सत्यमेव जयते

A Compendium of New Initiatives and Good Practices in the CAG's Institution

SUPREME AUDIT INSTITUTION OF INDIA

लोकहितार्थ सत्यनिष्ठा

Dedicated to Truth in Public Interest

2022

Girish Chandra Murmu

Azadi Ka Amrit Mahotsav

Foreword

In continuation of our effort to showcase the various initiatives in the CAG institution, I am happy to present the second edition of the Compendium of New Initiatives and Good Practices, "The Catalysts - in pursuit of Good Governance".

This Compendium showcases our innovative efforts using technology and business process re-engineering to drive outcomes. There is a particular focus on capacity building; audit methodology, use of technological tools in our processes; business process re-engineering in auditing and accounting; and engagement with stakeholders.

Through this Compendium, we hope to connect with our stakeholders and showcase the dynamism and zeal of our personnel, who strive tirelessly and innovate to keep pace with fast-evolving technology and governance structures. In addition, we hope that sharing these initiatives and good practices in the CAG's organization will further our outreach to society and serve as a guide for Offices within the organization to replicate these initiatives.

(Girish Chandra Murmu)
Comptroller & Auditor General of India

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NATURAL RESOURCE ACCOUNTING

The cause for Sustainable Development as the organizing principle for meeting human development is well established and recognised. It is also an accepted fact that standard accounting procedures tracking the growth of economy fail to account for the environmental costs of the growth, the depletion of the natural resources or its deterioration.

Therefore, CAG took the initiative to handhold all the States and a Union Territory (UT) to create Natural Resource Accounts for their respective jurisdictions. CAG also released a Compendium of the Natural Resource Accounts of all the States and a UT for the year 2020-21.

Strides in Natural Resources Accounting
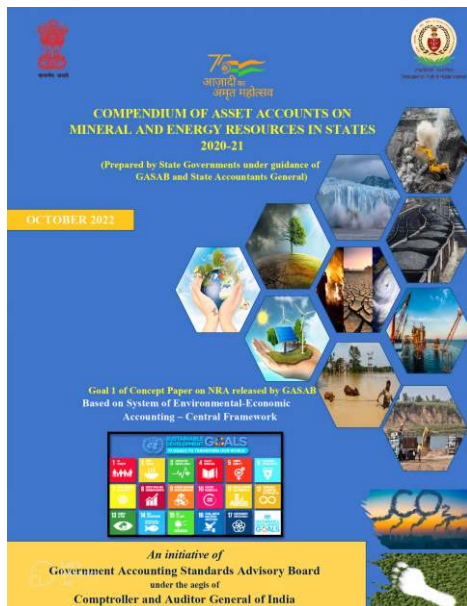
A good example of CAG Institution working proactively in an area of international importance to aid the Government is our efforts in the nascent field of Natural Resource Accounting (NRA). Inspired by the direction of Honourable Prime Minister to rediscover ourselves as CAG 2.0, we set out to aid the government by developing the concept of NRA, and then to hand hold the 28 states and the Union territory of J&K to prepare the asset accounts which was topped by releasing a value added Compendium of NRA, despite various challenges. We conquered unchartered territory and achieved our target, despite various challenges including the pandemic.

Conventional accounting is limited by the fact that it considers only measurable economic activity and does not consider the impact on any other factors like environment. On the contrary environmental statistics address only certain objectives and does not give the complete story. The sustainability of resources or the value of the stock and flow of resources are missed out when we focus on one system or the other.

NRA, on the contrary, is a system which captures the dynamic interplay between the natural environment and the economy. It measures both the value of the resources used in the economic production along with the cost incurred in the environmental sphere, including the cost of remediation and mitigation of damages, to arrive at the true economic cost benefit. This would enable better management of resources and to take more informed decisions ultimately leading to sustainability and measurement of green GDP.

The United Nations developed a System of Environmental-Economic Accounting – Central Framework (SEEA-CF) in 2012. It lays down a four stage process which is as follows:

• Asset accounts resource wise in physical and financial terms of the stocks including changes

• Supply and Use tables in Flow terms, covering again both the monetary and physical values

• Economic Accounts showing depletion adjusted economic aggregates

• Functional Accounts including transaction level details and environmental implications.

The United Nations General Assembly adopted an 'Agenda for Sustainable Development', consisting of 17 Sustainable Development Goals (SDGs) to help streamline development of actions for greater human well-being, while leaving no one behind – by 2030. India is one of the more than 190 countries, which had signed up for implementing SDGs. Six of these goals have a direct or indirect nexus with the SEEA-CF, as they relate to the management of natural resources.

India needed to develop a robust system of NRA, to help manage its natural resources. The existing system did not have an integrated framework of economic accounting and environmental costs, and only physical statistics were available for natural resources. To address the gap, and to aid India in its quest to achieve progress on SDGs by the target year of 2030, the institution of CAG decided to step in.

The Government Accounting Standards Advisory Board (GASAB) under the auspices of CAG's institution came out with a Concept Paper on NRA in July 2020, which set out action plans in convergence with the SDG target of 2030. GASAB formed a Consultative Committee comprising eminent subject matter experts, members of stakeholder ministries, regulatory bodies, and academia to prepare the Concept Paper. It also envisaged short, medium and long term goals in consonance with the four stage strategy suggested by the SEEA-CF of the United Nations, as below.

Short term goals	Mid-term goals	Long term goals
• Preparation of Asset Accounts on Mineral and Energy Resources in States • Initiation and preparation of disclosure statement on revenues and expenditure related to natural resources *(2019-20 to 2021-22)*	• Preparation of National Asset Accounts on Mineral and Energy Resources • Preparation of Asset Accounts in respect of other four resources namely water, land and forestry & wildlife resources in the States • Preparation of supply and use tables in physical and monetary terms showing flow of natural resource inputs, products and residuals *(2022-23 to 2024-25)*	• Preparation of the economic accounts highlighting depletion adjusted economic aggregates; and • Preparation of functional accounts recording transactions and other information about economic activities undertaken for environmental purposes. *(2025 - 26 onwards)*

On the basis of this Concept paper, CAG's institution and GASAB decided to prepare the asset accounts on Mineral and Energy Resources to complete the Short Term goal envisaged in the concept paper by the due date of 2021-22. In order to do so, it required to coordinate the actions of all the 28 states and the union territories of the country to prepare detailed asset accounts of the important Mineral and Energy Resources available in their respective territories.

How can CAG help in NRA?

CAG is uniquely positioned to play a critical role in the preparation of environmental accounts as it has both the knowledge and capacity to use international best practices as well as institutional reach with its presence in all the states, where its mandate includes both audit and accounting. Therefore, CAG played a vital role in hand holding the officers/staff of the state government to assist in the preparation of natural resource accounts. It did so by a combination of steps, commencing with developing a concept paper, then coming out with the templates, prescribing a robust process and by handholding and monitoring the progress in all the states and the UT of Jammu and Kashmir.

The steps involved in the implementation of NRA in India, led by GASAB, is depicted as follows.
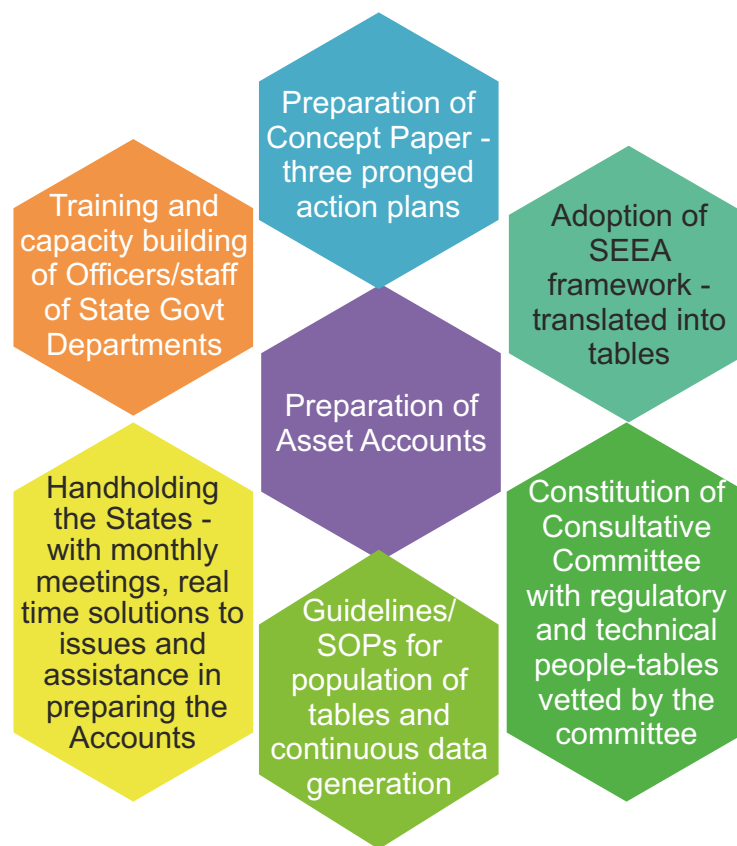
GASAB succeeded in leading all 28 States and the UT of Jammu & Kashmir to build their first Asset Accounts on Mineral and Energy Resources for 2020-21, through the above robust methodology. While the process covered in all 40 major minerals, 63 minor minerals and four fossil fuels, each state was allowed to pick the most significant minerals found and exploited in its area and then prepare the asset accounts, initially for the year 2020-21.

Based on these Asset Accounts prepared by the States, GASAB came out with a Compendium of Asset Accounts on Mineral and Energy Resources - henceforth called the NRA Compendium, containing the stock and flow of resources across States. The overall State-wise position of stock and flow of significant major minerals commencing with the opening stock, additions, and extractions during the year, and closing stock at the end of the year 2020-21 are available in the compendium. State-wise position of major extractors and availability of resources at the end of the year are also depicted in various tables.

The flows and depletion rates of resources were also used to work out their sustainable life and other significant factors like revenues vis-à-vis market values and collections of their district mineral foundations.

An example of the details available in the compendium is the abstract presented below of the Fossil fuels:

Stock and flow	Break-up	Coal	Lignite	Crude Oil/Petroleum	Natural Gas
No of States involved		14	4	7	7
				In million tonnes	In million cum
Opening Balance		1,03,017.95	7,951.31	916.26	3,05,539.73
Addition		2,614.34	0	2.50	4,409.96
Extraction	Govt. Sector	479.64	26.79	14.47	6,739.11
	Private Sector	115.65	21.82	0.25	1,622.30
	Illegal/Others	1.48	0	0.015	10.43
	Total	596.77	48.61	14.75	8,371.84
Closing Balance		1,05,035.91	7,902.68	904	3,01,577.85

Note : The minor variation in closing stock is due to variations in stock and flow reported by the states.

The state wise details are depicted below:

Extractions in million tonnes

Coal (major extracting States)
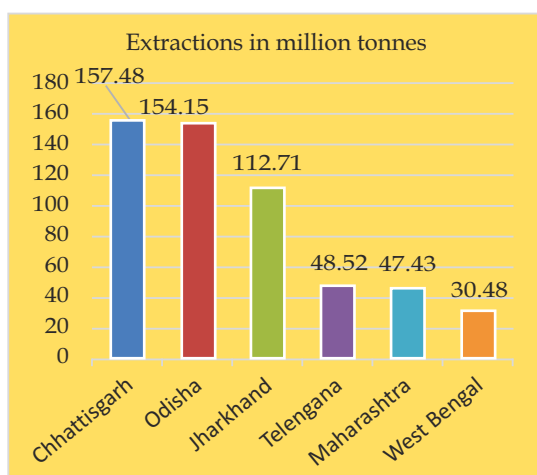
Extractions in million tonnes
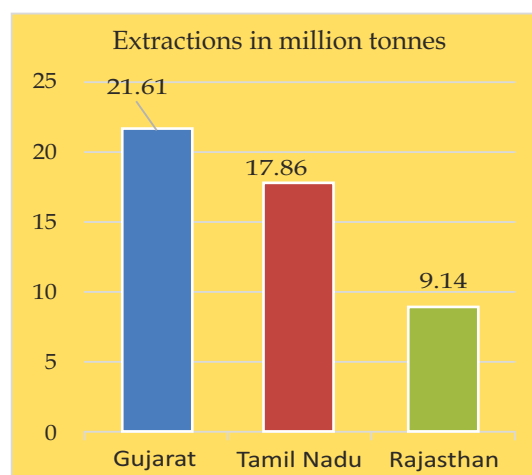
Lignite (major extracting States)

Extractions in million tonnes
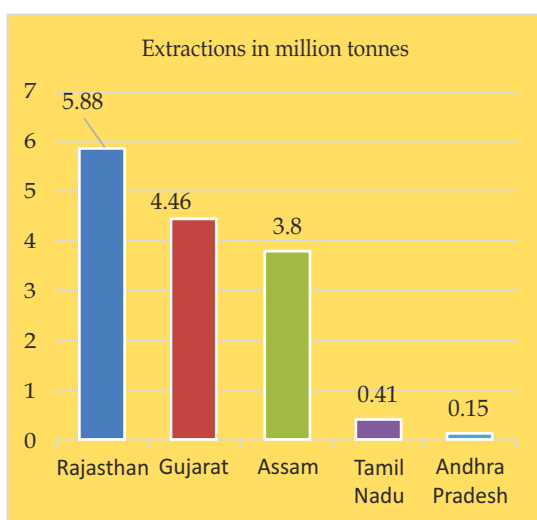
Crude Oil (major extracting States)

Extractions in million cum
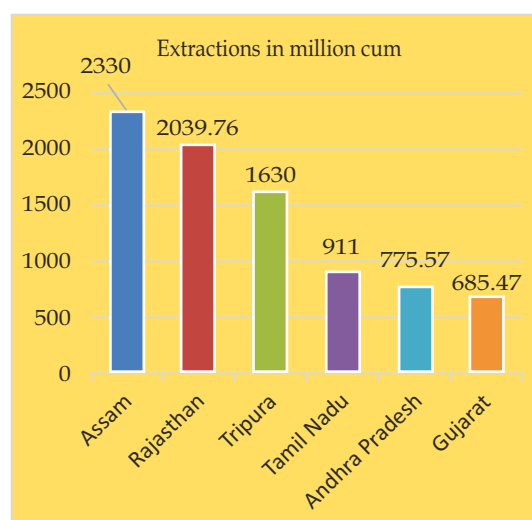
Natural Gas (major extracting States)

Innovative Approaches and Good Practices

Several innovative approaches and good practices were observed during the study ranging from amendments in the statutes, development of mining surveillance system and efforts to geo-tag and geo-fence the mining areas by the Ministry of Mines, Government of India and States. Other innovative methods included deployment of drone technology in detection of illegal mining, satellite based monitoring methodologies to control and monitor mining activities, IT enabled monitoring of mining and usage of resources. These case studies were highlighted in the NRA Compendium to enable sharing of best practices and its proliferation.

Some observations during the Study

The NRA Compendium also brought out several salient points of interest, which would enable the decision makers to act proactively to improve the management of the natural resources. These include

- The life of the reserves based on the stock and flow statistics were made available. Several resources in States are vulnerable as the present level of proven reserves would completely deplete in less than 10 years.

- Variations between figures of State Government Departments and those reported by the lessees to the Indian Bureau of Mines were noticed.

- The States were not capturing the entire gamut of mining activities commencing from extraction, production and dispatch. This denied the States the advantage of monitoring production loss claimed by the lessees as also production vis-à-vis extraction of ore.

- Most of the States were not capturing the grades of minerals produced, though royalties are based on the grades. This made it difficult to monitor the production grade-wise and revenue collection.

- Variations between the royalties and average market prices of produces were captured through the Asset Accounts which require study to ensure timely revision of royalties to bring it in line with realisable value.

- Many States were not maintaining datasets on illegal mining and recovery of penalties therefrom. Many cases of non-capturing of name of mineral, volume and royalty involved, penalty charged, short charging of penalty etc. were observed.

- All States have not yet completed the geo-tagging and geo-fencing of mine areas.

- There were gaps in realisation of district mineral foundation contributions.

Way Forward

Chapter VII of the NRA Compendium contains three Sections in which the way forward has been identified. These are briefly summed up below:

Section A: There is a need to make concerted efforts to fine-tune the existing systems and processes. Few areas needing attention are discussed in this Section.

Section B: There is need to leverage technology to develop new systems which will enable capture of data at point of origin in a comprehensive and reliable manner on a regular basis.

Section C: A complete mapping of supply and use of resources for 360 degrees profiling of mineral extractions till their end use is suggested for better management of available resources and optimise revenue realisations and ensure sustainability of resources for the future generations.

Continuity Plan

In order to enable states to prepare asset accounts in a sustained manner, GASAB has developed Guidelines/SOPs to implement quarterly reporting framework for collecting and collating data/inputs from the last level, i.e. district mining offices which can then be developed into a database. This will ease the process of preparation of Asset Accounts in future years. GASAB has also suggested mapping the supply and use for better management of the resources and their sustainability and optimising revenues for the States.

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the report

http://gasab.gov.in/gasab/pdf/Compendium-of-Asset-final.pdf

STRIDES IN AUDIT METHODOLOGY AND INSTANCES OF NOVEL AND IMPACTFUL AUDITS

Audit is conducted in the CAG Institution according to the methodology set out in various Regulations, Standards and Manuals. Audit methodology is continually evolving and it is shaped by strides in technology, remote access to data and analytics capabilities for gathering and analysing evidence.

This section showcases instances of advances in audit approach adopted by a few Offices and their impact.

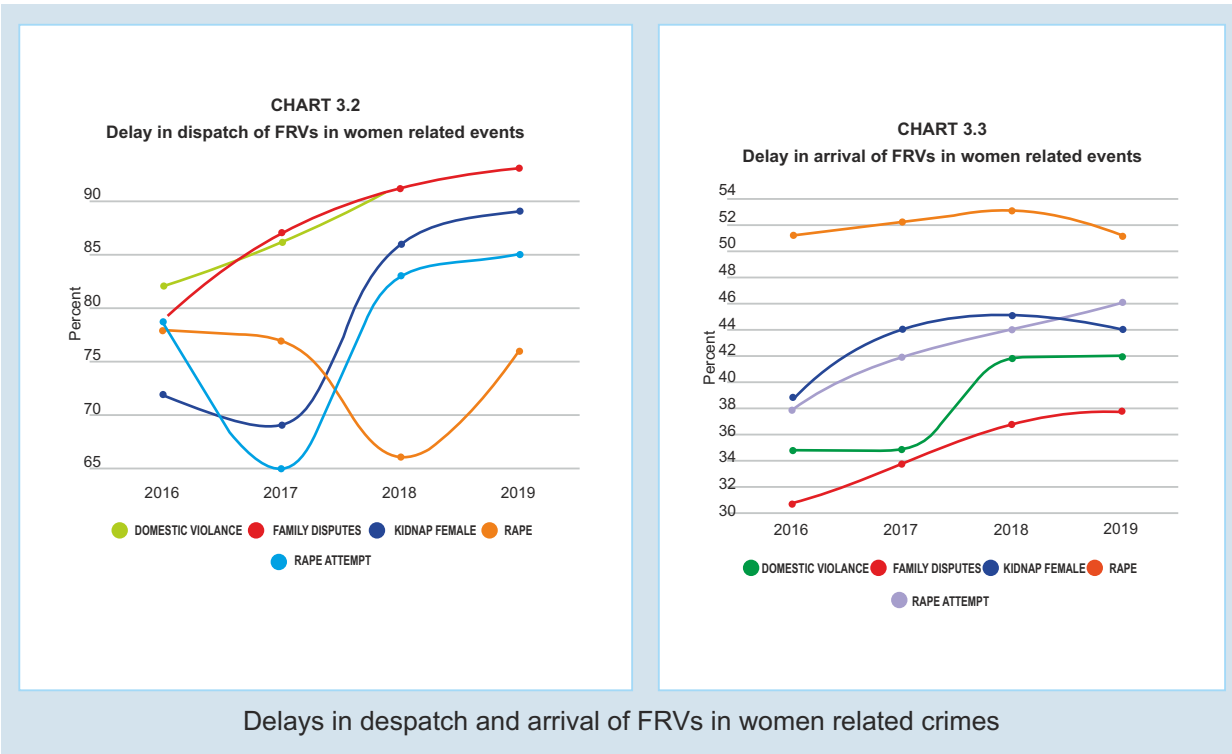# Performance Audit of Dial 100 Emergency Response System

The Government of Madhya Pradesh undertook Dial 100 Emergency Response System (DERS) project with effect from the 1st of November 2015, to upgrade and provide a centralized emergency 24x7 response system from the police to distress calls. The call centre, a fleet of First Response Vehicles (FRVs) and technical assistance was outsourced to the System Integrator by the police department. Once implemented, the FRV was expected to reach the site within five minutes of a distress call in urban areas and within 30 minutes in rural areas.The Office of the **Principal Accountant General, (Madhya Pradesh)** took up a performance audit of the Dial 100 Emergency Response System during which joint physical verification of 103 FRVs in eight districts was conducted and 4TB data dump was taken from the auditee and analyzed centrally. Records maintained at eight out of the 52 district Police Control Rooms for the period from November 2015 to March 2020 were also examined.

Audit noticed the following important issues:

- The Department did not provide adequate number of police personnel in the FRVs despite surplus manpower in certain districts.

- Dispatch within three minutes of a call was achieved in less than 22 per cent of the calls.

- The average response time in DERS was 24 minutes in urban areas and 56 minutes in rural areas.

- FRVs reached the scene within five minutes in less than 13.2 per cent of the calls during 2016-19 in urban areas

- FRVs reached the scene with delays ranging from 31 to 720 minutes. These included serious events like rape, domestic violence, and kidnap of female etc.

- The model did not provide for scale up of deployment or redeployment of FRVs on important days – such as New Year, Holi and Diwali – as Audit analysis showed that there was an upsurge of distress calls and consequent delays in arrivals.

- Transparency was not ensured in tendering. The Project consultant did not disclose a potential conflict of interest with the selected bidder and remained actively engaged in the selection process. The evaluation criteria were tweaked to alter the preferred bid at the final stage of selection of the Project Management Consultant.

- FRVs were deployed on a simplistic assumption of one FRV per police station, without considering factors like traffic, road conditions, crime rate and geographical conditions.

- Out of every 100 calls, only 20 were categorised as actionable and out of these actionable calls only two had valid data to support the dispatch of a FRV.

- The revamped system was to benefit from the use of technical equipment such as Mobile Data Terminals to be fitted in the FRVs. These were either not fitted or not functional and when functional, the police personnel did not feed data in the requisite sequence.

CHART 3.2
Delay in dispatch of FRVs in women related events

Percent

	2016	2017	2018	2019

Legend: ● DOMESTIC VIOLANCE ● FAMILY DISPUTES ● KIDNAP FEMALE ● RAPE ● RAPE ATTEMPT

CHART 3.3
Delay in arrival of FRVs in women related events

Percent

	2016	2017	2018	2019

Legend: ● DOMESTIC VIOLANCE ● FAMILY DISPUTES ● KIDNAP FEMALE ● RAPE ● RAPE ATTEMPT

Delays in despatch and arrival of FRVs in women related crimes

Audit concluded that due to deficiencies in system design and implementation, the department failed to achieve the project objectives of reaching the site of distress call within 5 minutes and thirty minutes, in case of urban and rural areas respectively. The department accepted the audit findings and assured to act on all the recommendations in Phase-II of the DERS.
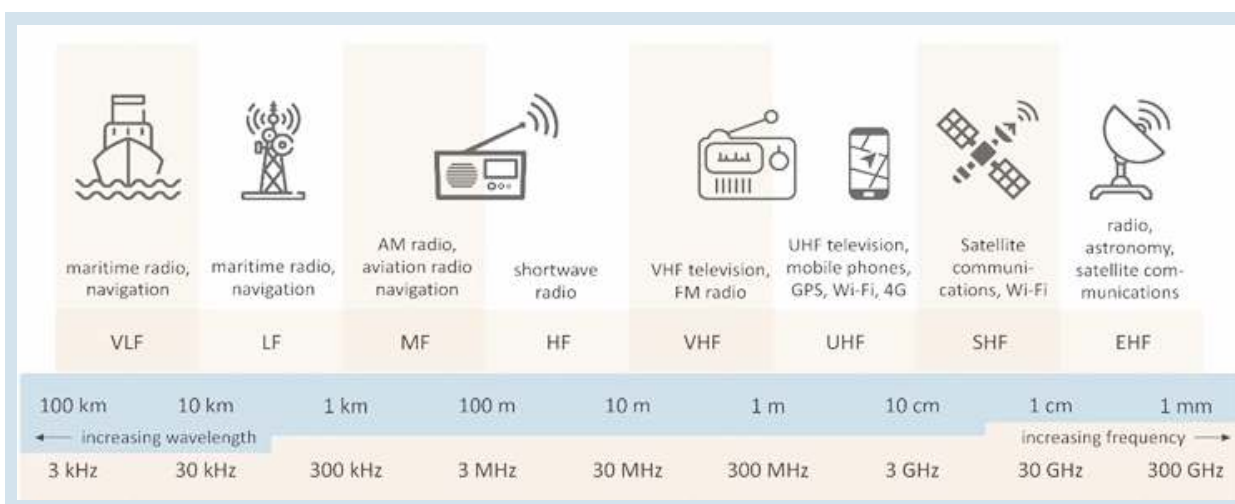
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Integrated Approach in Audit of Spectrum Management

Spectrum as an economic resource is unusual in that it is both non-exhaustible and non-storable, although it may become increasingly congested. It is essential to use these scarce resources rationally, optimally, efficiently, and economically so that equitable access could be available to large radio communication networks in an interference free radio environment.

Spectrum Management involves regulatory, administrative, supervisory, and specialized technical procedures necessary to ensure the efficient operation of radio communication services. The Nodal agency is required to balance the demands of government users and private service providers. Government departments use spectrum for providing national public services, whereas private players contribute towards value-added services.

DoT requested CAG (October 2020) to audit the utilization of Spectrum allotted administratively to Government Ministries/ Departments/ Agencies. **The Office of the DGA (F&C), New Delhi** adopted a new approach by involving audit offices of Ministry of Defence (MoD), Department of Space (DoS), Ministry of Information & Broadcasting (MIB), Ministry of Home Affairs (MHA), Ministry of Railways (MoR), selected PSUs namely Oil and Natural Gas Corporation (ONGC), Indian Oil Corporation (IOCL), Gas Authority of India Limited (GAIL) and Airports Authority of India (AAI) to audit the Management of Spectrum.

Government Ministries/Departments/Agencies have been assigned spectrum administratively in important International Mobile Telecommunication (IMT) bands, as well as non IMT bands. IMT bands are in great demand owing to its utility for providing Telecom Access Services (communication services) to subscribers. Thus, audit focus was on assessing the management and utilization of important IMT bands' spectrum. Departments having the highest spectrum allocation and frequency assignment in important IMT bands were selected based on examination of data on Department-wise administrative spectrum assignment by Department of Telecommunication (DoT). 100 per cent coverage of IMT bands was ensured since such bands have great commercial utilisation and value.

		AM radio,			UHF television,	Satellite	radio, astronomy,
maritime radio, navigation	maritime radio, navigation	aviation radio navigation	shortwave radio	VHF television, FM radio	mobile phones, GPS, Wi-Fi, 4G	communi-cations, Wi-Fi	satellite com-munications
VLF	LF	MF	HF	VHF	UHF	SHF	EHF
100 km 10 km		1 km	100 m	10 m	1 m	10 cm	1 cm 1 mm
← increasing wavelength						increasing frequency →	
3 kHz 30 kHz		300 kHz	3 MHz	30 MHz	300 MHz	3 GHz	30 GHz 300 GHz

Virtual workshops were held with all participating offices to explain the subject of audit focus and technical background. This enabled the audit teams to acquaint themself with the salient features of Radio Frequency Spectrum, spectrum bands, and IMT. Further, the office hired a Technical Advisor (retired Wireless Advisor) to assist the audit teams in understanding the nuances of the topic. International best practices in Spectrum Management adopted in the USA and the UK were studied and discussed with the auditee to understand the preparedness and future strategies in Spectrum Management w.r.t sharing of spectrum bands, spectrum relocation fund, pricing methodology, etc.

Important Findings:

- Spectrum allotted/assigned to Government Departments in majority of Bands like 470-646 MHz, 700 MHz, 900 MHz, 1427-1500 MHz, 1800 MHz, 2100 MHz, 2300-2400 MHz, 2500-2690 MHz, 3300-3670 MHz, 24.25-28.5GHz was found to be either sub-optimally utilized or not utilized at all for years together for various reasons.

- Sub optimal utilization of spectrum by Railways in 900 MHz band allotted for its GSM-R based Mobile Train Radio Communications (MTRC) system.

- Non-functioning of Automated Spectrum Management System (ASMS) leading to deficiencies in database and monitoring of spectrum users.

- Bandwidth capacities on GSAT 29, GSAT 19 and GSAT 11 remained idle for long periods since their launch in June 2017, November 2018, and December 2018 respectively.

- Use of outdated Analog Terrestrial Television (ATT) for transmission of video and audio by Ministry of Information and Broadcasting underscored showcasing its poor audience coverage and under-utilized spectrum.

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1 Key documents is used in audit methodology to obtain assurance that key facts used in audit are backed up by documentary evidence. (This evidence is called KD).

Impact:

- Action on recommendations of working groups have been expedited.

- Cabinet approval was obtained for spectrum auction in the IMT bands highlighted by audit for non/underutilization. Spectrum surrendered by ONGC was put up for auction in July 2022.

- Policy formulation for allotment/assignment of spectrum for uses other than commercial use by Telecom Service Providers is under active consideration.

- Railways has agreed to vacate Spectrum in 900 MHz band after rollout of Long-Term Evolution (LTE) based network.

- The case for waiver of Spectrum charges from Defence is under Consideration at the Highest Level.

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Audit of Administration of Nazul Lands in Delhi under L & DO

T he Land &Development Office (L&DO), Delhi, an attached office of the Ministry of Housing and Urban Affairs, is responsible for administration of leasehold properties of the Government of India (GoI). These properties include Nazul Lands (lands acquired in the year 1911 for the formation of capital of India at Delhi) and Rehabilitation Lands (lands acquired by the GoI for speedy rehabilitation of displaced persons from Pakistan). Nazul Lands covering a total area of around 20,000 acres, includes prime localities at the heart of Delhi like Connaught Place, Chanakya Puri, Jor Bagh, Golf Links, Sunder Nagar, Defence Colony etc. These properties are given on lease for residential, commercial and institutional purposes.

The Office of Principal Director of Audit, Industry & Corporate Affairs, New Delhi carried out compliance audit of Administration of Nazul Lands under Land and Development Office (L&DO) in Delhi. Audit of L&DO was challenging as vital records were not provided; files were too old (100 years or more); and several replies provided to audit queries were doubtful/incorrect. The Office overcame these difficulties by scanning various documents; visiting sub-registrar offices and by conducting physical verification of sites.

The audit team was able to work from home even during peak covid-19 pandemic, as scanned documents were available with them. Further, to verify details of the properties, the audit team
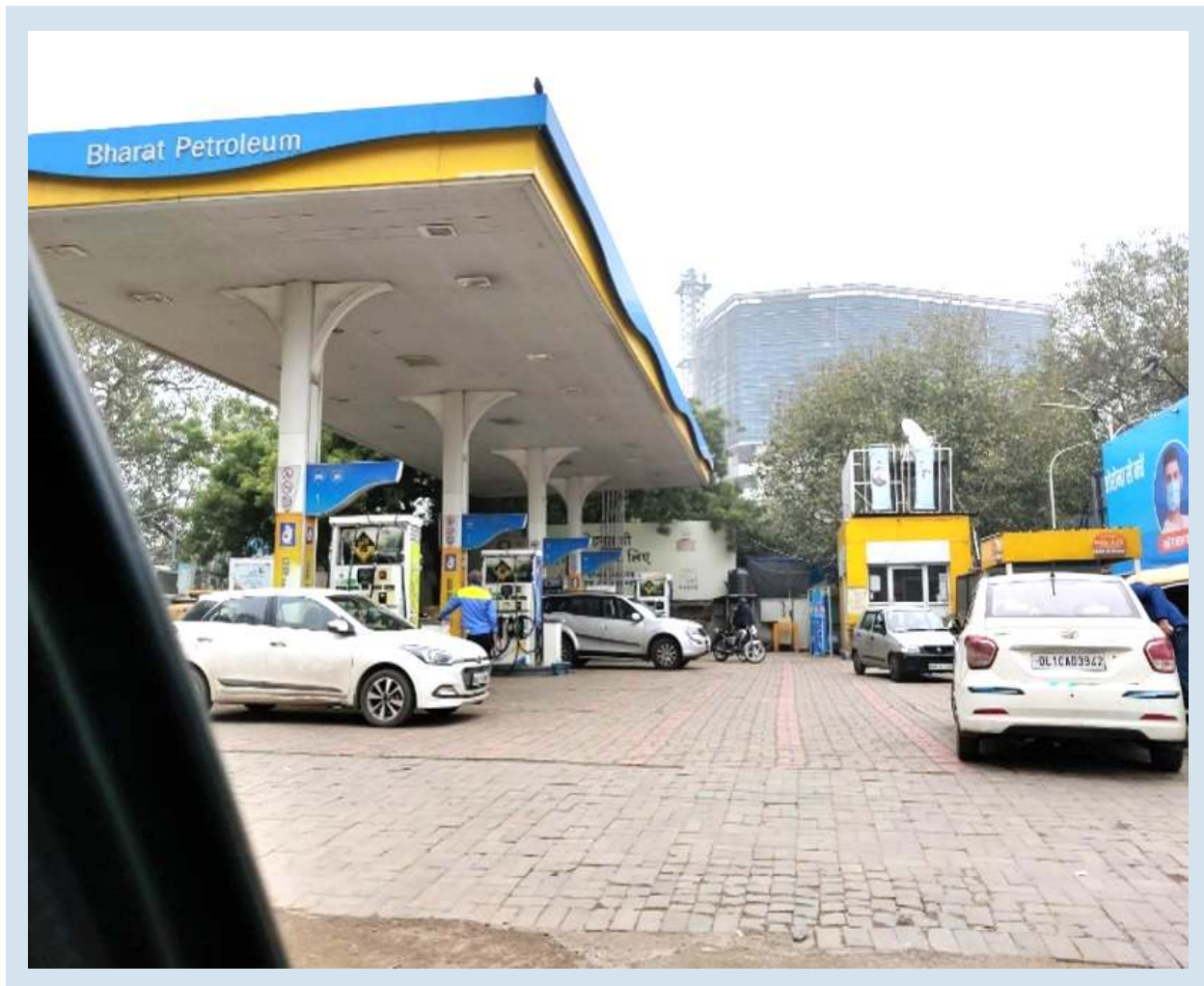
visited Sub-Registrar offices which helped in bringing out significant audit observations.

Several statements given by the L&DO to audit appeared to be incorrect and these were verified by adopting innovative methods. Some such instances are given below:

a. In case of Krishna Filling Station at Minto Road, L&DO replied that after the allotment in 2008, the petrol pump was not functional due to land use and other issues. An audit team member visited petrol pump (January 2021) as a customer and found it to be functional at the site.

b. In case of VIMHANS hospital, Lajpat Nagar, L&DO replied that in view of non-compliance of EWS condition (free treatment to EWS category patients in hospital) since 2003-04, possession of the property was taken over back by L&DO. An audit team member booked an online appointment for treatment in VIMHANS hospital and found that the hospital was in operation as appointment for Out Patient Department was given.

Impact

During Audit, it was noticed that Sub-registrar office (responsible for registering the property) and L&DO were working in complete isolation whereas their functioning was interdependent in respect of properties where L&DO was the lessor. Properties were changing hands from the lessee to buyers without the knowledge of L&DO.

L&DO did not devise a mechanism to ensure the availability of information regarding the registration of properties. This not only resulted in financial losses on account of unearned lease but also led to sale of properties to private parties with impunity. As a result, Sub-registrar offices were not in a position to identify the properties belonging to L&DO and leased properties of L&DO were sold without its knowledge.

L&DO, based on audit finding, has directed the Sub-Registrar Offices that no L&DO property leasehold/freehold shall be registered (sale deed, agreement to sale etc.) without obtaining the No objection Certificate from L&DO.

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Performance Audit Report on Land Acquisition and Allotment of Properties in NOIDA - A New Initiative

The Government of Uttar Pradesh (GoUP) constituted the New Okhla Industrial Development Authority (Authority) in April 1976 under Section 3 of the Uttar Pradesh Industrial Area Development (UPIAD) Act, 1976 with the object of creating a planned, integrated and modern industrial city, well connected to Delhi.

In July 2017, the GoUP entrusted audit of the Authority to the Comptroller and Auditor General of India (CAG) and thereafter appointed CAG as the sole auditor for the period from 2005-06 onwards. The media has been highlighting deficiencies in the working of the Authority. There were also public complaints highlighting irregularities in its working and execution of development works were under the scanner of CBI. The Performance Audit of Land Acquisition and Allotment of Properties" in NOIDA was undertaken by the **O/o The Principal Accountant General (Audit-II), U.P., Lucknow** in this backdrop.

The audit covering the period 2005-06 to 2017-18 focused on acquisition of land and allotment of properties. The Performance Audit Report pointed out losses of over Rs. 50,000 crores to the Government and the Authority. Further, allotments worth Rs. 34,000 Crore were found to be ridden with one or more irregularity.

The conceptualisation of audit was demanding as the audit was to be done for the first time and that too, covering a period of 13 years. To compound the issue, the Authority had an autonomous position, with its own set of work regulations. Further, Audit had to cover the entire gamut of decision making from inception of regulatory orders to actual implementation. To meet the challenge, a representative sample was selected covering each category in terms of Land use like Agriculture use, Commercial Use, Industrial Use and Institutional Use and sub-categories under them and in areas where significant discrepancies were noticed, the examination was extended beyond the sample. Data from other Departments and agencies like the Registrar of companies, UPRERA (Uttar Pradesh Real Estate Regulatory Authority) and U.P. Corporation Limited, the Mining Department and Stamp and Registration Department of the state was also utilized. Satellite images were obtained from ISRO and joint physical verification of selected sites with NOIDA officials was conducted.

The audit findings point to serious gaps in the governance structure of the Authority, which has resulted in extremely poor outcomes for all the principal stakeholders viz. the Authority, State Government, industries and the public at large and specifically the home buyers. The Report is replete with instances of contravention of rules and orders, wilful concealment of facts and exercise of power beyond remit.

The Report has raised serious questions of propriety and pointed to Governance failure at every level viz. at the level of executing officials, the CEO and the Board as illustrated below:

- Rights of farmers were side stepped through misuse of statutory provisions during acquisition of land.

- Lack of uniformity in costing for properties, inconsistencies in the system of costing and lacunae in pricing of allotted properties were noticed.

- Lack of due diligence, contravention of rules and orders, misrepresentation and wilful

concealment of facts were observed in the allotment of properties. In numerous instances, allotment was made to entities who did not have the financial capacity for executing such projects, an essential criteria laid down in the brochures for allotment.

The PA Report brings out the above findings in detail and also the reasons behind them, clearly indicating the lacunae, the decisions which led to such state of affairs, the chain of events and the parties responsible. The Report also highlights how the statutory provisions for land acquisition have been misused, the position of home buyers who have invested their life savings in the projects which are lying incomplete for several years, the machinations through which the terms and conditions of allotments were circumvented and the involvement of Authority officials in the process.

Outcome & Impact

The Government accepted 23 out of the 27 recommendations made in the Report. The Government and the Authority have accepted our contentions in major areas and committed to change the existing procedures, processes and conditions. The major achievements are as detailed below:

Planning	• Government instructed a review of NOIDA's Plan Regulations, 2010, at the instance of Audit.
Pricing	• Pricing guidelines to be formulated for NOIDA. • NOIDA had started the process to appoint the consultant for costing of the properties as recommended by Audit. • NOIDA agreed to recover the costs amounting to Rs 1,733.20 crore made in respect of ex gratia payments for land acquisition, additional compensation paid on land acquisition and payments for abadi plots(Abadi plots are developed plots given to landowners in addition to Monetary Compensation against their Land Acuisition) due to non-framing of policy, • NOIDA has agreed that in future it will determine the reserve price on the basis of FAR(Floor Area Ratio) i.e. higher the FAR, higher the reserve price.

Allotments	• Terms and conditions for allotment and collection of dues to be strengthened.
	• Lacunae in policies to be fixed and discretion in allotments to be addressed.
	• Four commercial builders' plots were cancelled after audit objection and allotment money has been forfeited in one case.
	• NOIDA has accepted that sub-division of the Sports City plots into 81 parts has led to non-completion of sports infrastructure and projects.

https://cag.gov.in/en/audit-report/details/114909

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the report

Fast & Faster – Chasing the Outcome

Indian Railways are the backbone of the country, ferrying millions of passengers every day to their destinations. Most of the routes of Indian Railways are extremely busy and none is busier than the Howrah – New Delhi route. The Government was urging Railways to focus on mobility and timeliness. Against this backdrop, we decided to audit the outcomes, to find out whether there was scope to improve the punctuality of trains running in the busiest line of Indian Railways (IR).

We found that while the on-time performance of trains and punctuality is a very significant focus area, the travel time for different trains has not changed, and on the contrary increased. The Punctuality Performance of IR was only 69%, when we commenced the audit. We intended to suggest specific steps for improving punctuality and reducing travel time, by using innovative and never before tried methods. The audit team of **PDA North Central Railway, Prayagraj** achieved many firsts like interacting with a few Supreme Audit Institutions (SAI) and the International Railway Union (UIC), working with a former Chairman, Railway Board (CRB), conducting foot plating inspections (inspecting a line by travelling in the locomotive), and simulating the actual complex train operations. The team also consulted various experts from institutions like the Indian Institute of Management (IIMs), Indian Institute of Technology's (IITs), and other domain experts.

We found that the IR prepared their working timetable manually. We used computer-based simulation of all the trains of New Delhi – Howrah route, prepared a new working timetable which can save about 5.5 hours i.e. 23 per cent of the running time within existing resources, apart from achieving 100 per cent punctuality for passenger trains. The Simulation exercise informed that for every 100 km run, an average savings of 22-25 minutes is possible for trains cleared for 110 Kmph. Similarly, for trains cleared for 130 Kmph, an average savings of 10-12 minutes is possible.

This involved the resolution of more than 12,000 conflicts in the busy line. The team also determined many untapped additional freight paths in various sections, which have the potential to bring in additional revenue. During the audit, we consulted many other countries and their SAI, to frame appropriate indicators of performance as IR did not have defined outcomes. Another innovation adopted was to analyse data based on the route, and not the zones as was the practice earlier, which yielded sub optimal results.

We noticed, six internal and controllable factors were critical accounting for 66 per cent of total detention to trains over the network. We observed (during 2017-18 and 2018-19) that IR did not address these factors on priority, as seen from the financial outlays and expenditure commensurate with their criticality. We found that only 20 per cent of capital expenditure was made of these five critical factors (viz. Path, Traffic, Engineering, Block and Signaling &Telecommunication), which contributed to 51 per cent of cumulative detention time. We also found that there is significant scope to reduce travel time and improve punctuality within the existing resources, as the IR timetables have significantly more allowances/slack (15-30 per cent) built-in, as against the international norms (UIC) of 3-5 per cent. Our report included global benchmarking of train performance & employee productivity, investments made by IR and its outcomes, alternate timetable with a significant reduction in travel time with punctuality.

Perhaps, the highest praise for a professional auditor, would be from his client. In that respect, we knew that it was a job well done, when a former Chairman, Railway Board, stated, ".....what has been achieved is in itself a path-breaking exercise, never undertaken even by Railway authorities…."

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Impact of Voucher Audit

It is generally observed that exorbitant expenditure booking is done in the last quarter of Financial Year in the remittance departments. Non-refunding of unadjusted & un-utilized advances at the end of financial year is also prevalent. An analysis of expenditure under the Object Head 24 (Major Works) through payment vouchers having higher value were undertaken by the O/o **The Principal Accountant General (Audit-II), U.P.**, Lucknow for the Divisions of Department of Environment, Forest and Climate Change, Government of Uttar Pradesh, in order to understand and address these issues.

The Drawing and Disbursing Officers (DDOs) are responsible for correctness in all respects of the original records of cash and store, receipt and expenditure, as per the Financial Handbook (FHB). The Divisional Forest Officer (DFO) holds the power of DDO and is responsible for the same. The accounting data of Forest Accounts is captured through the compiled monthly accounts rendered by the respective divisions of Forest Department in the Voucher Level Computerisation (VLC) system in the Account Offices. Hence, VLC data and monthly accounts related to the receipts and payments were used in selection of the Forest Divisions for the test check.

We decided to conduct a thorough scrutiny of the vouchers which were available in the Office of Accountant General (A&E)-II, Uttar Pradesh, Prayagraj. Accordingly, Office of the Accountant General (A&E)-II, Uttar Pradesh, Prayagraj was requested to provide the vouchers for the test months selected for audit for the Forest Divisions. Initially, the audit scrutiny was conducted in the premises of the office of the Accountant General (A&E)-II, Uttar Pradesh, Prayagraj and later on the vouchers were transported to the Audit office at Lucknow for scrutiny in own campus. The Major Head -4406:- Social Forestry with expenditure of more than Rs. one crore in a particular month incurred by Forest Divisions was selected for test check.

During examination of monthly vouchers for the month of March 2017, we noticed that one of the Forest Division DDSF Awadh Van Prabhag, Lucknow had executed the work of digging of pits and trenches for plantation and security purpose by using Mechanical Earth Augur(A tool to dig pits) attached with the Tractor/JCB. The payment vouchers had details of name of person to whom payment was made, Tractor/JCB number through which the digging of pits and trenches has been carried out, number of pits dug/volume of the trenches, rates and amount paid etc. Repeated identical payments to the same persons for same work was noticed.

Therefore, verification of the vehicles used in plantation works was carried out through M-Parivahan app (M-Parivahan is a mobile-based application through which citizens get quick access to all the crucial information related to Transport services such as Driving Licenses, RC, Paying tax, Challan, emergency services etc.) of Transport Department. The registration number of these Tractor/JCBs recorded on payment vouchers (March 2017, March 2018 and March 2019) of these divisions revealed that these numbers did not belong to Tractors/JCBs, instead they were registered as motorcycles, jeeps, scooters, mopeds etc. The same methodology was applied in scrutiny of vouchers of other selected Forest Divisions and a consolidated Draft Paragraph was issued to the Department.

Impact

The Draft Paragraph on fraudulent payment of ₹ 137 crore made by the Department involving 1,058 payment vouchers was issued to the Department. The Department, based on audit finding, took action against large number of delinquent officials by suspending 14 officials and issuing charge sheet to 137 officials. Further, disciplinary proceedings against the remaining delinquent officials are under process. The matter was further referred to the Government of Uttar Pradesh by the Department to initiate action against the DDOs/DFOs (the Indian Forest Services Officers).

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Embedding Information Technology Audit and Root Cause Analysis in Performance Audit of "Direct Beneficiary Transfer"

Office of the Principal Accountant General (Audit-I), Rajasthan took up Performance Audit of "Direct Beneficiary Transfer (DBT) system" in Rajasthan to assess the efficacy and efficiency of the DBT system with a focus on correct identification of beneficiaries, coverage of all intended beneficiaries and correct and timely payments. The two schemes with the highest expenditure under Social Justice and Empowerment Department (SJED) viz. Chief Minster Old Age Pension Scheme (CMOASPS) and Chief Minister Ekal Nari Pension Scheme (CMENSPS) were selected for the Performance Audit.

Some of the innovative practices adopted in this audit are elaborated below:

- Centralised collation of data of all the DBT schemes was not available. Hence, crucial information such as scheme wise/ department wise amount transferred directly in the account of the beneficiaries was collected from different sources such as administrative/annual reports of different departments, Voucher Level Computerisation system of the O/o AG (A&E), Rajasthan, Jaipur, information compiled by Directorate of Economics and Statistics, Government of Rajasthan and Finance Accounts of the State Government

- We examined whether necessary process re-engineering was carried out for implementing DBT, so as to minimize intermediary levels, delay in payments to intended beneficiaries and

Work Flow Diagram of CMOAPASand CMENSPS
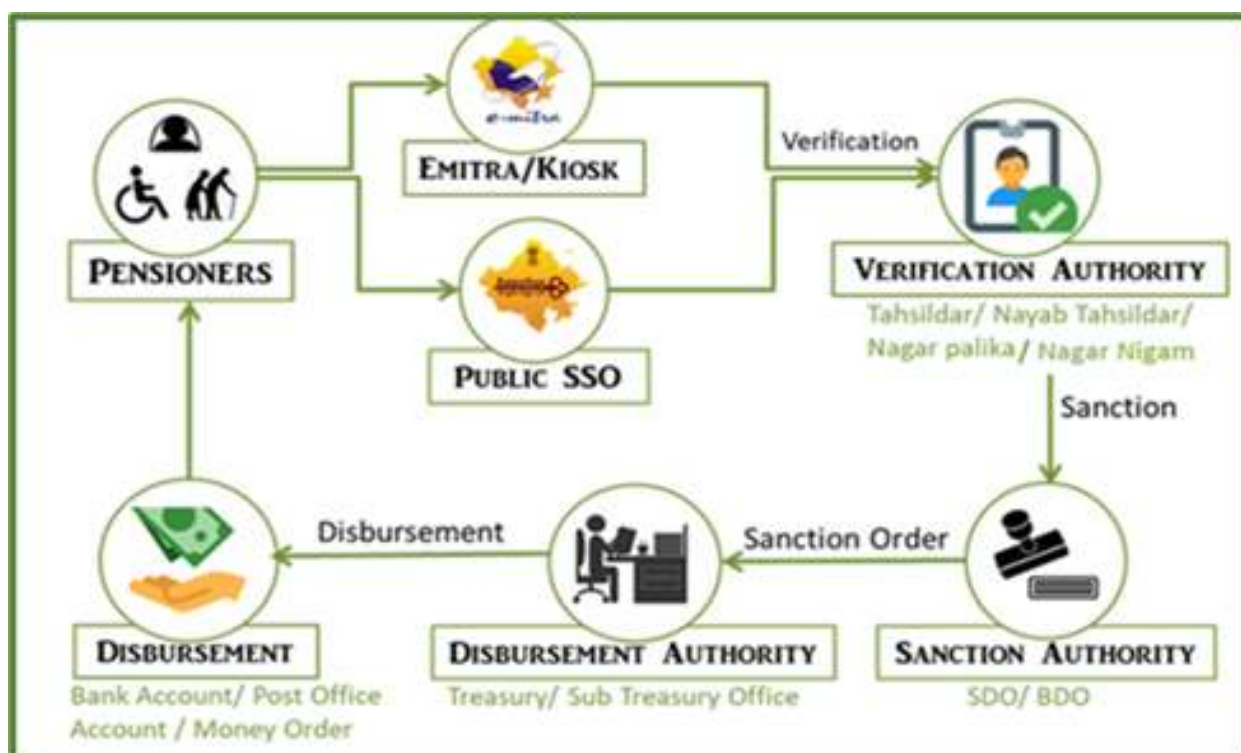
pilferage and duplication. Such analysis enabled us to prepare work flow and process flow diagrams covering functions dealt by multiple departments and agencies in the state which serves as a repository of valuable information for the state government

- Beneficiary survey of 240 beneficiaries for each of the two schemes receiving pension in their bank accounts and 72 beneficiaries of both schemes receiving pension through Money Orders (total 552 beneficiaries) was conducted

- Data analysis of RajSSP data dump (containing the information related to the two schemes) was carried out

- Root cause analysis was carried out to identify the factors resulting in deficient performance. For instance, root cause analysis of failed payments revealed that procedural problems existed in cases where the failure occurred due to wrong/updated beneficiary details and the consequent problems faced by the beneficiaries in addressing the cause of failure to get the pension payments restarted. This scrutiny resulted in valuable insights which have been brought out in the audit report

- Information Technology audit was seamlessly integrated as a key component of the performance audit. In addition to highlighting the aspects specific to IT audits such as data security, integrity and reliability, the IT related shortcomings were linked to the consequent problems in the scheme implementation. Further, IT based solutions for problems in scheme implementation were also provided.

Audit Impact
The State Government accepted many of the audit recommendations, as they were based on root cause analysis and were practical.

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Performance Audit of Assessments of Assesses in Gems and Jewellery Sector

Performance Audit of "Assessment of Assesses of Gems and Jewellery Sector" by **CRA Wing** was undertaken (a) to examine the adequacy of rules, regulations, notifications etc. in respect of assesses of this sector; (b) to assess efficiency and effectiveness in compliance of such legislative provisions; and (c) to ascertain whether systems, internal controls, processes and monitoring and coordination mechanism were sufficient and robust. Data from multiple sources [kimberleyprocessstatistics.org, GJEPC (Gem & Jewellery Export Promotion Council) India, Ministry of Commerce etc.] were analysed and risk areas were identified based on correlation of broad trends nationally and internationally.

Audit Findings

The main audit findings are elaborated below:

There was regular trend in growth of quantity and value of imports and exports of rough diamonds during 2010 to 2020 that required examination at the detailed granular level of imports and exports. During the period 2009-10 to 2019-20, 76 per cent of total imports of rough diamonds and 80 per cent of total exports of rough diamonds were to three countries viz. United Arab Emirates, Belgium and Hong Kong whose contribution in global diamond mining was negligible.

Graph 2.4: Import and Export of Pearls in India
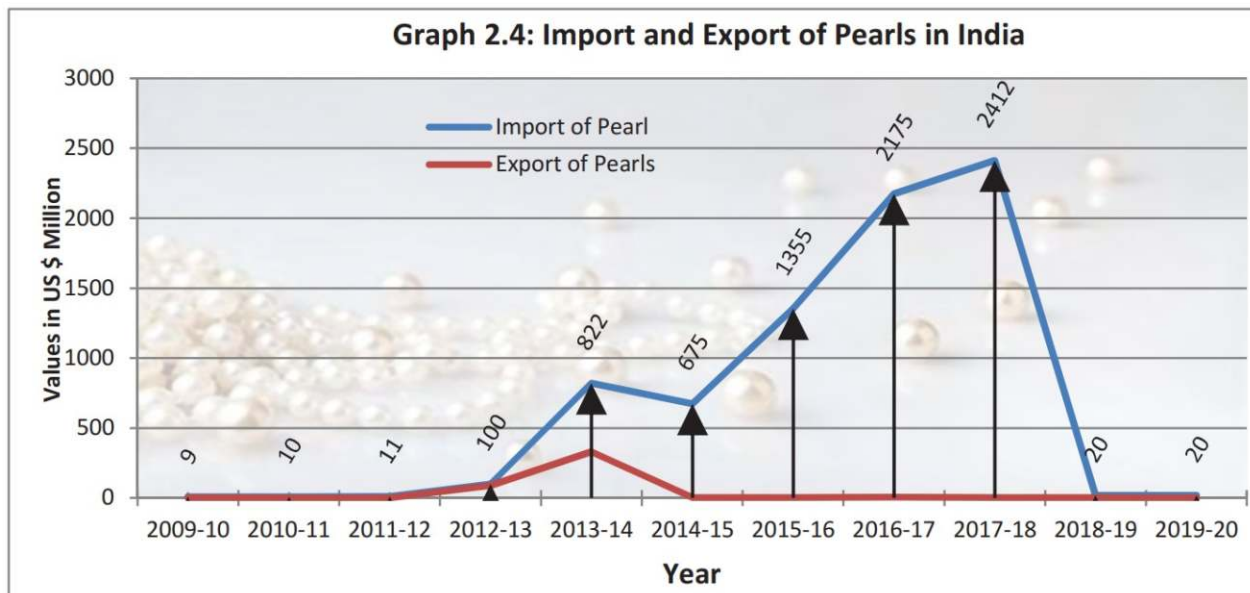
Analysis of import and export figures of pearls revealed that though there was not much variation in export of pearls during FY 2012-13 to FY 2017-18, there was an abrupt rise in import of pearls during the said period followed by a sudden fall in import from FY 2018-19. The trends during FY 2012-13 to 2017-18 was indicative of potential over invoicing of import of pearls with underlying risk of significant value of income escaping assessment.

• We carried out 360-degree analysis and observed various irregularities like non-examination of suspicious business activities; unexplained excess output, short accounting of stocks, and non-verification of differences in claims made by assesses as per records of the assesses vis-a-vis the records of the related party with an underlying risk of tax evasion that required further probing and detailed examination.

- We noted that the assessment records did not have details of examination made/ verification of quantitative details of inventory as per disclosures in ITRs and TARs.

- We observed that the Department was inconsistent in making disallowances in similarly placed cases involving bogus entries/ purchases, in the absence of any guidelines/SOP in this regard. Additions were made in an arbitrary or discretionary manner and without recording proper justification in the assessment order with an inherent risk of non-sustainability of additions at the appellate stage.

- Issues pointed by us were indicative of weak monitoring mechanism in the Income Tax Department (ITD) with respect to the Gems and Jewellery sector. As this sector involves significant risk of money laundering, round tripping, incorrect invoicing, and risk of routing of black money in the garb of transactions and claims, such areas required stricter monitoring.

- We noted that these issues escaped examination by the ITD in the absence of guidelines/ SOP and instructions specific to this sector for addressing the risks.

Audit Impact

- Major risk areas were flagged to the ITD for use of the same in developing parameters for CASS (Computer Aided Scrutiny Selection) and for enhancing the quality of assessment through a Standard Operating Procedure. The recommendation for formulation of SOP is under consideration of the Central Board of Direct Taxes.

- Further, recommendations were made regarding examination of reasons for non-verification of unexplained excess outputs to prevent possibility of evasion through suppression of sales and introduction of unaccounted raw material. The recommendation has been noted for due consideration and inclusion in audit checklist to be prepared by ITD for the forthcoming 'Compendium of Audit for 2021-22'.

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TECHNOLOGY TOOLS FOR AUDIT PLANNING, EVIDENCE GATHERING AND REPORTING

Leveraging technology aids in improving audit planning, evidence gathering and in deriving better insights. We have adopted new technologies to improve the effectiveness of audit. In this section we showcase some of the initiatives where offices have used latest technology tools in audit.

Data-driven Audit -
Implementation of Innovative Techniques

Centre for Data Management and Analytics (CDMA)** is the nodal centre for data analytics in the CAG organization and it provides guidance to field offices on data analytics. CDMA functions in two modes. One focuses on capacity building of field audit offices by extending technical support services to them and by validating and optimizing their data analytical models/queries, etc., which are used in a repetitive/periodical fashion.

In the second mode CDMA undertakes one-off data analytics projects, where, the data is obtained either from field offices or from audit entities. Data analytical models are then prepared using various data analytics tools. The data analytic reports, which are shared with the stakeholders, highlights specific risk areas in the form of anomalies or outliers and these form the basis for framing audit guidelines.

Implementation of Innovative solutions

CDMA, in addition to using traditional exception querying tools like SQL, has been working on various set of Big Data Tools viz. Python, R, KNIME, Tableau, etc. It has also implemented innovative techniques viz. Machine Learning, Artificial Intelligence, Image Analytics, Reverse Geo coding and other statistical methods in several instances to prepare data analytic reports. Results of some innovative techniques recently used by CDMA are illustrated below:
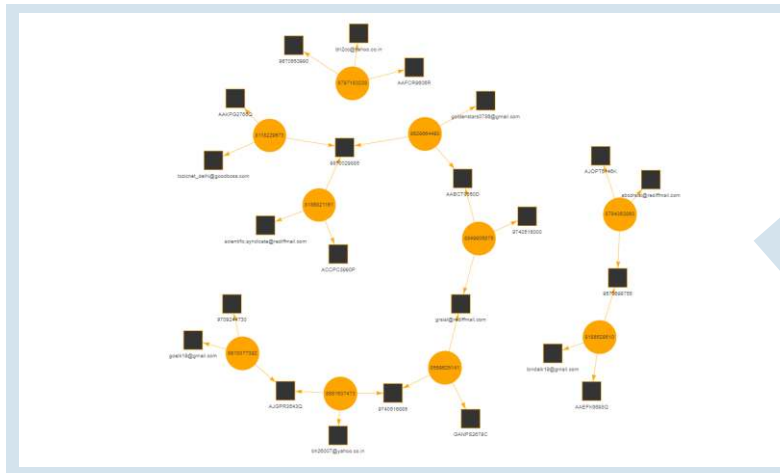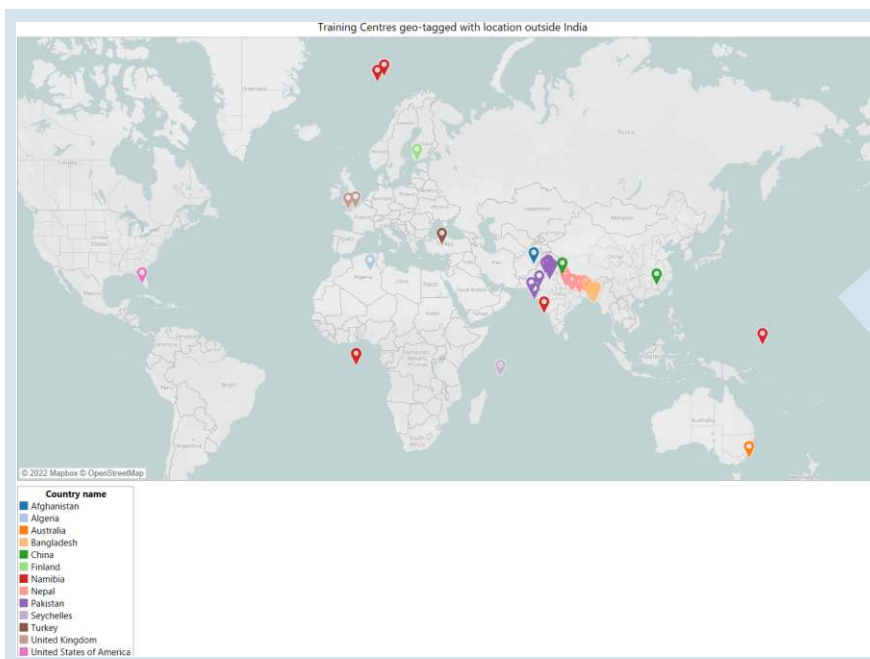

Network analysis to identify duplicate registrations on basis of multiple attributes (email, PAN, Mobile, etc.)


Image Analytical and Face recognition tools in Python were used to detect usage of – non-human photo; same photo being used more than once; & different photos of the same individual.

Fuzzy logic in Power BI was used to identify the defaulter licensees in EPCG and MEIS schemes, DGFT.

Training Centres geo-tagged with location outside India

Reverse Geocoding of the location coordinates based on IP addresses, in PMG-DISHA data suggested that several training institutes were apparently located outside India.
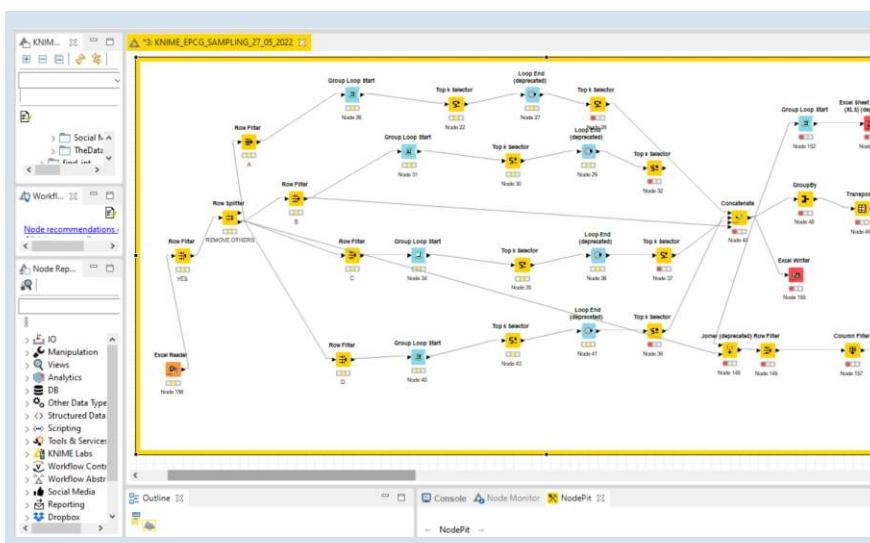
Using KNIME, in PA for EPCG scheme, Multi-Stage Risk model for sample selection was developed for verification of red-flagged data transactions in field audit.
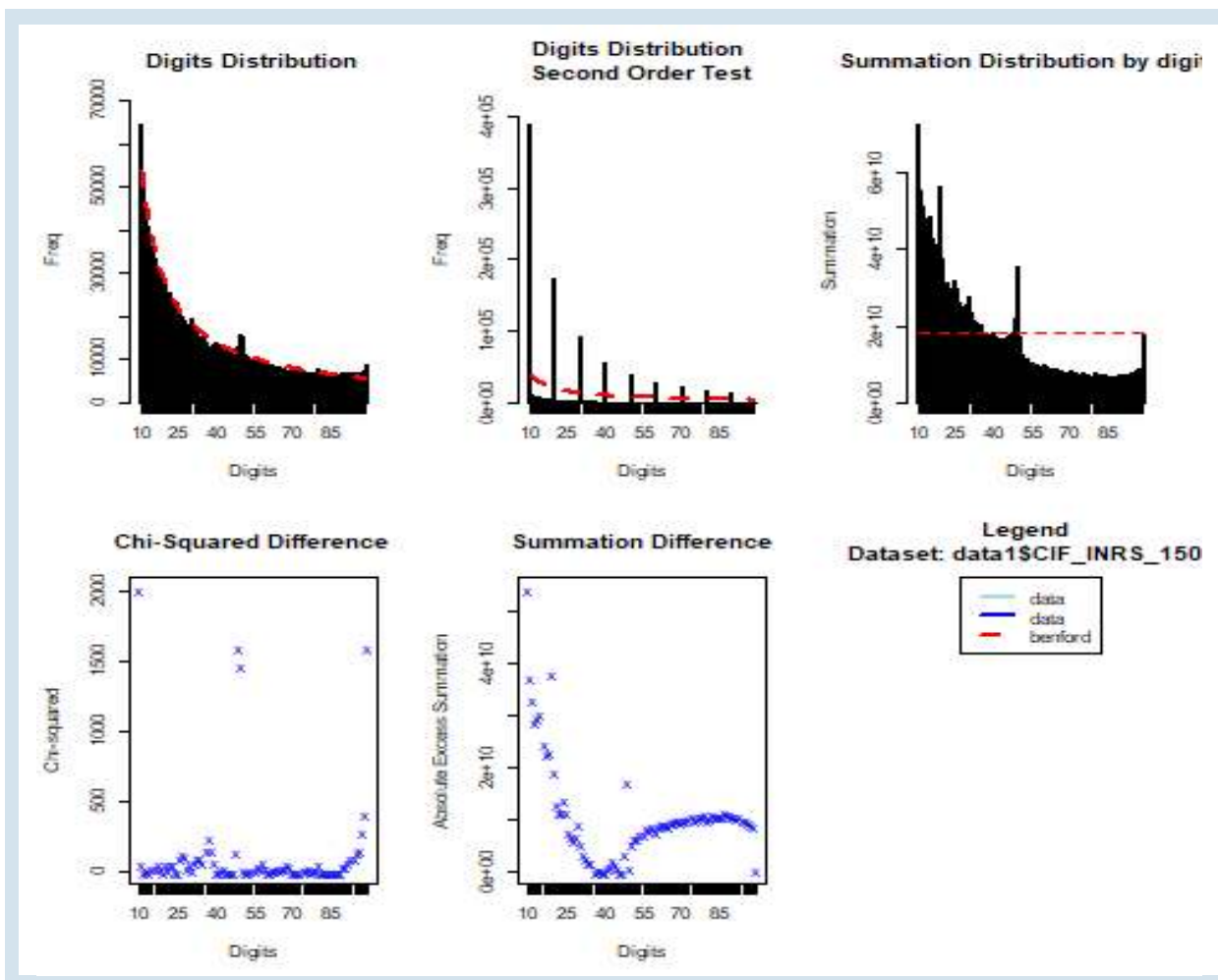
Benefits derived from the Innovative Techniques

The following benefits were achieved during major data-led Audits that were taken up during the year 2021-22:

- It helped to shift focus from traditional random sampling approach to high-risk transactions and entities

- Machine learning and data analytical models were helpful in detecting risks at an early stage and provided ample time for detailed planning of the audit

- Duplicate beneficiaries were identified using advanced analytical tools

- It helped in detecting usage of non-human photo; same photo more than once; & different photos of same person

- Some form of manipulation that has taken place in the data set were identified when data showed departure from Benford law

- Ready to use queries and comprehensible Tableau models were provided to field offices on VAHAAN, SAARTHI data

- Use of data analytical models promoted offsite audits

We are in the process of scaling up the use of Analytics, both for high-risk repetitive audits and for single use high risk audits.

Performance Audit of "Exemptions granted by Income Tax Department to Charitable Trusts and Institutions"

Direct Taxes Wing conducted a performance audit of "Exemptions granted by the Income Tax Department (ITD) to Charitable Trusts and Institutions". We examined the effectiveness of monitoring of compliance of the process of Charitable Trusts and Institutions availing benefits under Income Tax Act; efficiency of ITD in granting exemptions to the Charitable Trusts and Institutions; and sufficiency of existing provisions in the Act/Rules/CBDT Instructions relating to Assessments of the Charitable Trusts/Institutions. We examined 6,064 cases, in respect of which exemption of ₹1.67 lakh crore was claimed. In this Performance Audit, apart from audit sample, total population was also analysed.

Statistical analysis of population and audit sample

In Chapter 4 of the Audit Report, profiling of audit universe, context analysis and profiling of high value assessments; distribution of total population based on returned income and assessed income; state-wise data relating to exemptions claimed but registration status not available; foreign contribution received but registration status not available; categorization of Trusts/Institutions on the basis of their activities and their types etc. were included. Few important results of such analysis of data population are summarized below:
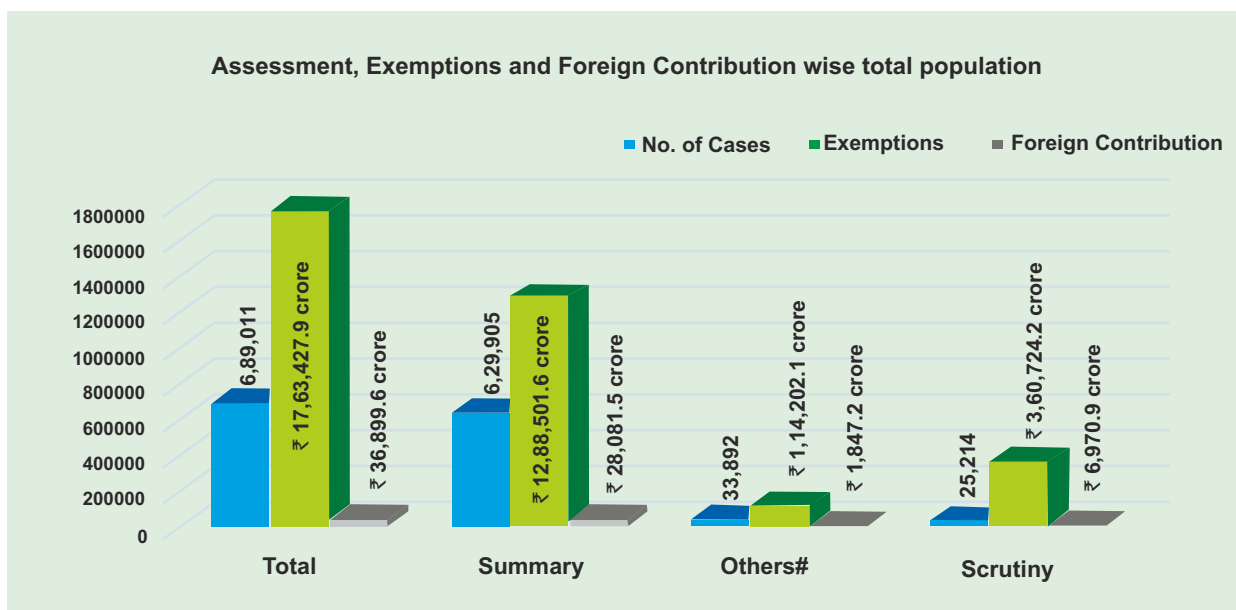
Assessment, Exemptions and Foreign Contribution wise total population: Out of total exemptions of ₹ 17,63,427.9 crore claimed by the Trusts/Institutions during aforesaid period, 73 per cent (₹12,88,501.6 crore) of exemptions was processed in summary manner whereas 20 per cent (₹ 3,60,724.2 crore) of exemptions were scrutinized by the Department. Out of total foreign contribution of ₹ 36,899.6 crore received by the Trusts/ Institutions during the period, 76 per cent (₹ 28,081.5 crore) of foreign contributions was processed in summary manner whereas only 19 per cent (₹ 6,978.4 crore) of foreign contributions were scrutinized by the Department. In order to

examine whether the focus of ITD was on significant cases, we examined the characteristics of the distribution.

Distribution of total population on the basis of returned income and assessed income: Out of total 6.89 lakh cases processed/assessed/ rectified during the FY 2014-15 to FY 2018-19, the returned income was zero rupee in 5,11,951 cases (74.3 per cent of total cases) whereas the assessed income was zero rupee in 4,33,620 cases (62.9 per cent of total cases). Number of cases selected for scrutiny for all the four AYs i.e., AY 2014-15 to AY 2017-18, was the highest (22,376 cases) for cases with returned income of zero rupee followed by cases with returned income more than zero rupee and upto ₹ 50 lakh (2,717 cases) followed by case with returned income of more than ₹ 1 crore (201 cases).

Foreign contribution received but registration status not available: The Charitable Trusts/Institutions are required to obtain registration under Foreign Contribution (Regulation) Act, 2010, for receiving foreign contribution. From the data pertaining to Income Tax Returns (ITRs) processed/assessed/rectified for AY 2014-15 to AY 2017-18 during the FY 2014-15 to FY 2018-19, We found that in 347 cases, where foreign contributions were received, registration under FCRA was not available.

Significant audit findings

- Deficiencies in the ITD system, which led to incorrect claims of exemption along with the possibility of revenue leakage, were noticed.

- The Income Tax Act has no clarity on allowing deduction under Section 80G for donations out of CSR fund. The Income Tax Act has no clarity regarding allowance of various expenses under the head "administrative and establishment expenses" for the purpose of determining application of income.

- The Income Tax Act has no provision to restrict donations by a Trust to another Trust out of current years' income. Therefore, certain Trusts/Institutions are taking undue benefits by availing the permissible accumulation of 15 per cent out of the current year's income and then transferring the rest of the income to other trusts, and thereby making a chain of multiple donations.

- Very few surveys were conducted by the Department in comparison to the number of assessees claiming exemption under the Act.

- ITD has no mechanism to verify receipt and utilization of foreign contribution shown in the ITR Form-7 and that disclosed with Ministry of Home Affairs (MHA) under the FCRA Act. We noted instances where the deficiency resulted in incorrect claim of exemption on foreign contribution.

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Audit of Marine and Coastal Eco systems of Tamil Nadu

Tamil Nadu has a very long coastline (1076 km) and has ecologically important Gulf of Mannar Marine National Park & Bio-sphere Reserve which is home to several unique and endangered marine animals like Dugong, Sea Turtles etc. Recognizing the importance of the coastal ecosystem, **Office of Principal Accountant General (Audit-II), Tamil Nadu & Puducherry, Chennai** took up a Performance Audit of Marine and Coastal Ecosystems of Tamil Nadu.

The audit was quite challenging as it was on a technical subject and different from the traditional audits carried out by the Office. Further, it covered crucial areas in conservation of marine and coastal environment and it was necessary to equip the audit teams with insight on conservation mechanisms and to enhance their understanding about the challenges faced in the field of coastal and marine conservation. We took the following initiatives to address these challenges:

• Brain storming sessions were organized with scientists from reputed research agencies. We engaged with National Centre for Sustainable Coastal Management (NCSCM) at two levels:

- Arranged for guest lectures by the scientists working in NCSCM on the topics related to degradation of Coral reefs in Gulf of Mannar Biosphere, conservation of marine organisms in the coastal areas of Tamil Nadu, pollution of oceans/seas due to microplastics etc.,

- Obtained research reports published by NCSCM on the status of coastal ecosystems in the State.

• Coastal zonation maps were obtained from the department to analyze the status of implementation of coastal zone management aspects.

• Joint Site inspections were organized in select islands of Gulf of Mannar Marine National Park & Bio-sphere Reserve.

• The State has a long coastline spread over 13 Coastal districts and hence identification and analysis of CRZ violations was a difficult task. Further, spatial data was not available and shape files of CRZ maps were not furnished. We used innovations like aerial image analysis by overlaying the PDF files of the Tamil Nadu Sustainable Coastal Management (TNSCM) maps on google earth historical imagery over the period from 2011. This innovative approach helped us to superimpose CRZ Zonation maps of the entire coastline of Tamil Nadu and the present coastal map of Tamil Nadu. We identified more than 130 violations in CRZ area. Further, many violations were verified in the field during joint physical inspections.

Illegal Construction in the No-development Zone: M/s Golden Bay Resorts

Construction of resort and other amenities such as Boat Jetty in

No-Development Zone

(Inter-tidal Area)
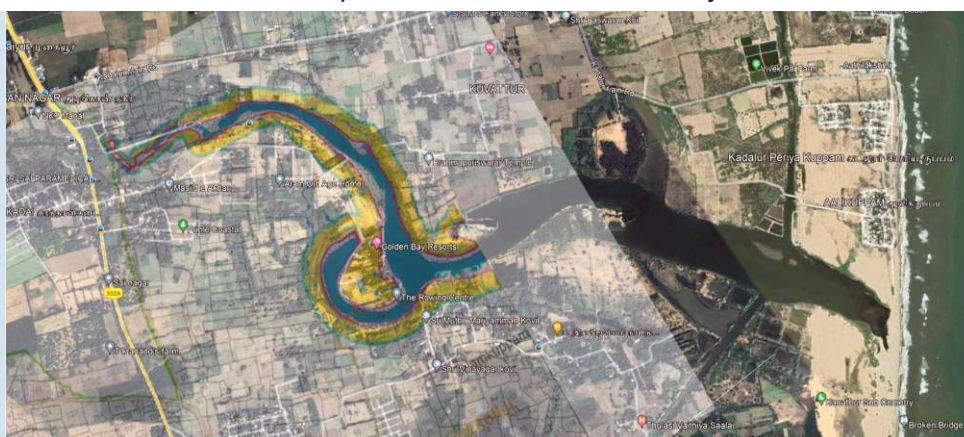
Illegal Construction of Mud Road obstructing water flow – Affecting Mangroves

Intertidal waterway

Mangrove cut off from the waterway

OUTCOME & IMPACT

The audit approaches adopted for this PA facilitated us to bring out several observations on CRZ violations at every stage right from the submission of application for CRZ clearances to implementation of the project. Besides, we were able to highlight the alarming level of degradation of Coral reefs in the islands of Gulf of Mannar Marine National Park due to the invasive seaweed species like Kappaphycus and non-availability of conservation for Dugong (sea cow), sea grass etc.

Audit Impact

The Government of Tamil Nadu accepted many of the audit observations included in the Performance Audit Report, some of which are mentioned below:

- Improper usurping of powers for clearance by Tamil Nadu State Coastal Zone Management Authority (TNSCZMA) for granting clearance to projects.

- Improper delegation of powers to local authorities, District Coastal Zone Management Authorities (DCZMA) for granting clearances without recommendations of TNSCZMA.

- Non-representation of local traditional communities in DCZMAs was accepted by the Government and acted upon.

- Government assured action on the identified violations and to declare a Reserve for Conservation of Dugong.

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Use of UAV Technology in Assessment of Plantations in Forest Department

Office of the Principal Accountant General (Audit-II), Odisha, conducted a *Performance Audit of "Assessment of Plantation activities in Forest Department"* which intended to assess the various types of plantations, both quantitatively and qualitatively. Apart from conducting a traditional audit i.e., checking records/documents supported by joint physical verification (JPV), we used new evidencing method to overcome the drawbacks in conventional audit evidencing method. We used remote sensing technologies, i.e., Satellite Images and Unmanned Aerial Vehicle (UAV) to assess the plantations. The assessments included tree counting, tree height measurement, species determination, canopy density, contour mapping, drainage pattern analysis and surface moisture conservation.

Audit Findings

UAVs were deployed in three Aided Natural Regeneration (ANR) and one Mangrove plantation areas to evaluate the plantation growth in various aspects. Firstly, doubtful plantation sites were selected using Google Earth as represented below.

Base Map _ Date(14-11-2015) – Rajpur1   09-10-2018 - Rajpur1
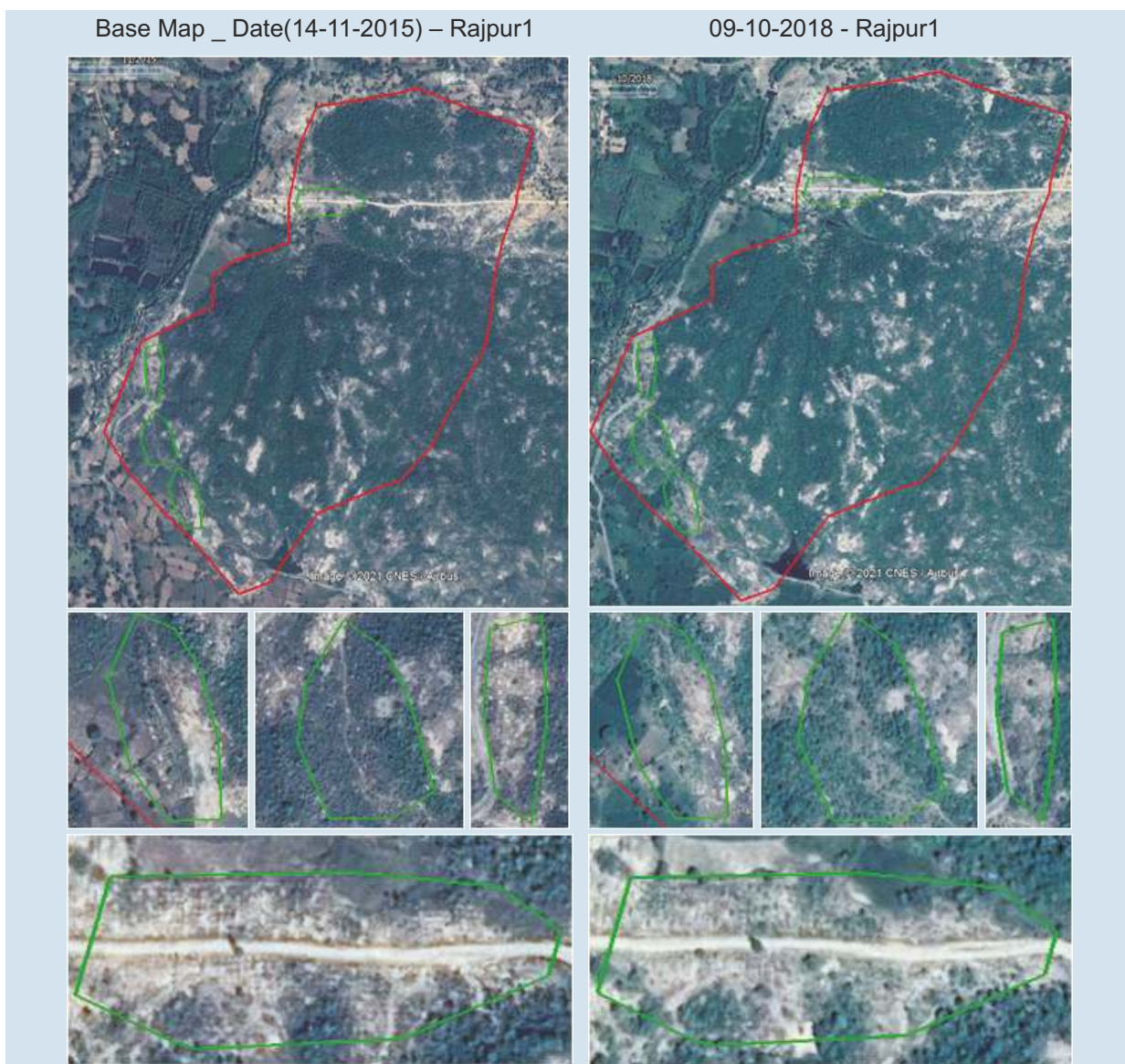
As per Google Earth analysis, change of 2.95 Hectare only was visible in the entire selected plantation site over different time period. Further analysis was conducted after selecting the doubtful plantation sites through Google Earth.

- We noticed a huge difference in the observed survival percentage as noted in the plantation journal and between JPV and UAV analysis. Details of differences between the plantation journal and the UAV output in a plantation area is tabulated below:

As per plantation Journal		
Rajpur 2		
Teak	-	4000
Karanj	-	500
Sisoo	-	1000
Bamboo	-	1500
Simaruba	-	1000
Gambhari	-	1000
Siris	-	500
Neem	-	500
Total	**–**	**10000**

As per UAV Outputs		
Rajpur 2		
Teak	-	340
Karanj	-	0
Sisoo	-	3
Bamboo	-	0
Simaruba	-	36
Gambhari	-	0
Siris	-	8
Neem	-	2
Total	**–**	**389**

*Tree Out of Boundary Simaruba 3, Siris 4, Teak 37
Overall Survival percentage 3.89

- Height analysis of the teak trees, as observed in the plantation site showed that 43.14% of teak trees were less than 5 feet in height even after a period of 5 years.

Chart 1: Teak tree height analysis

Chart 2: Tree height analysis
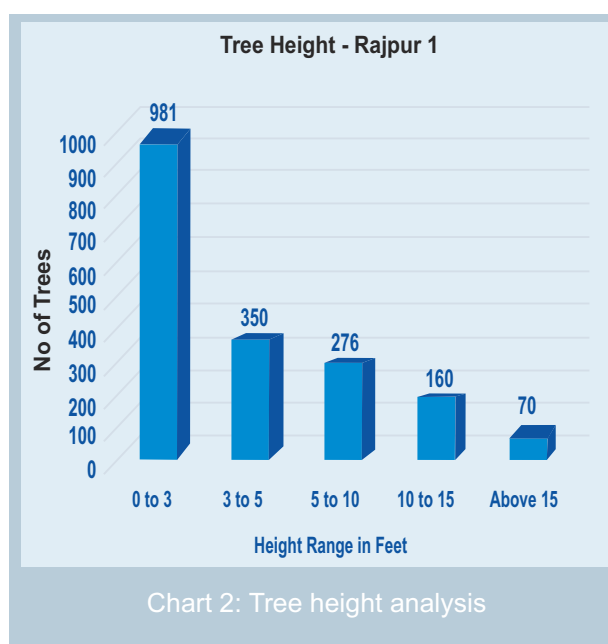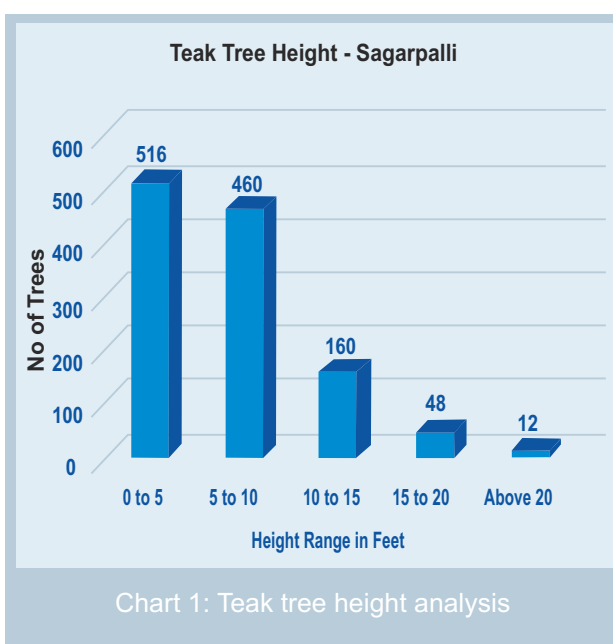
- In case of Mangrove plantations, assessment using UAV has proved to be a successful monitoring method. As the mangrove plantation sites were completely inaccessible due to muddy, shallow terrain, monitoring and evaluation through normal conventional method was almost impossible. The survival percentage was assessed as 36.46 per cent, which was indicative of a failed plantation.

- As per relevant rules, the trenches must be dug perpendicular to the slope of the terrain so as to maximise water retention. As can be seen from the Table and Figure below, trenches were neither executed perpendicular to the terrain slope nor inside the plantation area. Despite incurring a considerable expenditure towards this activity, the water retention capacity has not improved as seen from the survival of the planted trees.

Figure: Image of a Water trench dug in a plantation site

Sl. No.	Area	Total no. of trenches	Not perpendicular to drainage	Out of plantation area
1	Rajpur (Regular)	215	70	55
2	Rajpur (Additional)	703	211	55
3	Sagarpalli	121	34	2

Table: Analysis on the trenches dug in the plantation sites

We observed that instead of planting in the degraded patches within the plantation site (Aqua polygons inside red plantation boundary), trees (green dots) were planted along the accessible pathways/forest paths (blue lines). This failed the very intention of executing ANR plantations i.e., to naturally increase the forest cover by planting in degraded forest patches.

Government assured that appropriate action would be taken against the concerned staff after verification of the plantation sites by the flying squad.

UAV Image of Plantation at Sagarpalli.

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IMPROVING STAKEHOLDER ENGAGEMENT

Strong and effective stakeholder engagement is the cornerstone of a successful organisation. Effective engagement helps to translate stakeholder needs into organisational goals and creates the basis for effective strategy development. Proactive stakeholder engagement can mitigate potential risks and conflicts with stakeholder groups, including uncertainty, dissatisfaction, and disengagement. It further helps to provide better value addition.

In this section we showcase few initiatives for improving the engagement with our stakeholders.

Innovate – Whether at Home or Outside – IDLI, a Case in Point

Some innovations are done during audit, while others are done to facilitate audit. Our quest for good governance is not limited to our home base. This is a case in point, where one of our officers while working on deputation in the Delhi Development Authority (DDA) in their Land Department, managed to successfully develop an IT based Land Disposal system, which had been earlier tried by many big-name vendors, but in vain.

It was possible to computerize the Land Disposal Department which was dealing with public, largely by using the skills learnt at our National Academy of Audit & Accounts (NAAA) and our International Centre for Information Systems and Audit (iCISA). The web-based solution, named 'IDLI system' or 'Interactive Disposal of Land Information System', provides realtime services to the public including financial transactions. This software was also used to hold a Mega e-Auction of land and shops in 2018 which resulted in transactions worth ₹ 15,000 crores in DDA. Currently, the system has been stabilized and is planned to be integrated with IDLI system.

This ushered in transparency and addressed corruption in the Land Disposal department of DDA. The system had various modules meant primarily for the public like e-Capture, e-Mutation, e-Conversion, e-Reapply, e-EoT, e-appointment, e-Restoration etc. with sound security where middlemen, could not collude with any corrupt personnel to break the system. The other features included various report generation modules for top management etc. The services were developed in modular fashion from 2017 onwards with the scope for improving further in future. The success of this end-to-end web-based application has taken the Ease of Doing Business ranking of Delhi many notches upwards.

This initiative was triggered during the public hearings of DDA with the citizens of Delhi, who described their suffering at the hands of touts, officials, and the system at large. This system addressed all the issues faced by the public as also the requirements of the office. The entire System was developed in-house which was otherwise estimated to cost ₹ 300 crores as per procurement estimates. Our officer also made arrangements for maintenance and upgrades, with a team with one programmer and a consultant being trained and put in place when he left DDA. This scalable and replicable model is now being studied by many organizations.

The innovation was backed by a development philosophy that the applicants will monitor their own case and made them the masters instead of the officers controlling the flow of information. This empowerment ended the information asymmetry, which earlier left them at the mercy of touts and middlemen. The zero-error concept was inbuilt in the logic that the best person to know about oneself is that person itself which ensured that there was no error in the sensitive documentation.

Working together for Good Governance

We always wanted to develop an audit approach to enable us to address areas of risk and significance proactively, by addressing issues of concern to our clients and stakeholders. Even, the Hon'ble Prime Minister, during his address in November 2021, on 'Audit Diwas', had desired that Audit may reach out to stakeholders. Taking a cue from this, the Railways Wing immediately embarked on a plan to ensure effective Stakeholder consultation.

The process took off with an interactive meeting held in February 2022 between the apex level officers of Railway Board and senior officers from Railway Audit. The intended objective of this interactive meeting was to promote participation of Railway Management in the audit process. The Board members welcomed the initiative of involving the audited entities in the Audit Planning Process. This resulted in some concrete follow up action and delivered some outcomes, as discussed below:

SAMPRATI - Status Alerts on Monitoring Project Related Actions and Targets of Importance

A new audit product in the form of Quarterly Report (Named as SAMPRATI –Status Alerts on Monitoring Project Related Actions and Targets of Importance) was introduced. This was addressed to Zonal Heads as well as the Chairman Railway Board & Chief Executive Officer (CEO). This Report was based on data analysis, expenditure analysis and field audit. SAMPRATI contains two to three topics of critical projects/areas of national significance.

Three issues of audit concern which will be examined by the field offices as part of SAMPRATI are :

• Issues related to diesel locomotives consequent to electrification

• Issues related to electrification as obtained from MCDOs

• Data Analysis of IRPMs Data.

The Railway Audit Wing also faced challenges like delayed response to audit, restricted access to information and IT applications. To address these issues, the Railway Board Audit Wing suggested the constitution of the Audit Review Committee during the interactive meeting. Accordingly, an Audit Review Committee was constituted in March 2022, comprising of senior executives from both Railways and CAG.

The Audit Review Committee has already held three meetings from May to July 2022 and facilitated improved response to audit. The Committee has further been instrumental in faster finalization of Action Taken Notes to the Public Accounts Committee of the Parliament. Standing instructions have been issued to facilitate audit access to data and IT systems.

User Friendly Services

I. Integration with State Government Portal of GEMS and SPARK

Service and Payroll Administrative Repository of Kerala (SPARK) is a web based G2E integrated solution of Government of Kerala for Service and Payroll Management which attempts to bring the payroll and finance related activities of more than five lakh government employees, on a single application. In Kerala, the office of the Accountant General (A&E) maintains the service details and pay particulars of Gazetted officers of the State Government through GEMS application. The payroll is processed by SPARK GoK (Govt. of Kerala) based on pay entitlement communicated by AG through the GEMS application.

The Office of the Principal Accountant General (A&E), Kerala with support of the Government of Kerala integrated the GEMS and SPARK applications through a middle ware. This has made possible the receipt of online applications from SPARK (State HR) system for various pay revisions involving Gazetted officers of the State Government. A mechanism was developed to update the conditional leave balance in respect of Gazetted Officers to SPARK on request basis. Gazetted officers could apply for leave based on the availability of leave at credit. The SPARK (State HR) system has been appropriately modified so that when gazetted officials apply for leave online, the application will automatically share a request with the AG system to capture the officers' conditional leave balance as of date. This system has been put in place in four departments.

The project for the state-wide receipt of online orders for transfer/promotion has also been achieved. By shifting to this online system, the delay in receiving hardcopies of applications can be eliminated. The system for receiving online orders and CTCs for promotions and transfers will significantly improve response times. Furthermore, the implementation of these modules has contributed to our goal of becoming a paperless office.

II. Grievance Redressal Initiatives

Huge number of visitors had been visiting the **Office of the Accountant General (A&E), Haryana** looking for resolution of their grievances and status of their pension and GPF cases. This had led to issues of free access in office and also disturbance to the staff and officials. A need was felt to put together a formal arrangement so that the concerns of the visitors could be addressed. A Grievance Cell with an aim to physically interact and redress the grievances of the pensioners and GPF subscribers in the state has been established in the office premises. The grievance redressal cell was made functional in April 2022. Approximately 60 to 70 complainants visit the cell daily and their grievances are noted and resolved.

The cell is manned by officials of the AG office who have access to pension and GPF database and applications. The aim of the GR cell is to alleviate the grievances of the people who visit the centre and provide to them an on-the-spot resolution/information. In certain cases, new complaints are also received and forwarded to e- Samadhan for further follow up.

Also, a Tele-helpline centre was made functional in April 2022. The Tele-helpline Cell with 05 telephone lines has been established to resolve the grievances from various stakeholders from across the state of Haryana. The facility also has interface with other stake holders like Treasury Officers, DDOs etc. through conference call to quickly communicate and resolve the issue of the caller. The system has been functioning successfully and approximately 200-250 calls are being

received everyday. This facility was marked as an addition to the Public Grievances Cell and e-Samadhan. The State Government has approved the funding of the operations of the Tele-Centre.

Considering the difficulty faced in grievances redressal during Covid, it was decided to put in place a facility whereby pensioners/GPF subscribers and other stakeholders can reach out to AG office and get resolution of their grievances over telephone.

How the Tele-Helpline works :

- The caller calls on the tele-helpline number. The call is responded to in the centre and the official enquires about the nature of the grievance of the caller.

- A predesigned Google form is provided on each machine which the operator fills up and saves for future reference.

- In case, the problem can be resolved at the end of this office, its considered as disposed.

- In case, it involves other stake holders like Treasury Officer and DDO, a conference call is arranged with the concerned parties.

- In both the above cases, if the resolution is not provided, the caller is given a unique number which can be later used by the caller to take an update on the grievance, helping the pensioner save the trouble of a physical visit, especially during pandemic.

This initiative has led to greater reach of the Office of AG (A&E), Haryana to the pensioners.
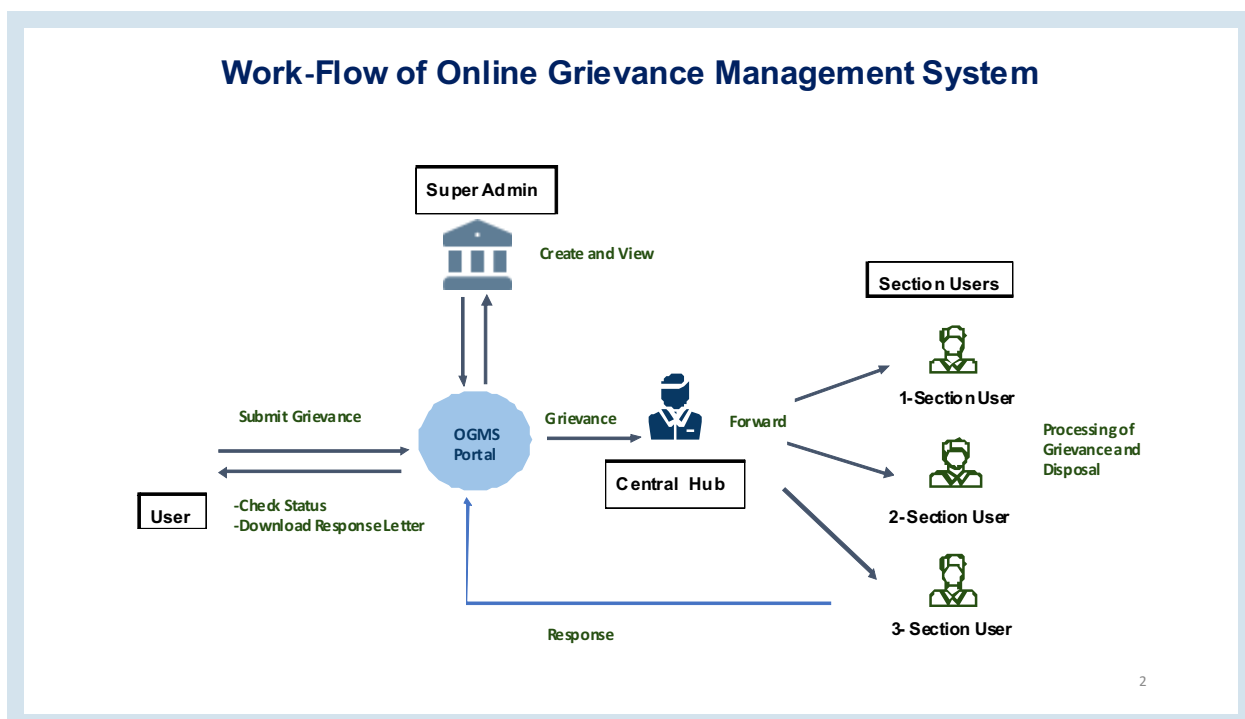
e- Samadhan

The state of Haryana has approximately 3 lakh pensioners and 1.09 lakh GPF subscribers. The entitlement function requires the AG office to engage and have an interface with the state government and the public in the state of Haryana. Considering the criticality and relevance of these functions, the office has endeavoured to make this engagement effective by implementing e-Samadhan.

e-Samadhan is a web-based application for submission and redressal of grievances related to entitlement function of the O/o Accountant General (A&E), Haryana. Due to the huge pensioner's and Fund subscriber's base in the state, the number of grievances received in the office was extremely high. The grievances were received in paper copies in the office and were resolved manually. Manual response were riddled with issues like inordinate delays, unscientific and bulky storage and problems in retrieval of documents. e-Samadhan was envisaged as a swifter and dynamic way of resolution of grievances which emanate mainly from entitlement functions of this office. Initially developed as an Online Grievance Management System (OGMS), it has now become a primary and convenient instrument of not only handling grievances related to Pension and Funds related functions but also for Loans and Advances and other general communication with the state government departments, DDOs and pensioners as well as GPF subscribers and other stakeholders.
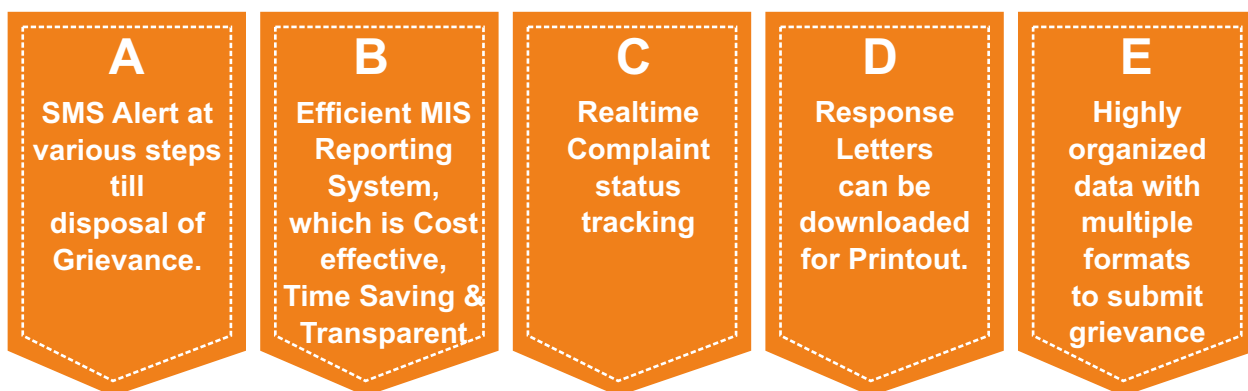
In e-Samadhan;

- The user can register on the portal using his mobile number as the username.
- Grievance can be submitted online.
- There is also an option of submitting the grievance in the form of audio.
- A unique OGMS no. is generated for tracking the request progress in future.
- The complaints are automatically allocated to the concerned section/ officials based on rules.
- The portal also has provision of sending SMS at various stages of processing of grievance to update the individual about the progress in the resolution of grievance.
- The system also takes care of grievances which are received in physical format. They are scanned and uploaded in the e-Samadhan by the officials of the e-Samadhan Cell. Procedure of resolution in this case is similar to that followed in online grievances.

Work-Flow of Online Grievance Management System

•The real time tracking of complaints are enabled.

Key Features of e-Samadhan are:-

A	B	C	D	E
SMS Alert at various steps till disposal of Grievance.	Efficient MIS Reporting System, which is Cost effective, Time Saving & Transparent.	Realtime Complaint status tracking	Response Letters can be downloaded for Printout.	Highly organized data with multiple formats to submit grievance

a. Multi-user facility provided for responding to & resolving the grievances.

b. 90% grievance settlement till date

c. Turn around time reduced to one day (in ideal scenario).

d. Date/status wise reports can be authorized.

e. The validity of the grievances can be checked.

III. Web based Grievance Redressal System

The Office of Principal Accountant General (A&E), West Bengal conceptualised, designed, developed and operationalised a Web based Grievance Redressal Module that made processing of grievances and monitoring of timelines efficient, and helped in improving the turnaround time for grievance resolution.
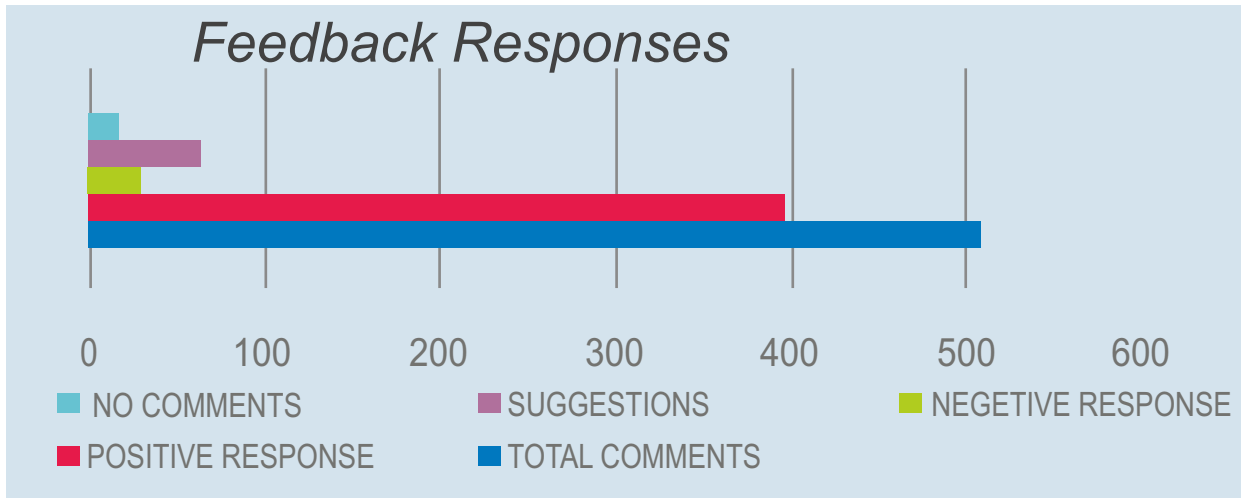
The AG office had multiple points of grievance recognition and registration systems and each of them had their own protocol and own mechanism of recognition, redressal, reporting. This created problems where sometimes some grievances were given priority, such as RTI applications. Besides, the higher authorities did not have the relevant unified data for monitoring the timelines and pendency of the grievances.

Hence, it was felt necessary to develop an IT Solution after analysing and mapping the flow of various types of grievances. The existing procedures were analysed and relevant BPR (Business Process Re-engineering) was done to ensure adherence with 4R (Recognition, Redressal, Reporting, Remedy). Various wings of this office were onboarded.

Outcome & Impact

	OLD SYSTEM	**NEW SYSTEM (MODULE) 'S IMPACT**
Recognition	• **Multiple points** of receipt of Grievance, so no integrated awareness of amount of Grievances	• **Single Entry** for feedback and grievances and unified platform for reporting
Recognition	• Timeliness of Grievances and feedback were not able to be followed properly, as each was processed in single physical file	• **Timeline norms** which were not existing earlier were made and enabled to be followed (the details given in graphs)
Reporting	• **No register** of pending grievances and no method of submitting information to DAGs or monitoring by DAGs and PAG.	• **Dashboard for DAGs** for monitoring and updated in real time whenever a grievance was closed
Redressal	• Multiple movement of files between section, coordination, dispatch	• Direct Sectional redressal, with no unnecessary file movement

The time taken between earlier offline instances and the online module mechanism showed significant improvement. The comments received in the Feedback Section of the website demonstrate the dynamism with which the Grievances are addressed by this office.. The analysis of Graph "Feedback Responses" for a month (March 2022), as received in website is as below:

Feedback Responses

Legend:
- NO COMMENTS
- SUGGESTIONS
- NEGETIVE RESPONSE
- POSITIVE RESPONSE
- TOTAL COMMENTS

X-axis: 0, 100, 200, 300, 400, 500, 600

IV. Pension and GPF Samvad

Most of our offices of Accountant General (A&E) manage the General Provident Fund (GPF) Account of government employees and authorize their pension after retirement. Having a hassle-free grievance redressal mechanism is critical for ensuring quality delivery of these services. **Office of the Pr. Accountant General(A&E-I), Maharashtra** initiated various grievance redressal mechanism aided by technology.

PENSION/GPF SAMVAD

The Pension and GPF Samvaad aim at providing pensioners with 'Pension at the Doorstep Services.' The pensioners register for these weekly Pension Samvaad interactions through the website/email or through the toll-free number helpline or voice mail number of the office. The Reforms and Innovation Cell of the Office conducts these weekly Pension Samvaad interactions through WhatsApp Video Calls/Zoom/Phone calls depending on the choice of the pensioner. Treasury Officers and DDOs are called in to assist wherever required. The Application Form for the Online Pension/GPF Subscribers Samvaad is available on the Website link- https://cag.gov.in/ae/mumbai/en.

A Voice-Mail service has also been initiated, using which pensioners can register for the Pension Samvaad 24/7 through voice recording (voice mail number – 020-71177775). The pensioners receive a call back from the office within two working days and their issues are taken up for resolution. A Toll Free number service is also avaialble through which pensioners/GPF subscribers can call (toll free number-1800-22-0014) to register for Pension Samvaad and request for any help/information.

The Principal Accountant General (A&E)-I, Maharashtra, Mumbai invites Government of Maharashtra State Pensioners to a

Pension Samvaad at your doorstep !

Meet officials from the Office of The Principal Accountant General to discuss and solve your Pension/GPF related issues through Whatsapp or Zoom Video Call *from the comfort of your home*

Samvaad will be held Weekly-
Every Friday

The following topics shall **NOT** be entertained during the Samvaad:-
(1) Cases involving purely Legal points or any matter which is Sub-Judice.
(2) Grievance involving policy matters.
(3) Issues such as appointment on Compassionate Ground.
(4) Retention of Quarters and Recovery of Penal/Damages rent and matters relating thereto.

Options to Register for Pension Samvaad:
✅ Click the link available under Menu Option **'Pension Samvaad'** on our office website https://cag.gov.in/ae/mumbai/en *or*
✅ Record your request through Voice Mail Service No. 020 7117 7775 *or*
✅ Call the Pr. AG Office Toll Free No. 1800 2200 14

PENSION/GPF SEWA PATRA

An Online Drop Box on the office website-(https://cag.gov.in/ae/mumbai/en/ae-complaint-suggestion) enables pensioners to seek answers to their queries and submit their requirements without visiting office in-person.

ONLINE HELPDESK

An Online Helpdesk which is operational 24/7 – helpdesk.mh1.ae@cag.gov.in- has been created whereby DDOs, TOs, Pensioners and GPF subscribers can refer their queries by writing to the office.

The above efforts along with workshops for DDOs of the State Government and dissemination of short videos for pensioners and officials of State Government have helped in improving the quality-of-service delivery of the Office and has been well appreciated by everyone.

Doordarshan Sahyadri (a regional Marathi channel) had broadcasted a report/feature on 17.09.2022, on the digital initiative 'Pension Samvaad'. The link for the feature (along with the English subtitles) is given below:

https://drive.google.com/file/d/1jcsZpGCMDh9Qr5oNDnA4Y5-EJLJCLOiH/view?usp=drivesdk

INITIATIVES FOR CAPACITY BUILDING

Capacity building is a systematic process to improve employees' knowledge, skills, values, attitude, motivation, and capabilities necessary to perform well at work. Capacity building affects organizational performance.

The CAG Institution is knowledge centric and hence it is important that employees are upskilled regularly.

In this section we showcase the initiatives undertaken in the recent years to address capacity building.
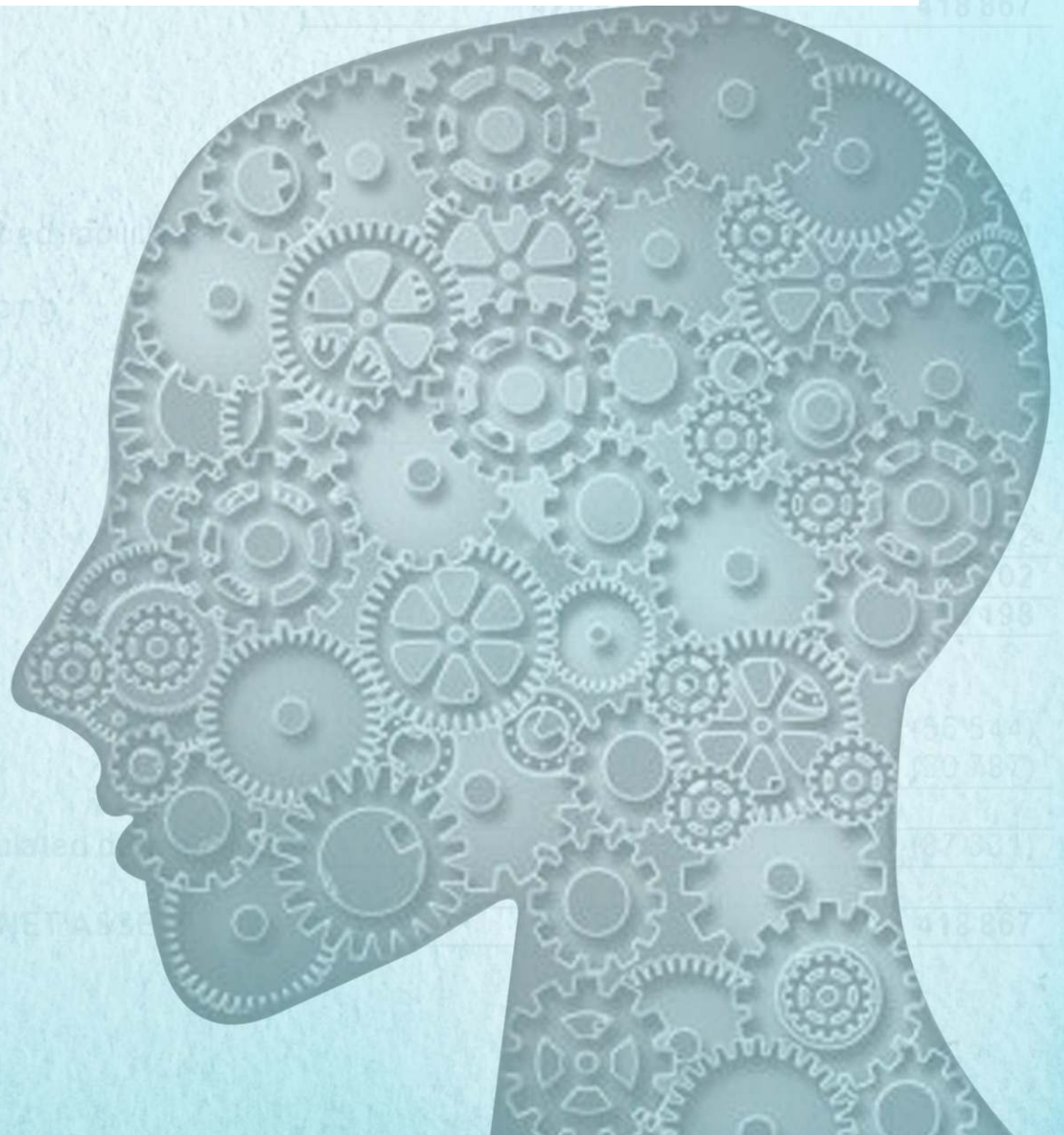
"Auditor, Train Thyself" - Learning Management System and Theatre as a Learning Medium

The Comptroller and Auditor General of India is striving to create an organization of agile auditors equipped with future-ready skills. In order to identify the right skills, our internal **Training Division at Headquarters,** carried out an IT Training Needs Analysis (TNA) through the Training Portal covering over 35,000 employees, the largest exercise ever conducted in the CAG Institution.

In recent years, learning has moved to a "Self-determined Learning" approach, where the learner determines what is of relevance to him, and the instructor only facilitates learning. Digital learning methodologies promote autonomy and a learner-centred approach. The Training Wing had developed Self-Learning Videos (SLVs) on MS Word, MS Excel, MS Access, MS Power-Point, Email, e-Office,IT applications of government like PFMS, BEMS, and SPARROW for dissemination in the organisation. In alignment with this philosophy, a Learning Management System (LMS) was envisioned to enable learning "anytime, anywhere and on any platform". The LMS was designed to function optimally on the mobile platform and also break down subject matter into small bits that can be consumed by participants easily.

The LMS system makes available digital training material online, in the form of courses. Each course is divided into several modules, in turn, divided into multiple sub-modules. Participants are expected to clear an end course examination in the LMS before they are certified. The LMS portal provides employees easy access to training in subjects of their choice, at their own pace and time from their home or elsewhere. Employees will be offered a basket of courses from which they can enroll for relevant ones. Supervisory officers will also be able to track the progress of their staff on a real-time basis. Integration of the LMS with the SAI Training portal will further improve the overall effectiveness of capacity building across the institution.

Content Development

While it is said that the "Medium is the Message", no LMS works without appropriate content and innovative methodologies. In case of content, we do work which is unique and does not have peers within our country. Therefore, we require to develop most of our content by using in house talent.

As a part of this initiative to develop content, the Training Wing in HQ asked **Regional Training Institute, Chennai** to develop Self-Learning Modules (SLM) on Public Financial Management System (PFMS) and Integrated Budget & Expenditure Management System (iBEMS) in November 2021 as SLMs in audio-visual format.

Preparation of the SLMs required IT knowledge as well as functional knowledge of the PFMS and iBEMS. Accordingly, faculty members (IS) worked with staff having domain knowledge of administration functions and prepared the SLMs of around five hours duration in six parts.

Easier said than done, preparation of the modules required not only technical expertise and functional knowledge but also immense patience, control over voice modulation by the presenters, coordination between audio and visuals and a lot of editing skills. Efforts were made to explain each of the menus, sub-menus and the processes involved therein in detail, using live data.
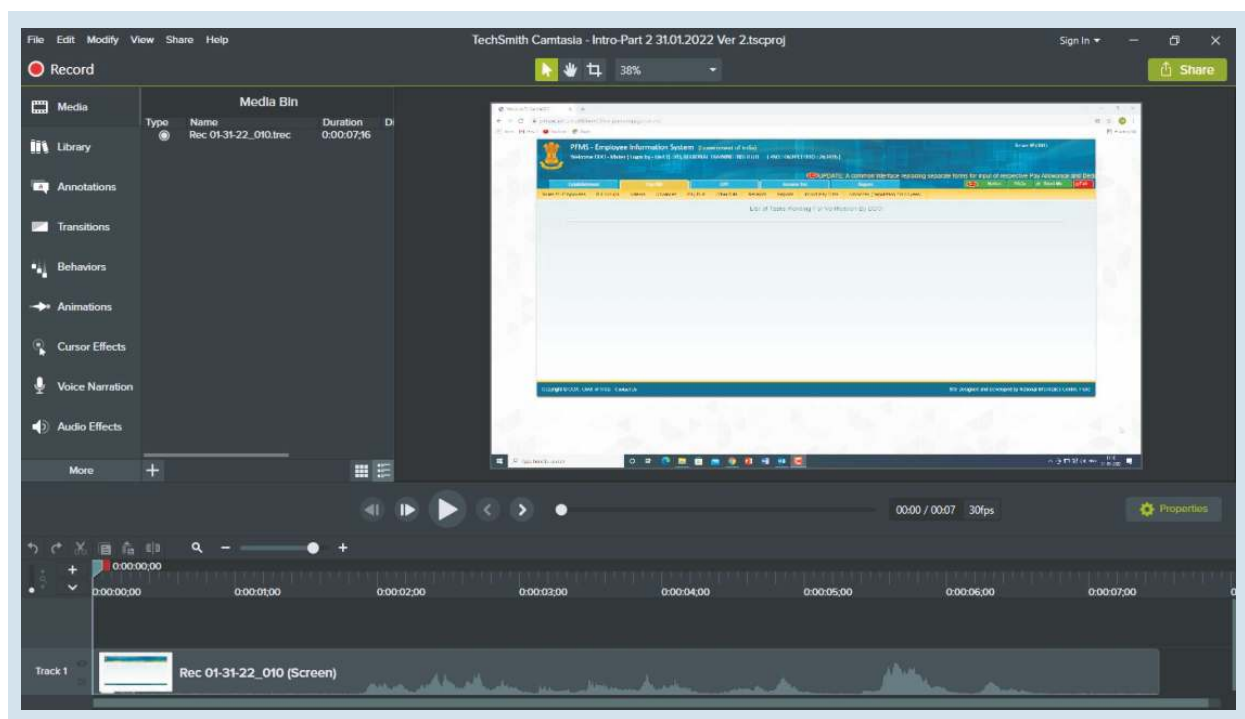
A recording-cum-editing software was used which could record the voice and screen simultaneously. Once recording was over, experts in the field were roped in, to fine tune the recording, improve voice modulation, integrate the voice and the screen timing, highlight the cursor movements to make it viewer friendly and to also include special effects.

Use of Theatre as Training Medium

Our offices continuously innovate and use new training methodology to get the message across. To break the monotony of classroom sessions and disseminate messages on soft skills in a convincing and interesting manner, we embarked on a journey of producing short plays using in-house talent.

These short plays are intended as training tools to be screened in a classroom environment, as a pedological tool. These could even be played during short breaks, to drive home the message, or used as Ice Breakers in training sessions.

 As a pioneering venture, RTI Chennai produced a short play on 'Punctuality'. This was a complete in-house production with our staff playing all roles. The video of the short play was played during sessions on 'Personal and Professional Ethics and Code of Ethics' in various courses. The play was very well received by the participants. The short play in Tamil with English sub-titles, has been forwarded to HQ for dissemination amongst other offices of the CAG Institution.
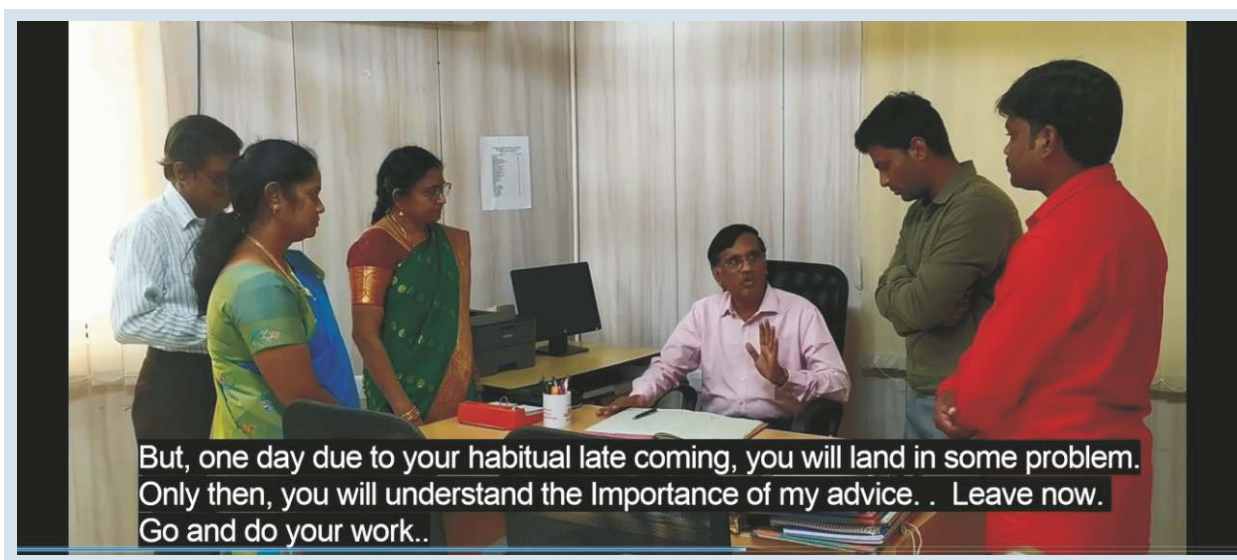
CDMA Support Videos (CSV) on Data Analytics Tasks

Introduction

Centre for Data Management and Analytics (CDMA) has been involved in performing data analytics on various All India and State auditee datasets. During such data analytics, various data analytics tools (both Open Source and Proprietary) viz. Tableau, Python, R, KNIME, Excel, SQL etc. are being used, with each tool having its own pros and cons. In the course of various data analytics projects, CDMA felt that some tools are more suited to specific data analytics tasks for audit purposes. Hence, there was a need to compile an indicative list of audit tasks which can be executed using specific tools. The suggested selection of tools for specific audit tasks has to be explained to the users.

In view of the above, CDMA came out with a knowledge sharing initiative named CSV- CDMA Support Videos in which short duration videos on different topics relevant for audit were created to enable officials to improve their skills in data analysis.

The data analysis videos available online are generally used by private sector and tutorials/ examples are based on sales data and are confined to a particular tool/technology. SAI India deals with Governmental data sets which we handle in fiduciary capacity and these are quite different, both in quality and content, from datasets available on other data sharing platforms.

Under the CSV initiative, CDMA is making videos to address specific queries relevant to audit using analytics tools generally used in the CAG Institution. We will be adding more and more videos on advance analytics on a continuous basis.

Scope and target viewers

The CSV video initiative will ultimately cover all the basic and advanced steps for different Audit Analytics Tasks with specific tools using auditee data sets. We plan to cover most of the Audit Analytics Tasks with various tools viz. Tableau, KNIME, Excel, SQL, MS Access, Python, R, Idea, Arc GIS, etc. Some tasks which have been covered in the videos are as follows:

• Appending/Merging Data Sets

• Aggregation or Summarization

• Duplicate Beneficiaries, Sampling Methods

- General Statistics for Data Profiling

- Developing Heat Maps

- How to access Tableau Server

- Data Preparation-Financial Year

- Joining of Datasets

- Data Cleaning - Validating Date Fields

- IP Address to Location

- Accessing Database

- VPN - Usage and Applications

- Use of Fuzzy Matching

- Geo Fencing Analysis
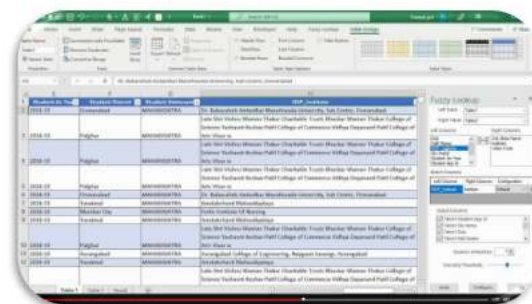
Sustainability

The videos are self-explanatory showing the use of various tools for a specific audit query which can be easily applied by various users following the steps. Further, CDMA technical support would also be available if required. With the support of all field offices, CDMA aims to increase the learning video universe so that every IAAD official is able to execute or carry out data analysis related audit tasks by referring to the relevant videos as needed.

Sample Screen shots of the videos
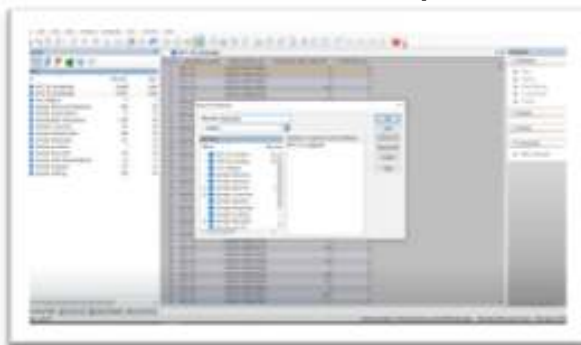
Appending data sets in IDEA

Generating Statistics in KNIME

Heat Map using TABLEAU

Fill gaps in data set using R

Capacity Building for Local Bodies Audit

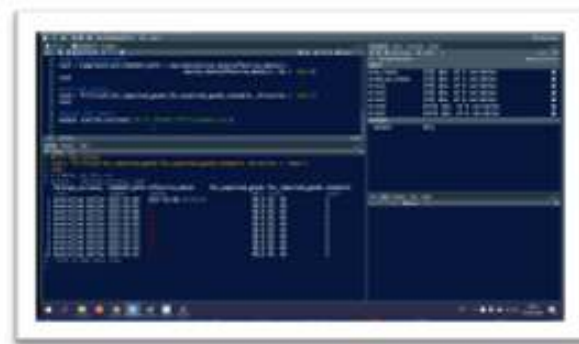The 73rd and 74th amendments to the Constitution and consequent Acts of State Legislatures, had empowered the Local Bodies (LBs) and delegated various functions to be carried out by these bodies. The accounts of LBs are audited by Local Fund Auditors (LFAs) of the State Government. C&AG has been mandated to provide Technical Guidance and Support (TGS) to these Auditors.

Enhanced allocations of funds to the LBs has increased the criticality of audit and maintenance of proper accounts by the LBs. CAG constituted a Task Force in November 2020 to study the accounting and auditing systems of LBs, with an objective of strengthening the auditing arrangements. The recommendations of the Task Force were discussed by the CAG's Audit Advisory Board (September 2021). It culminated in a high-level Panel Discussion on 'Enhancing Good Governance through Strengthening of Local Bodies Audit' which was chaired by the CAG. The key issues that emerged from these exercises included the need for capacity building and training of the LFAs and accounting staff in LBs. CAG's audit in related domains was refocused adopting a district-centric approach and by increasing the audit coverage of LBs and deploying additional resources. This resulted in an increase of nearly 125% in audit coverage over 2020-21.

Extensive consultations with LFA were held to understand the challenges faced by them and their expectations from CAG. Various initiatives were also taken to strengthen the role of LFAs and to improve the system of discussion by the Legislature, etc. Capacity building efforts have been strengthened with Annual Training Calendars, being prepared for training of LFAs by the State AG's offices.

To make these audits effective, new Guidelines were issued for Financial Audit of PRIs which contain step-by-step guide for conduct of Audit, with a view to comment on the extent to which the
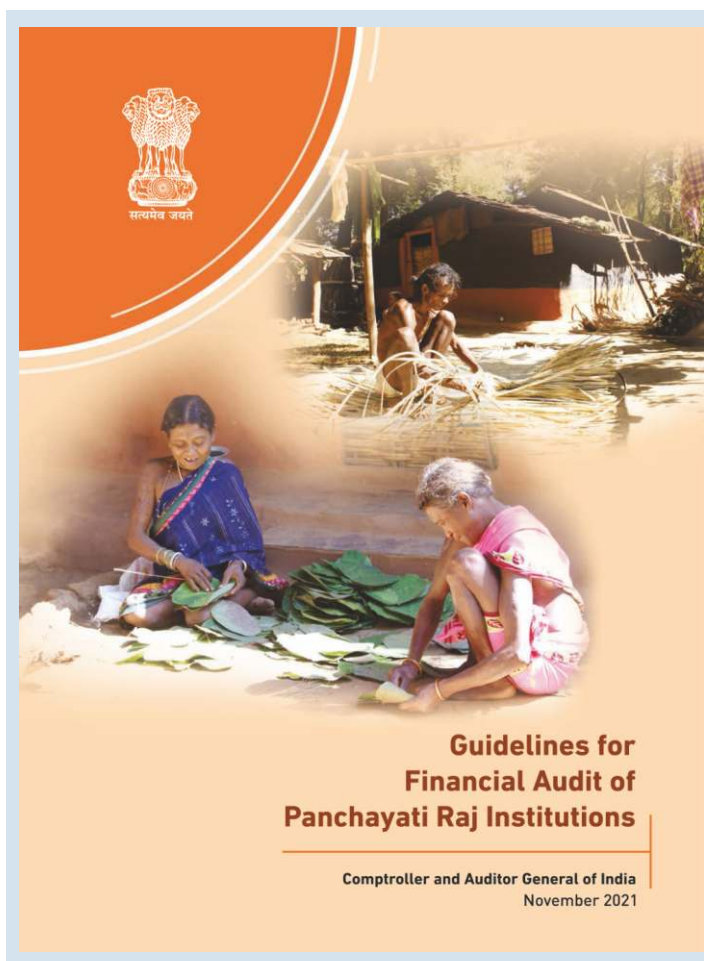
accounts present a "true and fair" view. Attempts are being made to strengthen the various legal provisions in the Act and to make the Technical Support more effective. The States have been requested to designate a Legislative Committee to discuss the Audit Reports of LBs. A review of the implementation of the 74th Amendment for urban LBs has been taken up and the relevant reports are being tabled in State Legislatures. Consolidation of common/relevant issues arising out of performance review of 'Implementation of 74th Constitutional Amendment Act' conducted by various States is under preparation.

All these efforts would go a long way in enhancing the capacity for audit of LBs.

BUSINESS PROCESS IMPROVEMENTS

Business or functional process is the foundation of an organization. They define how certain tasks are carried out. Process improvement through incremental changes enables organizations to improve the quality of output, products and services delivery. It makes an organization efficient by eliminating redundant efforts/processes, by reducing the cost of operations, and by ensuring compliance with rules and regulations.

The Institution of CAG of India constantly strives to improve its processes. The technological developments in the government departments as well as within our institution in recent years have provided opportunities for improving the business processes.

In this section we have highlighted the initiatives undertaken in the recent years by various offices for effective use of technology in improving their processes. Although some of them are of incremental nature, yet these bear great impact. Few others traverse into unchartered territory.

Development of e-file
Audit Module in e-Office

Files record the decision-making process and reasoning behind the decisions. One of the initial steps in the audit process is requisitioning and receipt of the physical files. As Directorates in Ministry of Railways (Railway Board) shifted to e-file Management System of e-Office application, the file/record got digitized in Railways. Majority of record/files are now available on their e-office portal. Hence there was a need for developing an arrangement by which the e- record/files of various directorates of Railway Board could be e-requisitioned by the Audit for scrutiny.

Responding to the need, **the Railway Board Audit (RBA)** wing developed an e-file Audit Module in the e-file Management System of our audit offices. With concerted effort of RBA, the Railway Board, and NIC, the e-file Audit Module went live in September 2021.

In the e-file Audit Module, auditor can see the list of various e-files associated with the auditee and make online requisition for specific files. The Dashboard of the Audit Module displays file requested, files received, files requested but not received and the files requested and returned after Audit. Once the e-files are received in the Audit Module, the e-file will be parked with the Audit till returned, just like in physical scenario.

The module was used extensively during the COVID-19 Pandemic period by the RBA. As a result, there were no backlogs or delays in auditing. The module has brought in better transparency, accountability, reduced duration of audit and improved interaction between Railway Board and Audit.

The module was utilized for conducting various audit assignments such as Thematic Audit on "Procurement of Rolling Stock Parts through Import contracts", "Procurement and utilization of wagons", Performance Audit on "Management of Spectrum" and for the ongoing Audit of "Energy Management and Green Initiative".
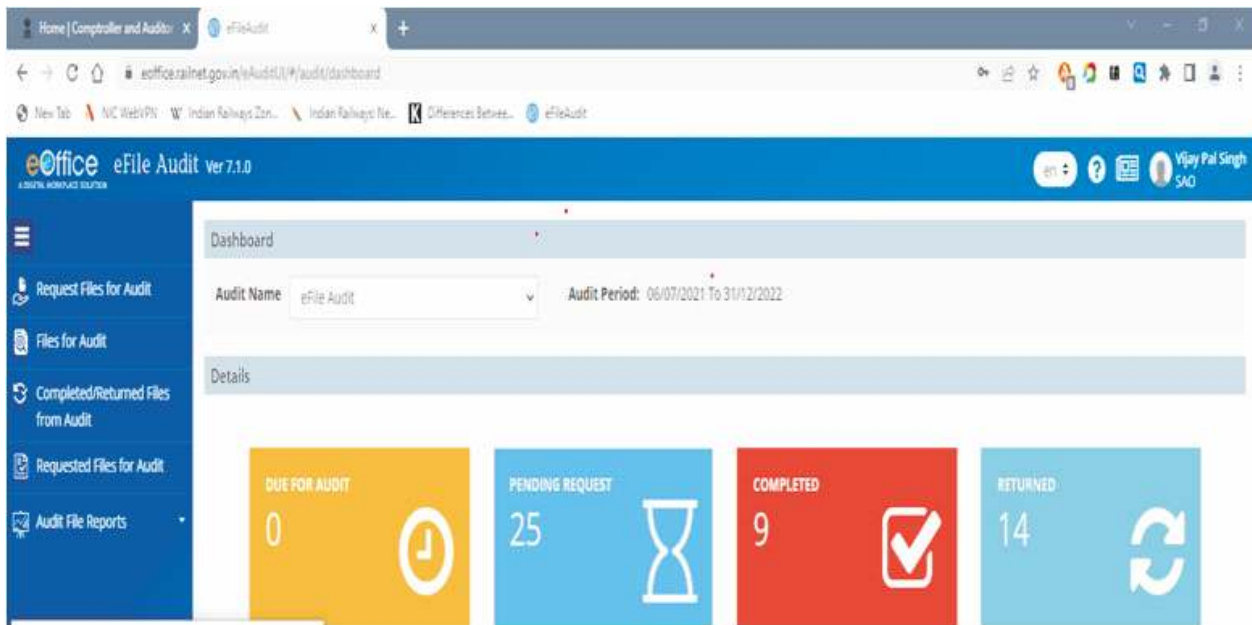
The Digitalization of Pension Processing

The office of Accountant General (A&E) authorizes the retirement benefits of State government employees. The application for retirement dues used to be submitted in paper applications. From these data was captured into pension processing application of the Accountant General and the final authorizations used to be paper based records sent through Post.

Office of the **Principal Accountant General (A&E), Kerala** with the support of Government of Kerala took the initiative to digitalize the whole process.

The retiring employees were facilitated to submit the application online. By April 2018, the AG office integrated the Pension processing application of the Office with Pensioner Information System (PRISM) module of State Government and Treasury Pension Payment module (PMIS) of the State Treasuries. Now the Office could receive digitally signed e-applications for pension, including pension revision applications from PRISM and issue digitally signed e-authorization to PIMS for payment.

In Kerala, Accountant General Office maintains the service details and pay particulars of Gazetted officers of the State Government in a digital system called GEMS. Office took the initiative to modify receipt of online pension applications in GEMS from PRISM. In these applications all the required data for processing the pension claims of Gazetted officers are incorporated from GEMS, and the digitally signed data is shared with the pension wing for processing the pension cases of Gazetted officers, thus making the whole process paperless.

The office has also implemented the receipt of digital Event/ Non-Event Certificates of the pensioners from pension sanctioning authorities to confirm any events after the retirement and approval of authorizations.

Receipt of information needed for processing pension digitally has standardised the data format. This has reduced the number of cases that are objected to and sent back for lack of information. This also enables tracking the status of the application. In addition, Pension records are stored in the office of Accountant General for a very long time and are needed for future references like revisions of pension. Space for storage, retrieving the documents efficiently etc. were huge challenges. With the help of State Government and M/s Keltron Ltd (State Govt PSU), the Office took an initiative to digitize the pension records. Following a strict quality assurance control mechanism, the office was able to digitise the documents and store them in a Document Management System, which facilitated easy retrieval by users based on role-based access.

These digitization efforts reduced the time needed for processing a case and greatly improved the quality of service to the pensioners.

Digitization of Old Pension Records

The retention period of Pension records is long. To overcome the difficulties in storing physical records for a longer period, the **Office of Accountant General (A&E) Telangana** (erstwhile Andhra Pradesh) attempted the digitization of records in 2015. However, due to non-indexing, data quality issues and lack of a search option of data fields, the usability of this digitized records was limited. Learning lessons from the previous attempt, this office took the initiative for digitizing the pensions records which will be of high quality and with search features to improve the usability.

The Office achieved this by using latest technologies available like Document Management System (DMS), Optical Character Recognition (OCR), Image optimization, Artificial Intelligence, Machine learning, indexing and by following a rigorous Quality Control (QC) process.

In the initial stage a proof-of-concept was conducted to identify patterns, data blocks, repetitive critical data elements in the old manual files and to examine how much of these data points could be captured faithfully using OCR, Artificial Intelligence (AI) and training the scan application with the pattern of records put in a file. As the results were encouraging the Office went ahead with the project to digitize the whole pension records.

Thirty three critical data fields in pension file which are pertinent for future actions including revision of pension were identified. These data fields are being captured using OCR technology during scanning after training the image reading application on the pattern of data blocks in each file and location of these fields. The captured data points are put in a database which would be linked to the scanned documents to enable future processing more effectively. Machine Learning techniques were used in the process to setup the page template for the identified pages to capture 33 critical data fields.

Despite the high DPI (Dots per Inch)/resolution, the scanned images of Phase 1 were found to be unclear due to the poor document condition. To rectify this, image optimization is being done to cleanse the scanned pages in Phase 2 thereby increasing the sharpness of the image while removing smudges, discoloration, etc.
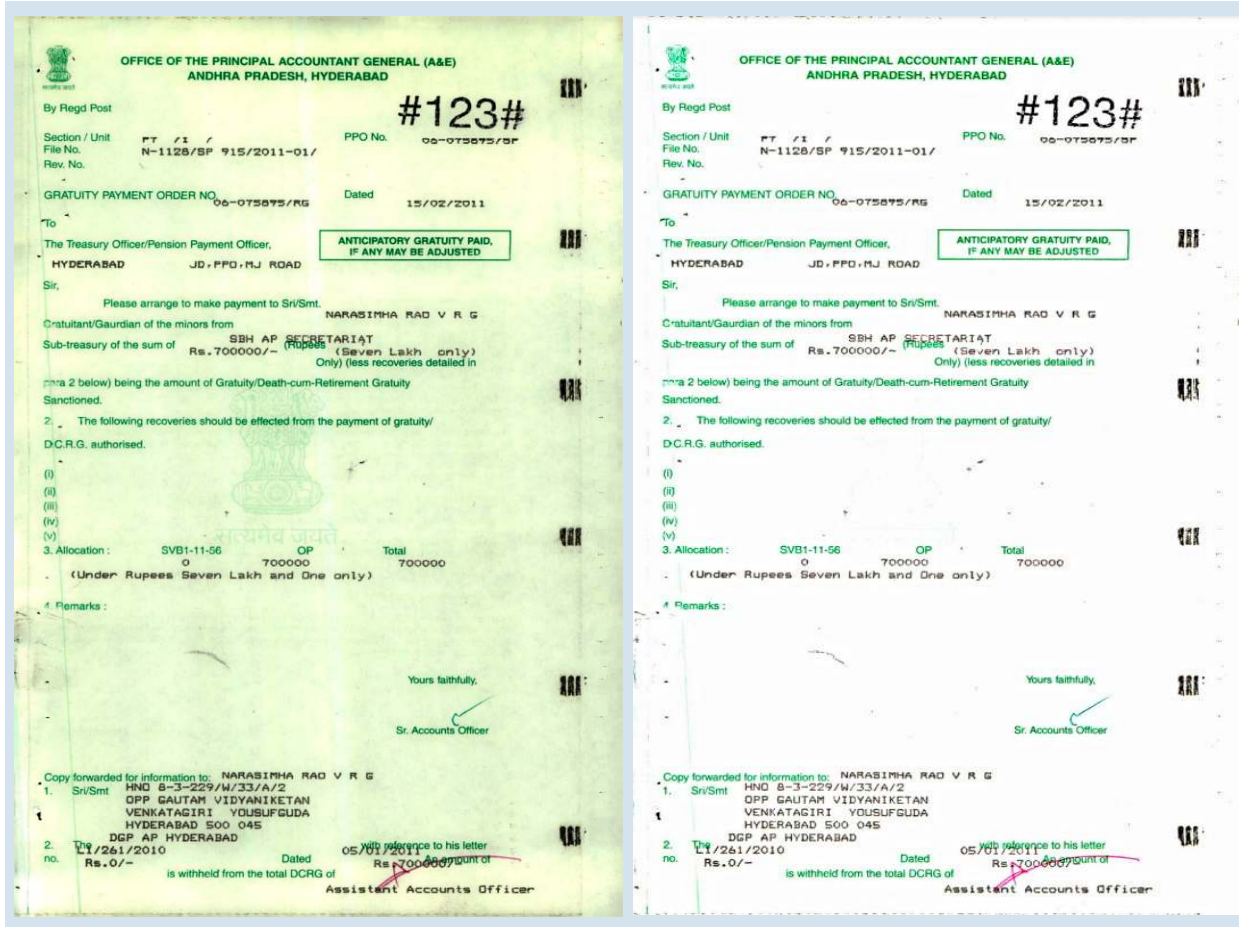
After the first phase of digitization, a major drawback highlighted by target users was the difficulty in dealing with a single scrollable image of the pension file that needed to be scrolled up/down within the document viewer to identify the relevant data points e.g., original service pension or pensioner's designation prior to retirement - for any activity. To address this difficulty and make the digitized file more consumable, the digitized documents are being indexed using machine learning technique in Phase 2. This allows users to access specific pages easily for future references.

To ensure that the digitized records are of high quality and consumable, a multi-level QC mechanism involving Vendor and office employees has been setup.

The digitized record and its accompanying parameters are being stored in a Document Management System. This helps in faster retrieval of the document. Besides document retrieval, there is an inbuilt search facility within the document view which makes it easy to retrieve information and thus assists in a more time-bound service delivery, while also reducing the requirement in terms of manpower and man-hours spent in physical document retrieval.

Besides the above-mentioned outcomes, it is also expected that the completion of this exercise would help reduce the need for a large physical space within the office premises with either movement/permanent disposal of the physical pension files and the freed-up space can be utilised by the office in a better way.

Scanning of 2,94,821 pension files out of 3,25,904 files has been completed as on August 2022 and the QC process, which is being run in parallel by a dedicated team set up for the purpose has completed the validation of 87,850 files.

Web Application for Monitoring Public Accounts Committee Recommendations

Comptroller and Auditor General of India conducts the audit of various Government departments, autonomous bodies, Companies /corporations, PRIs, Urban Local Bodies, and other Institutions in the State. Audit Reports are placed in the State Legislative Assembly. Public Accounts Committee (PAC) of the legislature discusses audit paras of Reports and make recommendations for corrective action. These recommendations have to be followed up and Action Taken Notes (ATNs) by concerned Departments have to be monitored.

Previously, the communications with PAC were in physical mode. This has its inherent limitations. Consolidating the replies and gathering real time information was challenging. To overcome these limitations, **Office of the Pr. Accountant General (Audit), Haryana** developed an application for monitoring PAC recommendations and ATNs.

In the Phase 1 of the application developed by the office, information on details of audit paragraphs, recommendations of PAC, ATNs etc. is captured through data entry. Once the data is captured in the database, the user could sort the data and analyze the issues based on their requirement. The Dashboard of the applications gives an overview of the status of audit paras and ATNs with drill down options for the user. Being a web-based application, this could be accessed across multiple devices.

The application helped the Committee and other users/stakeholders to work in a digitized paperless environment. The application helped to overcome the delays and improved transparency.

The Phase 2 of this application entails development of features for real time basis communication among the various users, enabling online submission, vetting, forwarding of ATN and other communication among the users through a user-friendly interface. This would eliminate the current practice of data entry and further streamline the process.

This application can be easily replicated by other offices where such a system does not already exist as the functioning of PAC and recommendations are similar across Audit offices,

Digitalisation of Voucher Checking Process

The office of the Accountant General (A&E) scrutinizes the vouchers received from Treasuries. The Monthly Accounts of the State is compiled after the voucher scrutiny. Voucher scrutiny helps in identifying fraudulent transactions, errors in accounting, omission of records etc. Expenditure related to those Vouchers which are deficient in nature are placed in a Suspense Head of Account and not carried to the final Heads of Accounts till the issues are rectified. Thus, voucher scrutiny is a critical component of the Accounts Compilation and Central Audit process.

The guidelines recommend a two-stage validation process of vouchers based on Stratified Random Sampling. The results of the scrutiny were earlier maintained as physical records in each Departmental Compilation Section. This made the consolidation process tedious, time consuming, resulted in duplication of work, and limited the management insights that could be derived out of the scrutiny.

To overcome this, **Office of the Pr. Accountant General (A&E-II), Maharashtra** took the initiative to digitalize the process by developing a module for "validation of vouchers" in the Voucher Level Compilation (VLC) application. In this module, the sampled vouchers are available for the accountants and other officers to scrutinize. Front-end user-friendly forms were made part of this module, in which the issues noticed during scrutiny could be captured.

Various MIS reports like category wise issues noticed, treasury and Drawing & Disbursing Officer (DDO) wise issues, section wise validation check details, total pending vouchers list, consolidated error Report, error intimation letter of all DDOs etc. could now be readily generated, since the information is captured in the database.

Besides reducing the time for generating reports, it also improved the quality of insights derived and enabled allocation of Human resources for checking more vouchers, pursuing with DDOs/Treasuries to resolve the issues etc. As shown below this has improved the quality of checking, quantity of vouchers that could be checked and improve the rectification rate after scrutiny.

The fact that this module was developed in-house by the office adds even more shine to the achievement.

Reduction of Objection Book Suspense items for the year 2021-22

Month wise errors identified and corrected before closure of account for the year 2021-2022
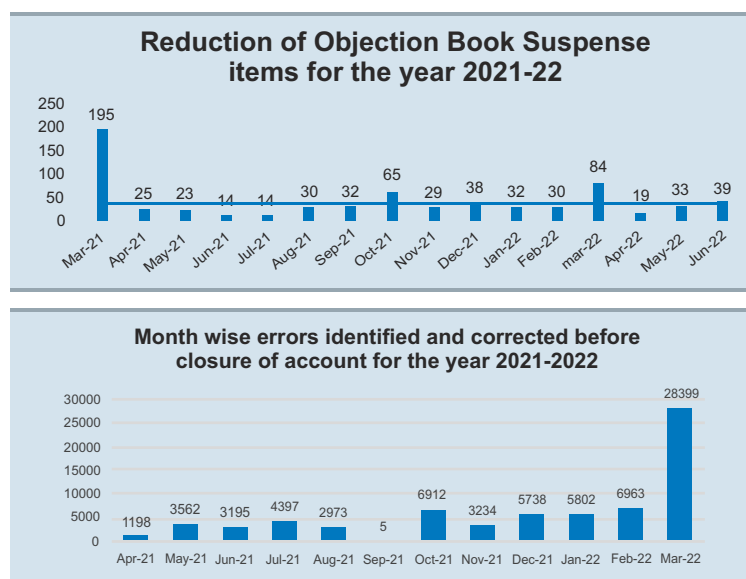
Performance at a Glance –
Aid to Management of Railway Audit

They say a picture is worth many thousands of words. Modern day managers are stressed and are perennially short of time. They need tools to make their work easier and their decision-making spot on. The IT geeks have stepped in to fulfill this need by developing dashboards. Dashboards are visual tools, which present up to date visuals of various metrics to managers to enable them to take optimal decisions. **The Zonal Audit Office of South-Central Railway (SCR)** developed a dashboard for the Railway Audit Wing.
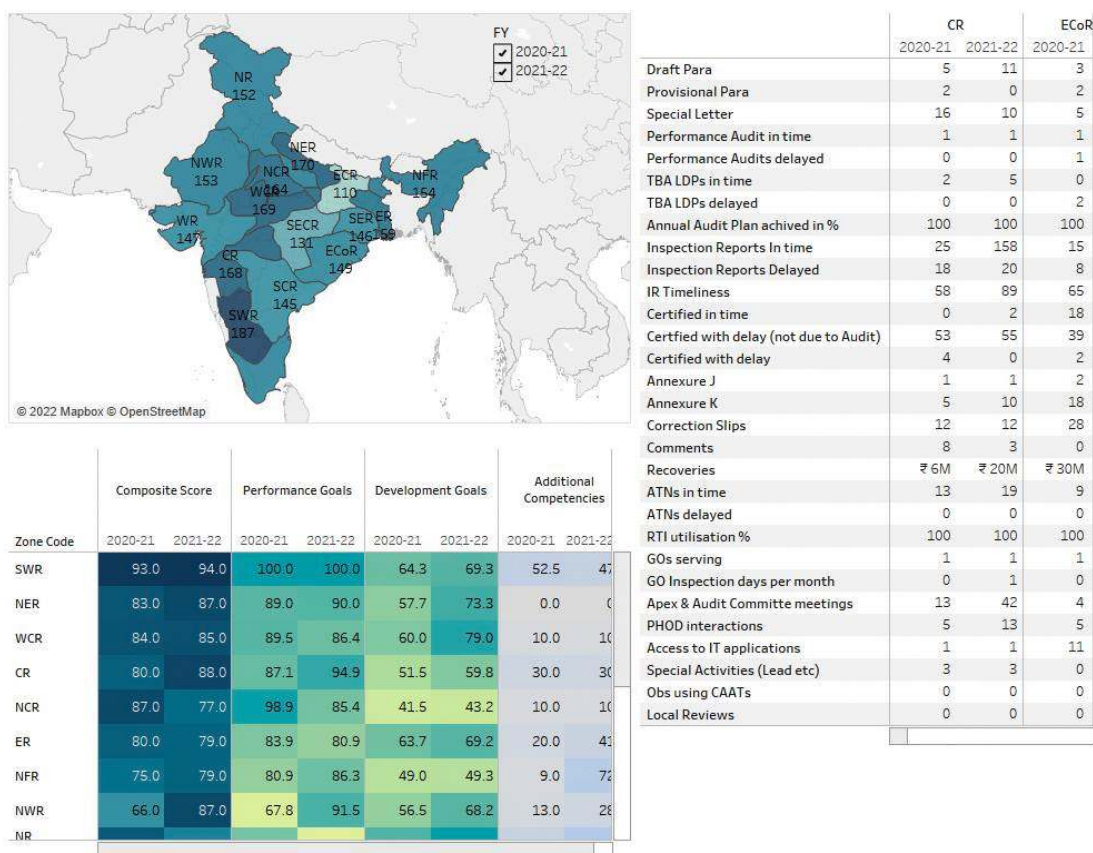
About the Dashboard:

Performance Dashboard for Zonal Railway Audit Offices (ZRAOs) is a visual presentation of key performance indicators of the 18 field offices of Railway Audit. It uses a modern-day data visualization approach to spot relationships and trends and to make sense out of data without requiring knowledge of statistics and computing. This web-hosted, interactive dashboard serves the need for improved monitoring by CAG Headquarters and easy reporting by ZRAOs.

Planning:

Traditionally, the work of ZRAOs was monitored through a predefined quarterly spreadsheet. which was cumbersome to read. It does not provide for quick comparison of multiple ZRAOs or for year-on-year comparison. Once the need was felt, an internal team from ZRAO – SCR rushed in to develop a digital dashboard that provides an at-a-glance monitoring

As the team comprised professional auditors, it quickly developed a methodology to calculate a composite performance score for each field office. A comprehensive set of performance parameters were defined, and weights assigned to them as per their relative importance. The

	CR		ECoR
	2020-21	2021-22	2020-21
Draft Para	5	11	3
Provisional Para	2	0	2
Special Letter	16	10	5
Performance Audit in time	1	1	1
Performance Audits delayed	0	0	1
TBA LDPs in time	2	5	0
TBA LDPs delayed	0	0	2
Annual Audit Plan achived in %	100	100	100
Inspection Reports In time	25	158	15
Inspection Reports Delayed	18	20	8
IR Timeliness	58	89	65
Certified in time	0	2	18
Certfied with delay (not due to Audit)	53	55	39
Certified with delay	4	0	2
Annexure J	1	1	2
Annexure K	5	10	18
Correction Slips	12	12	28
Comments	8	3	0
Recoveries	₹ 6M	₹ 20M	₹ 30M
ATNs in time	13	19	9
ATNs delayed	0	0	0
RTI utilisation %	100	100	100
GOs serving	1	1	1
GO Inspection days per month	0	1	0
Apex & Audit Committe meetings	13	42	4
PHOD interactions	5	13	5
Access to IT applications	1	1	11
Special Activities (Lead etc)	3	3	0
Obs using CAATs	0	0	0
Local Reviews	0	0	0

Zone Code	Composite Score		Performance Goals		Development Goals		Additional Competencies	
	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22
SWR	93.0	94.0	100.0	100.0	64.3	69.3	52.5	47
NER	83.0	87.0	89.0	90.0	57.7	73.3	0.0	0
WCR	84.0	85.0	89.5	86.4	60.0	79.0	10.0	10
CR	80.0	88.0	87.1	94.9	51.5	59.8	30.0	30
NCR	87.0	77.0	98.9	85.4	41.5	43.2	10.0	10
ER	80.0	79.0	83.9	80.9	63.7	69.2	20.0	41
NFR	75.0	79.0	80.9	86.3	49.0	49.3	9.0	72
NWR	66.0	87.0	67.8	91.5	56.5	68.2	13.0	28
NR								

relevant parameters included number of audit observations issued, timeliness of inspection reports etc. The methodology also includes additional activities like training, interactions with management etc.

The parameters are grouped into 3 areas- Performance Goals (core audit activities), Development Goals (activities that improve audit quality) and Additional Competencies (capacity building measures). The dashboard has a modular structure where new parameters can be added, and obsolete ones removed easily and weights readjusted without having to redesign it. In an innovative initiative of convergence, data for the dashboard was collected using Data Collection Toolkit in OIOS, which is an Audit management system, under implementation in CAG. Data cleaning and processing was done using open-source software KNIME. A web-hosted interactive dashboard was developed on Tableau.

The visualization has multiple views, indicating performance of ZRAOs on crucial parameters and a composite weighted score for each office. The interactive nature of the dashboard allows for inter-zonal comparison as well as for assessing the performance of a single ZRAO over successive years/quarters. CAG Headquarters and individual ZRAOs can assess reasons for lack of performance and make course-corrections. The model is scalable and aims to subsume at least 12 periodical returns from each of the 18 ZRAOs with considerable savings in man-hours, freeing up their time for core audit activities. This dashboard is an inspired example of turning the gaze inwards, where data-centric IT tools are used to monitor and improve our own performance.
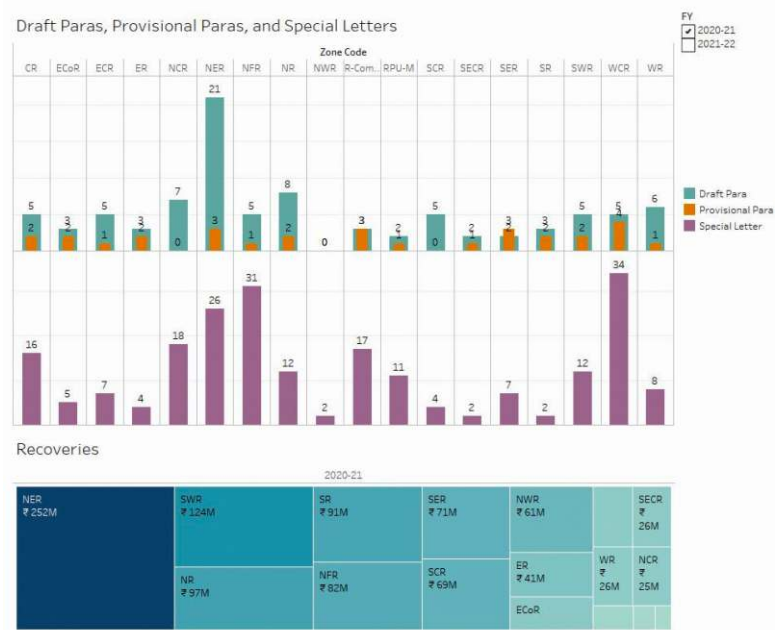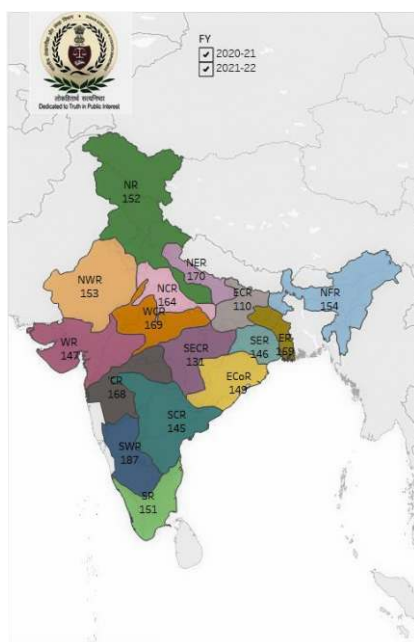
Performance at a Glance – Aid to Management of Accounts & Entitlement Functions

The Offices of the Accountant General (A&E) across the States are entrusted with the responsibility of authorizing retirement benefits to State Government employees and in few States manage the entitlements of serving Gazetted employees as well. The quality-of-service delivery impacts the government pensioners and serving employees. To ensure prompt service delivery and a similar quality of standard in services offered by various field Offices, the Government Accounts (GA) Wing closely monitors the performance of the Offices through a quarterly Key Reporting Area (KRA) framework.

Consolidation of the information from KRA report across Offices and its analysis was tedious and time consuming. To simplify the process of KRA report consolidation, derive better Management insight, and play a proactive role in improving the quality of services the **GA wing** took help of readily available technologies like Google Form, SharePoint and WhatsApp. The information sought in KRA report were simplified, made more focused and were sought through a unified format in Google Form. Unlike the previous quarterly collection of information, monthly information was sought. This report is then made available in SharePoint site of GA wing, where various Desk Officers of GA wing could review their respective States data.

An all-India Dashboard was developed in Tableau software using the reviewed data. This helped in Cross-State/Office comparison for deriving better insights. The scope for improvements noticed were readily communicated to the field Offices through the WhatsApp group managed by GA wing. Subsequent actions taken by field offices were at times daily monitored till the issue gets resolved.

As the trend from January 2022 shows, this new technology enabled proactive approach has helped in improving the functioning of 31 A&E offices. This is positive and re-assuring and would further help in raising the standards of service delivery by the CAG Institution.
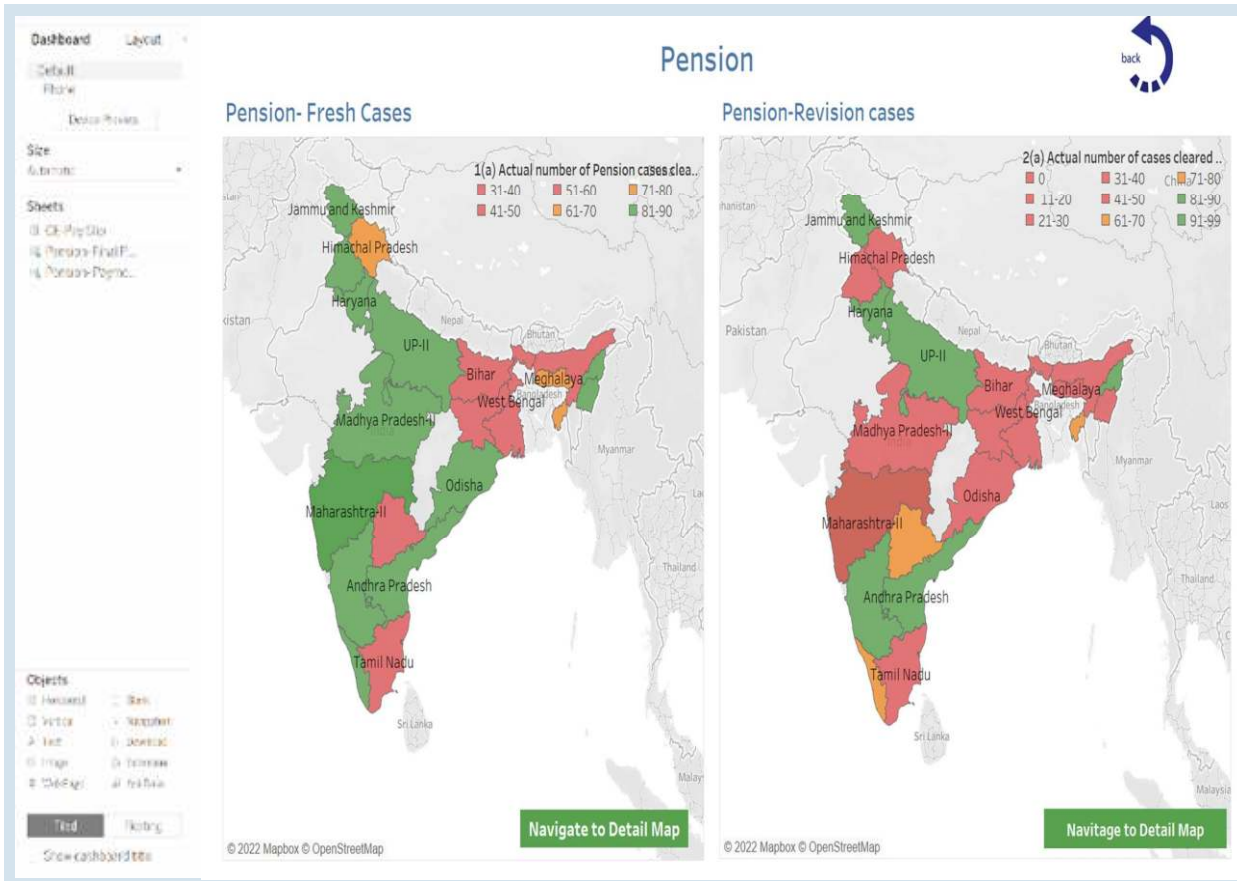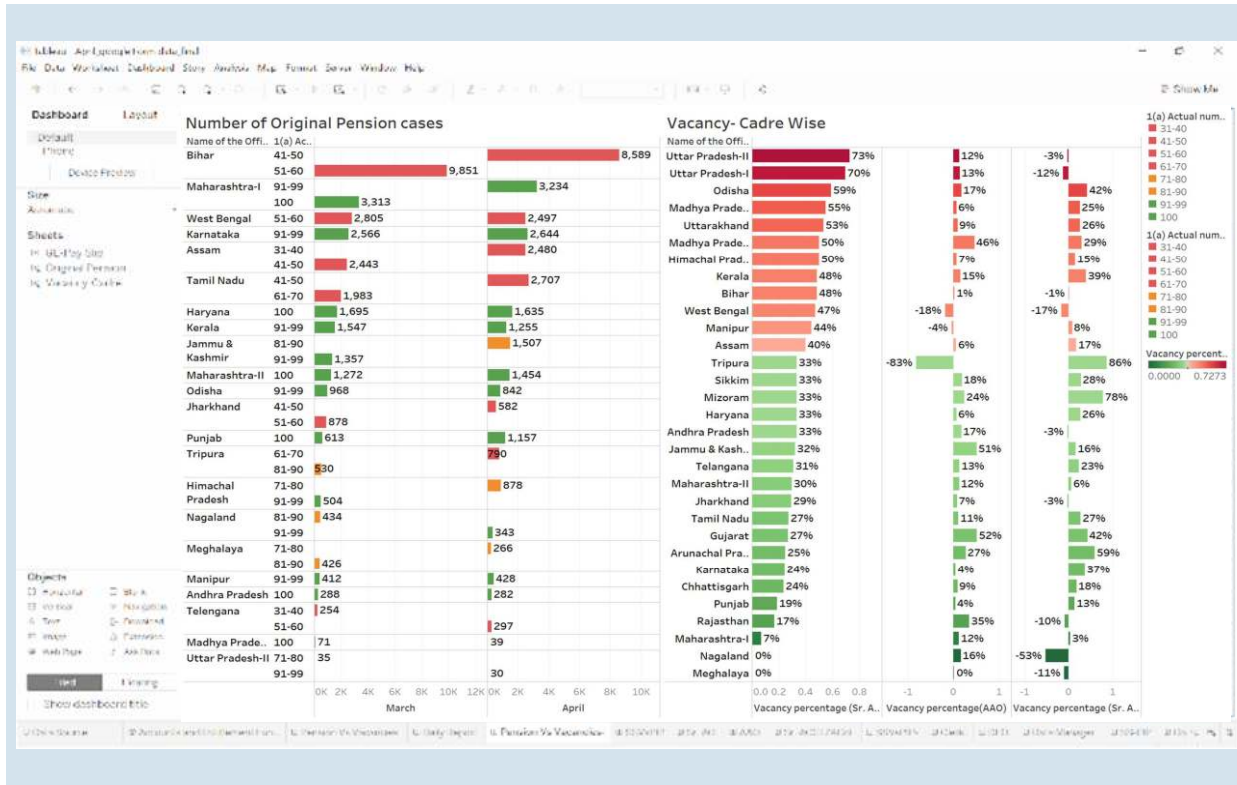
Audit Toolkits

Manuals are reference books of instructions that assist a person to carry out the work. It is important that manuals are updated with the latest development in the work environment or else it becomes outdated and limited in use. Checklists are often used as a tool for performing tasks in a structured and step wise manner for day-to-day affairs as well as for critical professional assignments. Use of checklist not only bring efficiency in work performed by the professionals but also reduces the risk of non-compliances to a great extent. With the evolving legal structure and compliances, the significance of checklist is now more critical for professional assignments and scheduling of tasks in an organized manner. Compendiums are ready references of circulars, instruction, or good practices which aid employees.

To achieve the intended benefits, the **Customs Receipt Audit (CRA) Wing of O/o Director General of Audit (Central), Mumbai,** took the initiative for preparation of Checklist for the Auditable units of CRA Wing as per Annual Audit Plan of Customs Department. Different checks required to be exercised during audit are tabulated for the convenience of Field Parties which helps them in capacity building, knowledge enhancement and to have uniformity in audit product.

The office took the initiative for preparation of Compendium of Circulars & Notifications in respect of various audits undertaken by CRA wing. The Office also prepared a Manual on audit of Director General of Foreign Trade which is done by CRA wing. This has helped in enhancing the knowledge of the Audit teams and expediting the decision-making during audit.

Similarly, The **Office of the DGA (Northern Railways), New Delhi** came out with the 6th Edition of Revised Railway Audit Manual. The revision of 5th edition (issued in May 2001) of Railway Audit Manual (RAM) was necessitated due to increased computerization in Railways, involving implementation of several IT applications and extensive changes in codes and manuals of Railways over a period. In last two decades, Performance Audit has evolved as a separate stream and Compliance Audit and Financial Audit underwent several changes.

The latest edition of the RAM tries to address issues like Audit of Railway Commercial Undertakings, Audit of Autonomous bodies, Audit through computerized applications being used by the Railway departments etc. The chapters on e-office, Centre for Railway Information System, Research Designs and Standards Organisations, Railway Sports Promotion Board, Rail Land Development Authority, Rail Commercial and Information/Notes about Railway IT Applications, OIOS have been included in the RAM for the first time. The Revisions were carried out through extensive consultations and quality checks

The latest editions of these manuals and compendiums have been widely appreciated and will go a long way in capacity building and aiding the employees in their work.

Initiatives of the Institute of Public Auditors of India

Institute of Public Auditors of India (IPAI) was set up as a Society in 1996. IPAI is a 'not for profit' organization comprising of specialists in public accounting, auditing, and other areas of public finance. IPAI provides internal audit, research, and consultancy services in financial management, accounting and auditing including forensic and performance audit, performance monitoring and evaluation of internal operating systems and projects/ schemes.

IPAI assisted several reputed organizations in capacity building through training, developing working manuals and providing guidance in audit and accounting matters. IPAI is often entrusted with internal audit and inspection of certain entities by Central and State governments, updating of Manuals and similar technical assistance in capacity building and helping to set up nascent organizations.

The initiatives of IPAI help to de-risk the CAG Institution. IPAI has in the last few years tried to build capacity by engaging professionals as honorary members and by more proactive partnering with CAG through MoU. IPAI has established a chair of public audit and finance in an institutions of repute for furthering its objectives. Besides continuing with efforts at conducting routine internal audit in client organizations, IPAI is trying to take up value – added assignments by building teams in various areas.

IPAI is reaching out to autonomous organisations for assisting them in improving systems and controls and is now playing a more proactive role in building capacity for public audits like starting PRAVESH (Planning for similar platform for local bodies' audit)

IPAI has also initiated a "Double Blind Review" of the articles contributed for the journal of the IPAI before approval by the Editorial Board. In the Double-Blind review, the article is sent to a reviewer under an arrangement where neither the author nor the reviewer get to know the identity of the other. This ensures candid assessment of paper quality. Double Blind Peer Review is also used for reports to clients based on a risk and materiality assessment.

IPAI has also started online interaction with field teams and clients for quicker finalisation of draft reports and proper appreciation of queries and information/explanations provided in response. Some assignments are executed in dedicated Task Force mode whereby the same team conducts inspections at different stations under guidance of a Project leader.

Impact of all these initiatives and planned measures will be visible in coming months. Success of our efforts is likely to reduce resource pressure on the CAG Institution too because strengthening controls and internal audits would reduce the audit risks and free some resources for better utilization.

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