. km. is unclassed forest, thus constituting 44.21% of the geographical area of the state and 7.82% of India’s forest area. The state has third largest forest cover in the country.

Forests of state forms catchment to at least four main river systems, i.e., Mahanadi, Godavari, Narmada and Ganges.

The forest of the state fall under major forest types, i.e., Tropical Moist Deciduous Forest and Tropical Dry Deciduous Forest. Sal (*Shorea robusta*) and Teak (*Tectona grandis*) are the two major tree species in the state. Other notable species are Bija (*Pterocarpus marsupium*), Saja (*Terminalia tomentosa*),

Dhawra (*Anogeissus latifolia*), Mahua (*Madhuca indica*), Tendu (*Diospyros melanoxylon*), Aonla (*Emblic officinalis*), Karra (*Cleistanthus collinus*) and bamboo (*Dendrocalamus strictus*).

The reason of negative change in forest cover is due to encroachment, degradation of forest due to rehabilitation from wildlife areas, mining activities, felling by Forest Corporation, diversion of land for irrigation projects etc. Positive changes in two districts viz. Rajnandgaon and Surguja are due to plantation and protection activities.

**Source:** <http://fsi.nic.in/isfr-2015/isfr-2015-forest-and-tree-resources-in-states-and-union-territories.pdf>, [http://www.cgforest.com/Media/Chhattisgarh\\_forest\\_department.pdf](http://www.cgforest.com/Media/Chhattisgarh_forest_department.pdf)

### (b) Biodiversity

State lies in the Deccan Bio-geographic Area, which houses rich and unique biological diversity. The State is conspicuously significant with rich endemic fauna and flora especially Herbal Plants of medicinal importance.

The state is placed in Deccan Plateau zone with three provinces namely 6D Chota Nagpur plateau, 6C Eastern Highlands and 6E Central high land (Rodgers and Panwar, 1988). There are three National Parks and 11 Wildlife Sanctuaries in the State covering 13.42% of the forest area of the State. The state has recently created Achanakmar-Amarkantak Biosphere Reserve to protect the rich biodiversity of the area. Indrawati National Park, Achanakmar, Udanti and Sitanadi sanctuaries are included in the Project Tiger.

Chhattisgarh is possibly last home of genetically un-swamped and critically endangered wild Buffalo (*Bubalus bubalis*) and Bastar myna (*Gracula religiosa*) and quite

rightly the State has declared them as State Animal and State bird respectively. Wild fauna also includes the Tiger (*Panthera tigris*), Leopard (*Panthera pardus*), Gaur (*Bos gaurus*), Sambhar (*Cervus unicolor*), Chital (*Axis axis*), Nilgai (*Boselaphus tragocamelus*) and Wild Boar (*Sus scrofa*).

The state has varieties of insects used in traditional medicines such as Red velvet mite (*Trombidium grandisssimum*), Pod Borer (*Heliothis armigera*), Green Leaf Hopper (*Nephotettix nigropictus* & *N. virescens*), Bed Bug (*Cimex lectularius*), Lightning Beetles or Fire Flies. The local traditional practitioners use these in the treatment of different diseases.

Chhattisgarh is a tribal dominated state in the country with extensive forest areas bearing the prints of traditional use. Large forest tracks of the state have been under scientific management over a century. The landform, the soil and the rainfall attributes of state allow for large biodiversity of crop cultivator and land races. These unique features cause Chhattisgarh to have extremely rich biodiversity within the old growth forest systems, the traditionally influence forest systems, the managed forest systems and the agropastoral systems.

On all these considerations Chhattisgarh encompasses highly rich biodiversity of crucial significance at the national level. With its two major most forested water basins; State is one of the biggest carbon sink of the country & strong contributor to soil and water securities of neighboring states also.

Bastar, Dantewada, Kanker, Korba, Kawardha, Bilaspur, Jashpur, Raigarh, Surguja and Manendragarh districts are rich repository of biodiversity and incidentally rich in minerals

also. With the increasing demands on the “mining sector”, mining activity would be a serious threat to Wild biodiversity.

Manendragarh, Surguja, Jashpur, Korba, Bilaspur and Raigarh districts of the State have witnessed installation of thermal power plants, and many more such plants are in the pipeline. The thermal emissions and fly-ash would pose a serious threat to Wild biodiversity.

Root Causes of Loss of Biodiversity are: -

- i. Difference in perceptions between primary and end users regarding exploitation of bio-resources.
- ii. Lack of awareness regarding sustainability of Bio-resources amongst users.
- iii. Weak enforcement of preventive laws.
- iv. Profit motives taking a priority amongst middle men of NTFP and other produces
- v. Breakdown of traditional C.P.R. based institutional regimes due to various policy interventions.
- vi. Indiscriminate and destructive exploitation of Bio-resource engraved in certain cultural practices like shifting cultivation, Commune-hunting (parad), Use of saplings as fuel wood for cooking, rearing of unproductive livestock primarily for social status & its unregulated grazing.

Source: <http://chtenvis.nic.in/pdf/bio%20diversity.pdf>  
[http://www.cgforest.com/Media/Chhattisgarh\\_forest\\_department.pdf](http://www.cgforest.com/Media/Chhattisgarh_forest_department.pdf)

### (c) Wetlands

There are 1309 wetlands in the state. Out of which 1159 are located inside the forest area under control of Department of Forests and 150 are located outside the forest area under the control of Department of water resources. Wetlands in State have an

enormous ecological, economic, commercial and socio economic importance and values. They play great role in maintaining ecosystem and moderating the local climate. Wetlands are increasingly facing several biotic pressure, large scale changes in land use/land cover and improper use of watersheds have all caused a substantial decline of water resources in the state. Wetlands resources exhibit significant ecological diversity. Unfortunately many such areas have been converted for agriculture, industry and settlements. Wetlands outside forest have been affected by industrial effluents, discharge of sewage, household wastes and sedimentation due to ecological degradation in catchment areas.

• **Threats to Wetlands: -**

- i. All aquatic systems, being an integral part of their watersheds, receive their water moving through the surrounding terrestrial landscape. Without their respective watersheds, the waterbodies have no existence. Further, all watershed- based human activities exert demand on water and or contribute to the degradation of water quality (influx of silt, nutrients and other pollutants from land with surface or subsurface runoff) and affect the amount of water in the system through reduced flows and increasing siltation of the water body.
- ii. Consumptive uses such as drinking water supply, irrigation and industrial use adversely affect the availability (e.g. for fisheries, and hydropower generation) besides degrading the water quality indirectly (waste inflow/discharge).
- iii. Non-consumptive uses such as fisheries and aquaculture, bathing and recreating, and transport render the water quality

unfit for drinking supplies and increase the costs of treatment.

**Source:**

<http://www.ercindia.org/files/wetlands/Chhattisgarh.pdf>,  
<http://chtenvis.nic.in/pdf/bio%20diversity.pdf>

**(d) Municipal Solid Waste management**

Solid Waste Management is one of the essential obligatory functions of the Urban Local Bodies in India. This service is falling too short of the desired level of efficiency and satisfaction resulting in problems of health, sanitation and environmental degradation. Most urban areas in the country are plagued by acute problems related to solid waste. Due to lack of serious efforts by town / city authorities, garbage and its management has become a tenacious problem and this notwithstanding the fact that the largest part of municipal expenditure is allotted to it.

SWM Practices and Key Constraints as per Annual Report for 2014-15 submitted to CPCB by CECB, are summarised below:

- i. 169 Municipal authorities are responsible for management of MSW in the state (13 Municipal Corporation, 33 Municipal Council and 123 Nagar Panchayat)
- ii. 73 municipal authorities have identified landfill sites
- iii. 3 municipal authorities viz. Dhamtari, Korba and Jagdalpur have established and started vermi composting/composting plants.
- iv. Non availability of suitable sites for Landfill nearby cities
- v. Lack of continuous funding to ULBs for management of Municipal Solid Waste (MSW)
- vi. Lack of technical expertise within municipal authorities for management of MSW

vii. Absence of mechanism of segregation of waste at source

Source:

<http://www.indiaenvironmentportal.org.in/files/file/draft%20Urban%20municipal%20waste%20management%20of%20Uttarakhand.pdf>

### (e) Biomedical Waste Management

Environment Protection and Pollution Control Board Government of Uttarakhand enforces the Bio Medical Waste (Management and Handling) Rules, 1996 / 2000. As per the provision of the rules it is mandatory for all HCEs to treat BMWs generated by them either on their own or through some authorized Common BMW Treatment Facility (CBWTF). There are Six CBWTFs (Private Agencies) in the state. According to a CPCB report, in 2009, against 5852 kg/day (2009) of biomedical waste generated, 5701 kg/day was properly treated. There were approximately 650 health care facilities in the state with 13061 beds.

Source:

<http://www.cpcb.nic.in/wast/bioimediawast/StatusBioMediawaste2009.pdf>

### (f) Hazardous waste Management

The Hazardous Wastes generating units in the state includes mainly Cement Plants, Iron and Steel Plants, Fertilizer Plants, Aluminium Plant, Power Plants, Waste Processing Units, Mine Workshops & Wire Drawing Units. The hazardous Wastes generated from these units are mainly used/waste oil, oil sludge, cathode residues, tar residue, lead & zinc ash/slag/dross, sulphur sludge etc.

Chhattisgarh Environment Conservation Board has completed the inventorization of hazardous wastes generating unit as per Hazardous Wastes (Management & Handling) Rules, 1989 (as amended on 2003). Total 210 nos. of units are generating hazardous wastes in the state as per the annual report on

inventory as on 31.03.2015. Board has granted authorization to these units for collection, reception, treatment, transport, storage and disposal. The total hazardous waste generation of state in the year 2014-15 was about 54087 MT as detailed below:

Sl. No.	Type of waste	Quantity (MT)
1	Land fillable	13879
2	Recyclable	38924
3	Incinerable	1284
<b>Total</b>		<b>54087</b>

Source:

<http://enviscecb.org/Data/Hazardous%20Inventory.pdf>,  
[http://enviscecb.org/hw\\_management.htm](http://enviscecb.org/hw_management.htm)

### (g) Ground Water:

The major rivers that drain the state are Mahanadi, Indravati, Son and Narmada. Major water bearing formations are weathered, jointed & fractured rocks of Proterozoic age where ground water occurs under water table conditions. Water bearing fractures generally occur within 100 m depth. The semi-consolidated formations (Gondwanas) are another water bearing formations with weathered sandstone and lime stone forming good aquifers. The unconsolidated sediments including alluvium and laterite are also water-yielding medium. Higher normal annual rainfall, more than 1500 mm is restricted to plateau regions of north-eastern and southern parts. Plains of central and northern-most parts of the region receive less than 1500 mm rainfall.

Ground water is the main source of drinking water in the state. It has involved individuals, Governmental and non-governmental organizations, industries and other sectors both in urban and rural areas. The Rabi crop in the state is mainly dependent on the

ground water. As stated earlier, the canal system in the state is supporting the Kharif crop only. The tanks and other surface water sources have only limited and site specific potential. The omni presence of ground water has made it a common commodity for use by one and all.

Ground water capacity of state is 13.68 Billion Cubic Metre (BCM), only 60 per cent (10.67 MCM) water is safe and usable. Ground water quality problem in state:

Contaminants	Districts affected (in part)
Fluoride (>1.5 mg/l)	Bastar, Bilaspur, Dantewada, Janjgir-Champa, Jashpur, Kanker, Korba, Koriya, Mahasamund, Raipur, Rajnandgaon, Surguja
Iron (>1.0 mg/l)	Bastar, Dantewada, Kanker, Koriya,
Nitrate (>45 mg/l)	Bastar, Bilaspur, Dantewada, Dhamtari, Jashpur, Kanker, Kawardha, Korba, Mahasamund, Raigarh, Raipur, Rajnandgaon
Arsenic (>0.05 mg/l)	Rajnandgaon

#### • Threats to Ground Water

- Due to shift in water use from dug wells to hand pump/ bore well the management of dug wells is neglected. Most of the dug wells are unused or underutilized and are converted into dustbin. The dug well due to bad management either collapses or filled by domestic waste, becoming a source of pollution in shallow zone/ ecosystem. This is equally true for urban and rural areas.
- In the absence of firm legal measures, large number of irrigation wells are being drilled with close spacing, causing interference and induced cone of depression. This leaves the shallow hand pump zone dry in the area of higher discharge.

- Spring water is a good source of drinking and irrigation. Springs are poorly managed presently in the state. Construction of proper outlet channel and storage system downstream at least in perennial springs provides energy free source of good quality water in the state at many places.
- Mining of economic and non-economic minerals beyond water table or sub surface mining (as coal) causes heavy pumping. Since mining comes under separate ministry, the lack of coordination or law enforcement is noticed in mining sector.

#### Source:

([http://cgwb.gov.in/gw\\_profiles/st\\_Chhatishgarh.htm](http://cgwb.gov.in/gw_profiles/st_Chhatishgarh.htm),  
<http://www.cgwrd.in/water-resource/ground-water-status.html>,  
<http://chtenvis.nic.in/pdf/bio%20diversity.pdf>

#### (h) Air Pollution

Growing air pollution has emerged as a serious concern in the cities, with vehicular emission and dust contributing a major share of the deteriorating air quality. Central Pollution Control Board initiated National Ambient Air Quality Monitoring (NAAQM) programme in the year 1984 with only seven monitoring stations in the country. There are 629 operating stations in 264 cities/towns in 29 states and 5 Union Territories of the country. There are 10 monitoring station in the state.

City	Operating Monitoring Station
Korba	3
Bhilai	3
Raipur	3
Bilaspur	1

As per Air Quality Index data of above four cities during May to October 2016, it was noticed that the NO<sub>x</sub>, SPM and PM<sub>10</sub> levels at

three sites exceeded the prescribed limits as stipulated by Central Pollution Control Board and falls in the range of “Good” to “Moderately Polluted” levels.

Source: <http://www.cpcb.nic.in/Network.php>

## (2) Laws and Polices

Chhattisgarh Environment Conservation Board is a statutory authority entrusted to implement environmental laws & rules within the jurisdiction of the State of Chhattisgarh.

Source: [http://enviscecb.org/intro\\_cecb.htm](http://enviscecb.org/intro_cecb.htm)

## (3) Environment Sustainability Index (ESI) 2011

The index aggregates indicators that reflect:

- anthropogenic activities of production, consumption and distribution that exert pressures on the environment,
- state of air quality, water quality, land use & agriculture, forests & biodiversity;
- measures of the impact of the current state of the environment and resource extraction on ecosystem and human health; and
- policy responses and society's efforts to preserve the environment.
- ESI is constructed as a composite index from 41 key environmental indicators selected using the Driving Force-Pressure-State-Impact-Response (DPSIR) framework. These indicators capture the driving forces that extract from and pollute the environment (Driving Force); depletion and pollution (Pressure); present condition of the environment (State), impact on the ecosystem and human health (Impact) and policy and societal efforts to reduce impacts and protect the environment (Response)

- ESI is designed to compare Indian States with their peers and does not indicate an absolute level of achievement. Although there are no clear normative benchmarks or thresholds for ‘good’ performance on many of the indicators, the sources on each indicator can be ordered from ‘better’ to ‘worse’. The overall ESI score provide a quick snapshot of State performance, the sub-indices are far more indicative and far more informative, highlighting areas for State intervention.
- Based on the aggregate ESI, states are categorized into five groups where Chhattisgarh in falls in the group with 20-40 percentile. This means State likely to experience increasing environmental problems unless appropriate.

• **Virendra Jakhar**

### VII. International Audit Report: Joint Environment Audit on the Drying up of Lake Chad.

Lake Chad is a large, shallow endorheic lake located on the African continent, in the Western part of Chad, on the edge of the Sahara desert was the fourth biggest lake in Africa in 1963 with a surface area of 25 000 km<sup>2</sup> (MBODOU, 2006). Situated in the Sahel region of Africa and bordered by four countries - Chad to the east (50%), Niger to the northwest (17%), Nigeria to the west (25%) and Cameroon to the south (8%), this lake was one of the largest bodies of fresh water on the African continent. The lake’s main inflow is the Chari River, which provides more than 90% of the lake’s water, coming in from the Southern part. The lake has no important outflows, losing water only through evaporation (95%), and through underground

leaking, its waters filtering into the Soro and Bodele depressions. The average surface area of Lake Chad has reduced to 1,350 km<sup>2</sup> in 2001 - a reduction of 95% compared to the levels of the mid-1960, as presented below (ODADA and others, Lake Chad - Experience and lessons learned brief, February 2006) due to various ecological and population pressures.

The geographical or drainage basin with its surface area of 2,381,636 km<sup>2</sup>, making out 8% of the African continent's surface, is shared by Algeria, Libya, Cameroon, Nigeria, Niger, the Central African Republic (CAR), Sudan, and Chad. The conventional basin or active basin, which falls under the Lake Chad Basin Commission (LCBC)'s jurisdiction, has about one million km<sup>2</sup> and the water is source shared by Cameroon, Nigeria, Niger, Chad, the Central African Republic and Libya.

#### ➤ **Ecological and Economic Significance**

The lake's surroundings have a vegetation mainly made up of wetland grasses (*Echinochloa Pyramidalis*, *Vetiveria Nigritana*), and more than 44 species of algae. The Lake Chad basin is famous for its diversity of fish and birds. The lake is a vital to the large number of animals and plants living in and around the lake, but also for more than 50 million people who live on its shores. It not only provides water for them, but it is also of economic importance, contributing to local's livelihood, offering enough for crops and livestock to survive as well.

#### ➤ **Ecological Threats**

The contributing factors to the shrinking of the lake according to the UN are governmental and local overuse of water, and the impact of pollution which led to the

shifting of rainfall to the South, causing the dryness of the area. Owing to inadequate ecological conditions, it has been shrinking for more than half a century, endangering the lives of the local population, flora and fauna. This dramatic shrinking is the result of poor human management, improperly designed and used dams, overgrazing, irresponsible irrigation, deforestation, and a dry climate. The water levels these days are very shallow, with an average depth of 1.5 meters, making the lake very sensitive to the shortage of rainfall in the area. The area was labelled an ecological threat by the United Nations Food and Agriculture Organization. Although the lake is a Ramsar site, part of the official convention which protects wetlands, it is still in serious threat.

#### ➤ **Conservation Attempts**

In 1964 the Lake Chad Basin Commission (LCBC) was formed by Cameroon, Chad, Niger, and Nigeria; the Central African Republic joined in 1994. The LCBC is charged with regulating the use of the waters of the lake and the basin for the development of livestock, crop, fishery, and water resources. It has also attempted to find ways to reverse the drastic decline in the size of the lake.

A Strategic Action Plan with a long-term vision of 20 years was adopted in 1998 to aid the vulnerable Chad Lake Basin. 50% of their budget was spent on operational activities, while the rest was spent on development.

Considering the ecological and economic value of the Lake Chad for the Societies dependent on the lake, the four (04) Supreme Audit Institutions (SAIs) of the riparian countries of Lake Chad, Cameroon, Chad, Niger and Nigeria decided to carry out a

coordinated environmental audit of lake Chad in 2012-13. According to INTOSAI standards, said joint environmental performance audit aimed to evaluate and report on the means used by the entities for efficiently managing their resources in the interest of economy and sustainable development, as well as the effectiveness of implemented programmes.

➤ **Why this Audit was important?**

The evaluation of LCBC initiatives relating to the sustainable management of water resources in the Lake Chad basin was considered necessary in view of the increased tendency towards continued degradation, over the past four decades, of natural resources in the basin, including water resources. At the same time, on the initiative of the riparian states or at the instigation of the LCBC Executive Secretariat, a mass of programmes, projects and actions involved considerable funding and all of the actors, but without any significant impact seen in water resources, a central element of the Lake Chad basin. On the contrary, Lake Chad has seen growing drying up and shrinking.

The objective of the coordinated environmental audit of Lake Chad was to:

- Verify how well riparian Countries comply with standards and good practices targeting the better management and use of Lake Chad basin water and resources;
- Evaluate, at the level of riparian Countries, the process of control, monitoring and enforcement practices and systems to achieve sustainable use of water resources in the LCB., and
- Verify whether LCBC, the transboundary organisations vested with the duty to

manage water use and development in the Basin, fulfilled its roles and responsibilities especially in terms of assessing and monitoring States' performances in the implementation of measures designed to control the Lake Chad basin water resources.

➤ **The scope of the audit covered:**

This joint environmental audit, oriented towards the evaluation of policies, strategies and actions at national level by public authorities of each riparian country of Lake Chad, and by the Lake Chad Basin Commission at regional level to highlight once again the importance and sensitivity of this unique freshwater body in the heart of the dry Sahara. Water quantity, the use of water resources (withdrawal / pumping, distribution, irrigation practices, dams), population settlements and human activities in the Lake Chad basin. Water resources management in Lake Chad. This included verifying the implementation of control, monitoring and enforcement practices and systems to ensure the proper use and sustainable management of water in the Lake Chad basin. Issues regarding water quality and pollution were however not included within the scope of this audit.

The scope also included the review of the working and reporting of the Lake Chad Basin Commission (LCBC). LCBC is a legal institutional body for the conventional lake Chad basin established in 1964 by the Fort Lamy Convention (current N'Djamena), signed by the Heads of State of Cameroon, Niger, Nigeria and Chad. Mandating for the coordination and promotion of sub-regional cooperation with a view to controlling and developing water resources.

The Joint Audit reviewed and took note of the National Audits conducted by the Supreme Audit Institutions of Cameroon, Niger, Nigeria and Chad, in their respective countries, and conducted this coordinated audit on the responsibility of ministries and other public bodies concerned with the sustainable management of Lake Chad water resources

➤ **Audit Methodology**

- Signing of a Memorandum of Understanding, by SAIs of four countries for effective cooperation and information sharing
- Criteria and effective selection of auditors, mentors and scientists
- Joint planning of the audit by auditors
- Capacity building sessions (training)
- Collection of audit data in each country
- Cross quality assurance of national reports
- Joint drafting of the joint report

The Audit teams also roped in the services of Hydrologists Geographers and other scientists in accomplishment of the task.

➤ **Common audit observations by joint audit in four riparian countries:**

The checks carried out as part of joint audit brought to light some good practices such as reforestation efforts, safeguarding and protecting land in the lake basin and restoration and protection of the vegetation as well as the natural environment of Lake Chad contributing to the sustainable management of Lake Chad, its tributaries and ecosystem in some of the four countries concerned. The audit effort led to bringing out following audit observations which were common for all four countries.

1. The coordination of the activities of ministries and other organizations of

riparian countries involved in the management of Lake Chad was not very effective and did not meet the reasonable expectations.

2. Policies and strategies for water resources management of the Lake Chad basin-

Absence of vital instruments for management of water resources hampered water management efforts undertaken by the transboundary organization LCBC and made it more difficult to subsequently harmonize policies, strategies, plans and tools to enable the sustainable management of water resources of the Lake Chad basin.

**3. User control measures**

- a. The measures for controlling users of water resources were not implemented.
- b. Control measures and mechanisms were not put in place for the occupation of land surrounding lake Chad and its tributaries, and for human activities resulting from it.
- c. Increase in illicit fishing practices (fishing channels) and in overgrazing, resulting from transhumant pastoralism outside of the dedicated areas, increased evaporation of rivers and other bodies of water.

**4. Water quantity monitoring measures**

Water quantity monitoring and surveillance programmes in riparian countries were non-existent, only partly functional, or no longer functioning because of the lack of maintenance and renewal.

**5. Measures for the enforcement of legislation and sanctions in case of infringement**

All four of the riparian countries enacted binding rules to control the major uses of

water resources, the protection measures provided for in the applicable legal and regulatory framework but were very poorly implemented.

#### **6. Raising awareness among users of water resources**

Activities of dissemination, popularization and awareness-raising among users, the population and other stakeholders regarding water resource protection measures in the Lake Chad basin area were inadequate or non-existent in the Lake Chad basin in the four riparian countries.

#### **7. Enforcing sanctions for violations relating to water resources management**

- a. Owing to lack of efforts and initiatives from the responsible ministries and organizations, sanctions for violations relating to water resources management were not enforced.
- b. The ministries and organizations involved could not ascertain possible infringements to the laws and regulations for the protection of water resources of the Lake Chad basin, this led to failure to hold offenders accountable, or to evaluate the effectiveness of rules enacted in order to see if they might be improved.

#### **8. Sufficient availability and proper management of resources allocated to development initiatives in the Lake Chad basin**

One of the major constraints imposed on the governments was the availability and allocation of sufficient human, financial and material resources for accomplishing activities that contribute to the sustainable

management of water resources of the transboundary basin.

#### **➤ Overall Conclusion of joint audit:**

The joint environmental audit, oriented towards the evaluation of policies, strategies and actions at national level by public authorities of each riparian country of Lake Chad, and by the Lake Chad Basin Commission at regional level, highlighted the importance and sensitivity of this unique freshwater body in the heart of the dry Sahara. The SAIs succeeded in drawing the attention of various stakeholders to the two main messages of the audit following here, based on the findings and recommendations made:

- a. On the one hand, with regard to the definition and effective implementation of policies, strategies, actions and instruments for the control of water users, the development of water resources monitoring and surveillance mechanisms, and the enforcement of protective legislation on these resources, the management and the future of Lake Chad had not been sufficiently taken into account to fall under the national priorities of the LCBC Member States.
- b. The LCBC for a long time orientated in its mandate, structures, strategies and actions towards various transboundary activities which might be important to the riparian countries of Lake Chad, but which did not give due consideration to the primary objective of its vocation as true transboundary basin organization, namely: the sustainable management of Lake Chad, a transboundary water resource. Consequently, the legal instruments guiding its actions, as well its financial and

human resources did not sufficiently help to achieve the primary objective, which was the lasting and sustainable management of the body of water, nourishing more than thirty million people.

➤ **Significance:**

There are many environmental issues which are of transboundary nature which need combined efforts from the Supreme Audit Institutions of the nations involved. These issues have to be dealt in through cooperative audits so as to do justice to the overall environmental concern involved in the given issue. This audit was one of the good examples where a regional environmental issue was taken up by SAIs for joint audit. There were national audit reports prepared for each country at the same time a joint audit report was prepared jointly which could provide a holistic report for all the stakeholders. The SAIs involved in this audit credited the success of this joint audit to multiple factors which among other things included mentoring by other external SAIs and fruitful partnership with some of the global agencies like GIZ and Common Cause Africa (CCAF). It was learnt that good negotiations and planning was necessary to achieve good cooperation agreement of SAIs. Further, good selection criteria for auditors enabled to have balanced, multidisciplinary and effective teams for the audit as well as developing soft skills and professional skills was necessary to achieve effective team work.

**Source:** [1. INTOSAI WGEA Co-operative Environmental Audit on the Drying up of Lake Chad conducted by SAI Cameroon, SAI Chad, SAI Niger, SAI Nigeria in May 2015](#)  
[2. Presentation by AFROSAI WGEA in 6<sup>th</sup> Seminar of ASOSAI WGEA.](#)

➤ **S. Prabhakar Rao**

**VIII. CAG Audit Report No. 03 of year 2016 on of Environmental degradation in the greater Guwahati area with special emphasis on the role of the Pollution Control Board, (PCBA) in State of Assam**

➤ **Introduction**

Guwahati is the largest and fastest growing city in the North Eastern (NE) Region of India. Home to approximately 10 lakh inhabitants, there has been a growing concern that pollution in and around the city is alarmingly high. Being the gateway to the NE Region, Guwahati has seen a constant influx of people from other NE States as well as other parts of the country in search of jobs and other means of sustenance. Commercial and industrial activities coupled with the pressure of an ever increasing human population have resulted in the generation of significant amounts of municipal waste, effluents as well as other industrial pollutants. Guwahati falls under the Kamrup (Metro) district which comprises Guwahati Municipal Corporation (GMC) area, North Guwahati Town Committee Area, Amingaon and a few revenue villages. The area known as greater Guwahati covers an area of 955 sq. km. The southern and eastern sides of the city are surrounded by hillocks which have become major targets of illegal encroachment and rampant stone quarry mining. Further, besides having the mighty Brahmaputra running through it, Guwahati is also home to many eco-sensitive swamps, marshes and water bodies like Deepor Beel, Silpukhuri, Dighali Pukhuri, Borsola Beel, Silsako.

➤ **Audit objectives:**

The objectives of the performance audit were to ensure whether:

- PCBA and concerned stakeholders complied with all Acts, Rules, Government policies and instructions for prevention, control and abatement of pollution.
- Effective mechanism was in place in the Government organisations and private entities, involved in prevention, control and abatement of pollution, to ensure that adverse impact of their processes and activities on the environment was minimised.
- There was periodical analysis of the impact of environmental degradation and remedial measures to overcome it were being implemented.

➤ **Audit criteria:**

The following were the sources of audit criteria for the performance audit:

- All related Acts, Rules like the Water (Prevention & Control of Pollution) Act, The Air (Prevention & Control of Pollution) Act, the Environment (Protection) Act, 1986, the Motor Vehicles Act, 1988 and the Central Motor Vehicles Rules, the Municipal Solid Waste (Management and Handling) Rules 2000, the Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008, the Plastic Waste (Management and Handling) Rules, 2011, the Batteries (Management and Handling) Rules, 2001, the e-waste (Management and Handling) Rules, 2011, the Forest (Conservation) Act, 1980, the Wild Life (Protection) Act, 1972, the National Environment Policy, 2006, the Biological Diversity Act, 2002, the Wetlands (Conservation and Management) Rules, 2010, the Guwahati Water Bodies (Preservation and Conservation) Act, 2008, the Ramsar Convention.

- Orders, instructions, guidelines, standards issued by Government, Central Pollution Control Board (CPCB), Hon'ble Courts etc.

➤ **Scope and methodology of audit**

A Performance Audit was conducted between June and September 2015 and covered the period 2010-11 to 2014-15. Records were examined at the Secretariat of the Environment and Forest Department, the offices of the PCBA and Guwahati Municipal Corporation (GMC). Information was also collected from the offices of the PHED, Jal Board, Health, Transport, Census, Agriculture, Water Resources, Ground Water Commission, Central Water Commission, Industry, Soil Conservation, Bio-diversity Board, Principal Chief Conservator of Forests and Guwahati Metropolitan Development Authority. The Audit methodology involved collection of data through document analysis, response to audit queries, questionnaires, joint physical verifications, joint collection of samples and photographic evidence. An advertisement was also put out in local newspapers and the website of the office of the Accountant General calling for public comments on the subject. Responses to the advertisement, Study Reports of different institutions / Scholars and of various implementing agencies of the Government of Assam were also examined.

➤ **Major findings:**

- The PA revealed that in spite of sufficient available funds there were huge arrears in mandatory inspections of industrial establishments and scientific analysis of air and water samples due to lack of focus on strengthening technical manpower for carrying out the essential inspections.

- Use-based categorisation of water for identification of various water bodies had not been done leading to risk of using unsuitable water bodies for drinking water. Further, only 24 out of 55 Water polluting Parameters identified by the Central Pollution Control Board were being monitored by the PCBA.
- PCBA had failed to prepare a Report and Action Plan for Bharalu river as directed by the CPCB in spite of the fact that Bharalu river categorised by the CPCB among the 35 most polluted river stretches in the country in terms of water quality criteria because of Dissolved Oxygen (DO), Bio-chemical Oxygen Demand (BOD) and Total Coliform (TC) levels far beyond the stipulated criteria indicating severe organic pollution.
- There was no Sewage Treatment Plant in the entire state of Assam resulting in untreated sewage being discharged from various generating points to natural water bodies thereby increasing the risk of organic and bacterial contamination in the water bodies.
- There was a shortfall of 68 per cent to 84 per cent in mandatory inspections of Industries conducted by the PCBA. In four out of nine industries jointly inspected along with Audit, effluent treatment plants were either not installed or not functioning resulting in discharge of untreated effluents containing oil, grease etc. into the water bodies.
- The PCBA was monitoring only three out of twelve air pollutants notified by the Central Pollution Control Board for being monitored. Besides, all air monitoring stations were located in residential areas whereas there was no station in high population/vehicular density areas or in commercial, industrial and eco-sensitive areas.
- Only 6 out of 35 highly polluting industries installed online Continuous Stack Emission Monitoring Systems and none of the units had installed the online effluent quality monitoring system till the deadline as mandated by CPCB expired in March 2015. The PCBA did not install necessary software and hardware for centralised data collection, analysis and corrective action.
- Pollution Under Control (PUC) certificates were issued without physical inspection of vehicles. Joint physical inspection of 9 out of 38 Pollution Testing Centres revealed that in four centres there were no testing machine/equipment while in other two centres, testing machine/equipment were available but were not in working condition.
- Even after 14 years of the enactment of the Municipal Solid Waste (MSW) Rules stipulating for authorisation by the State Pollution Control Board for creating a landfill, the GMC had not obtained such approval from the PCBA for the MSW landfill at Boragaon, located adjacent to the world heritage 'Deepor Beel' posing severe threat to the fragile eco-system of the Lake.
- 836 health care establishments (HCEs) were functioning without obtaining authorisation from the PCBA in violation of Bio-Medical Waste Rules. Besides, despite lapse of more than 12 years after the scheduled date prescribed in the BMW Rules, 56 HCEs in Guwahati neither had their own waste treatment facilities nor

had tie-up with other Common Bio-Medical Waste Treatment Facilities.

- PCBA was not in possession of information regarding the total quantity of hazardous waste generated in the State as out of 243 hazardous waste generating industries, 185 industries (76 per cent) were functioning without obtaining authorisation from the PCBA.
- Plastic carry bags of less than 40 microns were being sold/used openly in Guwahati city despite a District Administration ban as PCBA had not taken any action on 15 unregistered plastic manufacturing/recycling units.
- The sole battery dealer registered with the PCBA had sold 19.17 lakh new batteries but collected only 69 per cent of the used batteries against the requirement for collecting 90 per cent of the same, resulting in 3.94 lakh used batteries remaining unaccounted for.
- During 2013-14, 20.046 MT of e-waste was collected by five producers/bulk consumers and transported to other States for dismantling/recycling without the knowledge of the PCBA.

#### ➤ **Recommendations**

- The PCBA should prepare a time-bound action plan for use-based classification of surface water.
- Monitoring of water on all the parameters identified by the CPCB should be taken up on priority in order to have a proper assessment and reliable database of the quality of water.
- Action should be taken timely on defaulters.
- The PCBA should establish adequate air quality monitoring stations especially in

eco-sensitive and commercial areas and monitor all parameters as prescribed.

- Functioning of vehicular pollution emission testing centres should be reviewed and strengthened in co-ordination with the Transport Department. The testing centres should be regularly monitored and strict action initiated against agencies issuing inaccurate PUC Certificates.
- The PCBA should ensure that GMC obtains proper authorisation from them for management of MSW.
- Awareness Campaigns should be initiated by the PCBA to ensure that the general public is sensitised regarding scientific disposal of domestic waste.
- The Government must ensure that no HCEs, Veterinary Institutions and Animal Houses operate without authorisation of the PCBA so that the lives and health of humans and animals are not endangered.
- The PCBA should take penal action against the violators under Environment (Protection) Act.
- The PCBA should maintain updated information of all hazardous waste generating industries, recyclers, etc. and details of disposal of such waste.
- In order to ensure scientific disposal of hazardous waste, the PCBA should insist on installation of Common Treatment, Storage and Disposal Facility.
- The PCBA should take action against the unregistered plastic manufacturers in the State and ensure that carry bags less than 40 micron are not sold in the market.
- All handlers of batteries may be brought under the PCBA's registration network and strict monitoring of collection of used batteries ensured.

➤ **Conclusion**

The PA on environmental degradation in greater Guwahati area with special emphasis on the role of PCBA revealed that while there were multiple agencies responsible for compliance with various Environmental Laws and Waste Management rules, the State Government had entrusted with the PCBA the overarching control and monitoring of environmental issues. Overall the position of finances in the PCBA, which consistently showed excess of receipt over expenditure, suggest that the deficiencies brought out in the report could have been tackled with much more efficiency which would have helped the State of Assam curb the impact of environmental degradation much more effectively. The monitoring work of the PCBA also suffered due to lesser number of technical staff as compared to the non-technical staff strength. There was substantial shortfall in conducting inspections of even the highest polluting “Red” category industries. The Municipal Corporation was found to be discharging domestic effluents into water bodies without treatment. Several Industries, municipalities, healthcare establishments were found to be operating without valid authorisation. 56 out of 183 Health Care Establishments in Guwahati neither had waste treatment facilities nor tied up with other partners for Common Bio-Medical Waste Treatment Facilities. Handling and management of different kinds of waste was inadequate due to lack of active participation by all stake holders. The Board failed to take action against the defaulting individuals/organisations to ensure the implementation of the provisions of the Environment (Protection) Act, 1986 and Rules framed thereunder.

➤ **Significance:**

The ever expanding urban areas are vulnerable to the environmental degradation and are facing the threat of irreversible damages to their environment. The audit topic chosen for Greater Guwahati was very apt and timely which could bring out the issues for consideration of government and other stakeholders so as to have maximum impact of the audit effort. The report prepared as a standalone performance audit report achieves its purpose of making the subject more important to get the attention of the stakeholders as well as those who are responsible to take remedial actions in larger public interest. The idea of including pollution and issues related to all kinds of waste was also important so that all issues are handled simultaneously giving the holistic picture in respect of environmental degradation in urban setting. The urban areas in the country are growing at an exponential rates and the environment is at the receiving end due to population pressures and lack of planning, weak enforcement of laws, weak monitoring mechanisms which often lead to irreversible damage to environment. This kind of audits can be taken up for other urban areas which are in the similar phase of expansion and facing threats of environmental degradation.

**Source:** [Audit Report No. 03 of year 2016 on of Environmental degradation in the greater Guwahati area with special emphasis on the role of the Pollution Control Board, \(PCBA\) in State of Assam](#)

- **Vijender Singh Tanwar**

## IX. The future is “Digital”

The United Nations has adopted the agenda of *Sustainable Development* which is defined as development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. Its 3 dimensions are integration of economic, social and *environmental objectives*. *Digitization of the workplace will serve as one of the main initiatives which will help to achieve it.* To ascertain its impact, firstly, we

need to understand “What is meant by digitization?”

It is the conversion of information from paper format to binary data in the form of 0’s and 1’s and storage of the same in electronic media. It

minimizes but does not eliminate human interface in various processes. It has occurred in phases called “Generations”. From mainframe computers of the 1970’s which used to occupy one whole room, we have progressed to electronic devices which fit in the palm of the hand.

Government of India has launched the “**Digital India**” project on 1<sup>st</sup> July 2015, to transform the entire ecosystem of public services through the use of information technology, with the vision to transform India into a digitally empowered society and knowledge economy. It has 3 main vision areas viz creation of digital infrastructure, digital literacy & delivery of services. It has 9 pillars i.e. broadband highways (Bharat Broadband Network Limited), public internet access programme (Bharat Net Programme), mobile connectivity, e. Kranti (e-service delivery), e-governance, information for all, IT



for jobs, early harvest programmes, electronics manufacturing. It aims to increase the use of computers in all sectors of the Indian economy such as agriculture, health, and education etc. by 2019. It has schemes of around Rs. 1 lac crore which will cover all of India’s 600 districts & 2,50,000 villages (approximately). Leading national and international companies will be investing in it along with the government. The programme is to be monitored by the Digital Advisory Group – chaired by the Minister Communications & Information Technology.

Every citizen will have a digital identity (Aadhaar).

Our department also has to keep pace with these developments as it has been a cornerstone of the Indian democratic set up,

ensuring accountability of the executive to the Parliament/ legislatures and thus being an aid to governance. Its role has been consistently appreciated in several international fora. *Governance becoming more of e-Governance* using latest technologies, business and service models presents challenges and opportunities to the C&AG to play the role of an active catalyst for good governance. In simple terms, our auditee units are mainly government departments and if their records are maintained in the electronic form, then we have to develop the capability to handle them, to be able to audit them.

There are 3 main areas of IA&AD – accounts, audit and administration. In the accounts area, voucher level computerization was implemented in various offices across India around one and a half decades ago. It streamlined the process of preparation of the

monthly civil accounts of the State Governments by our AG (A&E) offices & the Finance & Appropriation Accounts too. Now IFMIS (Integrated Financial Management Information System) is being implemented across states which aims to computerize state treasuries. In it, e-vouchers will be received in the AG (A&E) offices.

In audit, there are 2 issues i.e. audit of IT systems & audit in an IT environment. To audit IT Systems of our auditee units, we follow the COBIT (Control Objectives for Information and Related Technologies) framework for IT governance and management. To audit in an IT environment, we need to understand the IT systems of the auditee unit & assess if they are able to fulfill the organizational needs and objectives.

In administration, we have started the BEMS (Budget Expenditure Management System), whereby all bills etc. are cleared and budget management is done in an IT environment.

In order to have a streamlined approach in this regard, the department has adopted a Big Data Management Policy for Indian Audit and Accounts Department (February 2016) and has created a Centre for Data Management and Analytics (CDMA) (June 2016). The centre aims to address the need for synthesizing and integrating relevant data from various sources and in various formats to transform data into actionable information using analytical techniques, along with creating capacity to address the major challenges in analytics of relevant data, thus, increasing efficiency and effectiveness of audits. Data Analytic Groups

have been set up in all field audit offices to steer work related to data analytics. A capacity development programme has been undertaken to enhance the skills on the same. Simultaneously, the field audit offices are also being equipped with necessary hardware and software for building up enabling capacity to carry out data analytics.

The impact of digitization is huge and widespread. It will unleash an e-revolution in the country. It has both pros & cons. The pros are that it promotes the 3 Es i.e. economy, efficiency & effectiveness. The whole of India including its 2,50,000 villages can be connected via internet, giving access



to the latest & a large volume of information. The travel times and costs will be saved, as administrative tasks such as applying for a license etc. can be done at the click of a button. It will ensure equity and act as a bridge between the urban and rural areas. Access to public services & employment opportunities will increase, as industries will be set up for manufacturing electronics (make in India) and jobs will be available in the IT Sector (Skill India). Also a paperless office, contributes to the *environmental wellbeing* as deforestation decreases and the pollution due to paper industries also diminishes. It will provide officers with a cleaner and greener environment for work (Swachh Bharat Abhiyaan).

The cons are that it impacts physical health due to overuse of computers. Also people spend too much time using computers leading to social isolation and misuse of internet. However, any scientific progress has both

positive and negative effects and it depends on the manner of usage i.e. whether we use it or abuse it.

It is evident from the events all around that ***the future is digital***, thus to ensure smooth execution, many aspects at different levels have to be covered. At the national level, the legislative framework has to be strengthened to keep pace with the challenges raised by the new technological developments (IT Act 2000) to ensure security of data and privacy of citizens. Policies have to be framed to encourage both hardware manufacturing and software companies to increase export. The educational institutions have to be set up to train manpower to enable to harness India's demographic dividend using the IT sector. At the organizational level, the compatibility of file formats, stability of IT systems, longevity of the digital documents and data security have to be ensured. Thus, to sum it up, we all have to come together, to make this endeavour a success and realize the dream of India of not only joining the developed countries' club but also to make it an all-inclusive development journey.

- ***Sumedha Amar, IA&AS***

