THE CATALYSTS

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

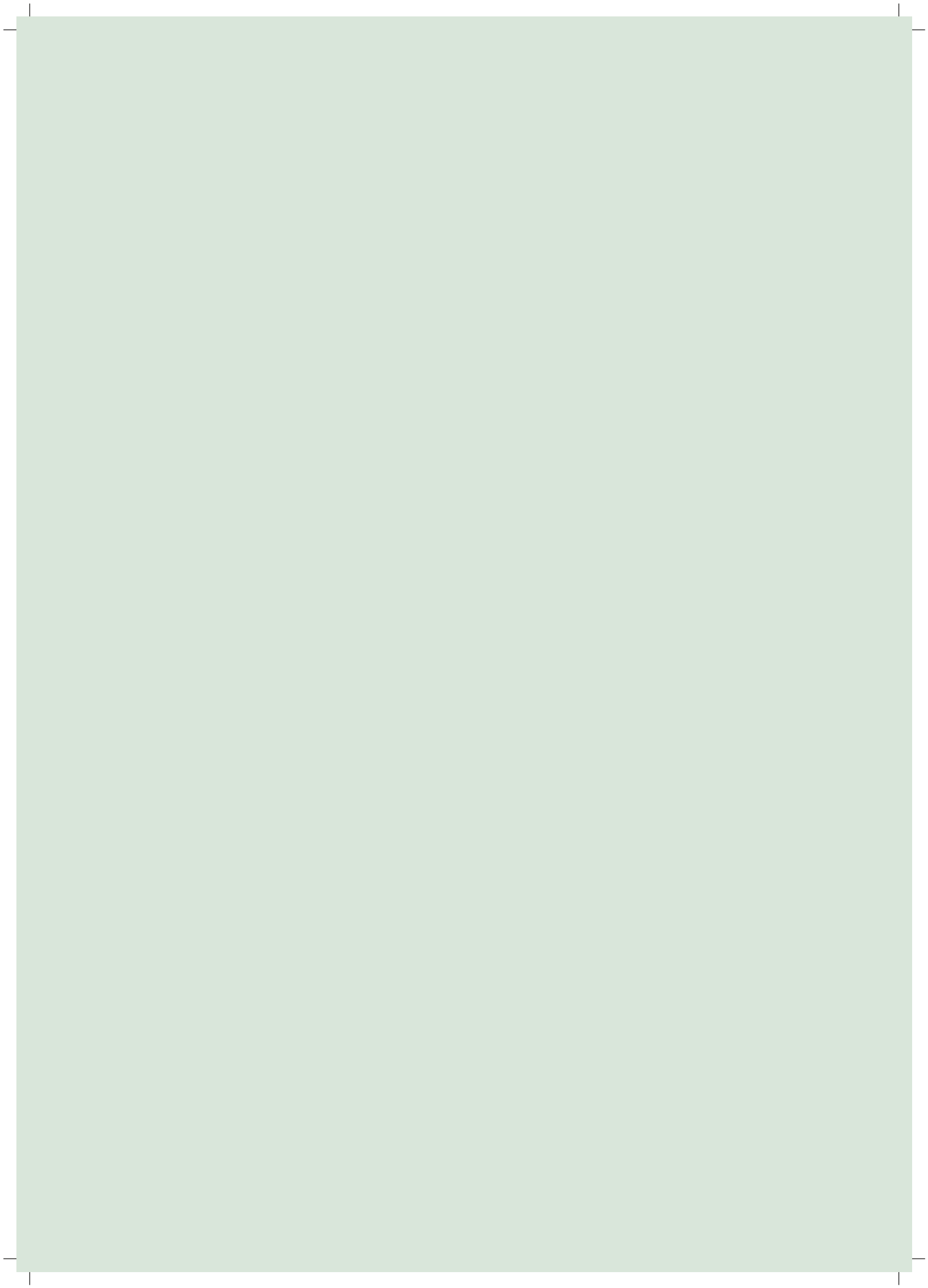## COMPTROLLER AND AUDITOR GENERAL OF INDIA
2024

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Foreword

I am pleased to present the fourth edition of the *Compendium of New Initiatives and Good Practices,* titled *The Catalysts – in Pursuit of Good Governance,* released on Audit Diwas 2024. This compendium serves as a valuable knowledge management tool, aimed at providing our external and internal stakeholders a glimpse of the innovative and exemplary practices being adopted across the organisation of the CAG. It is intended to encourage our teams to adopt and replicate these practices, ensuring that successful initiatives are not isolated efforts but part of a continuous process of improvement.

It is heartening to note that several best practices from previous editions, such as the use of drone technology, Geographic Information Systems (GIS), and digital platforms for enhanced service delivery, have been adopted across various offices. This edition reflects our ongoing commitment to incorporating advanced technologies, with a focus on digital tools that strengthen audit planning, evidence gathering, reporting, and stakeholder engagement. Organized into four sections, it showcases exceptional achievements in award-winning categories, new technology-driven initiatives, stakeholder engagement efforts, and the tangible impact of our audits.

In this compendium, we highlight exemplary work such as the audit of degradation of the Kshipra River, the implementation of e-NDC solutions in Odisha, Python-based analysis for detecting cartel formation, and the GPF digitization phase in Kerala, among others. These initiatives underscore our dedication to innovation, accountability, and responsiveness to emerging challenges. The section on Stakeholder Engagement particularly underscores our efforts to strengthen relationships and collaboration, including international engagements, advancements in local government accounting, recent initiative by the Government Accounts Wing and the strides in natural resource accounting through GASAB. We have introduced a new section on the Impact of Audit, which highlights instances where major recoveries and policy changes were prompted by the efforts of IA&AD.

I commend the dedication of our audit teams, field offices, and headquarters functional wings, whose work exemplifies the ethos of good governance and public accountability. It is my hope that this compendium keeps our stakeholders well-informed and serves as a source of inspiration, encouraging more offices to replicate these innovative practices in the pursuit of continuous improvement and service to the nation.

(Girish Chandra Murmu)
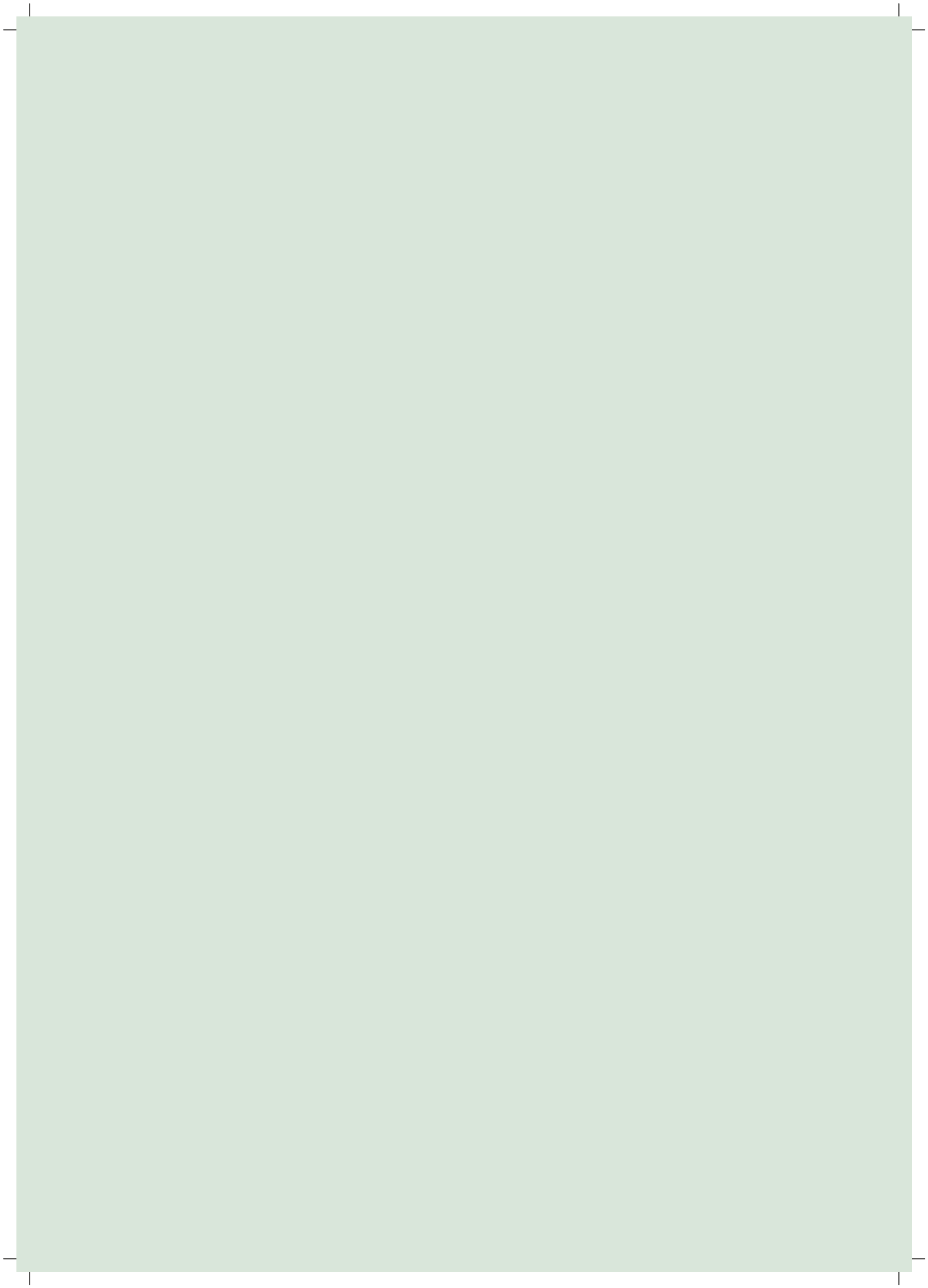Comptroller & Auditor General of India

Table of Contents
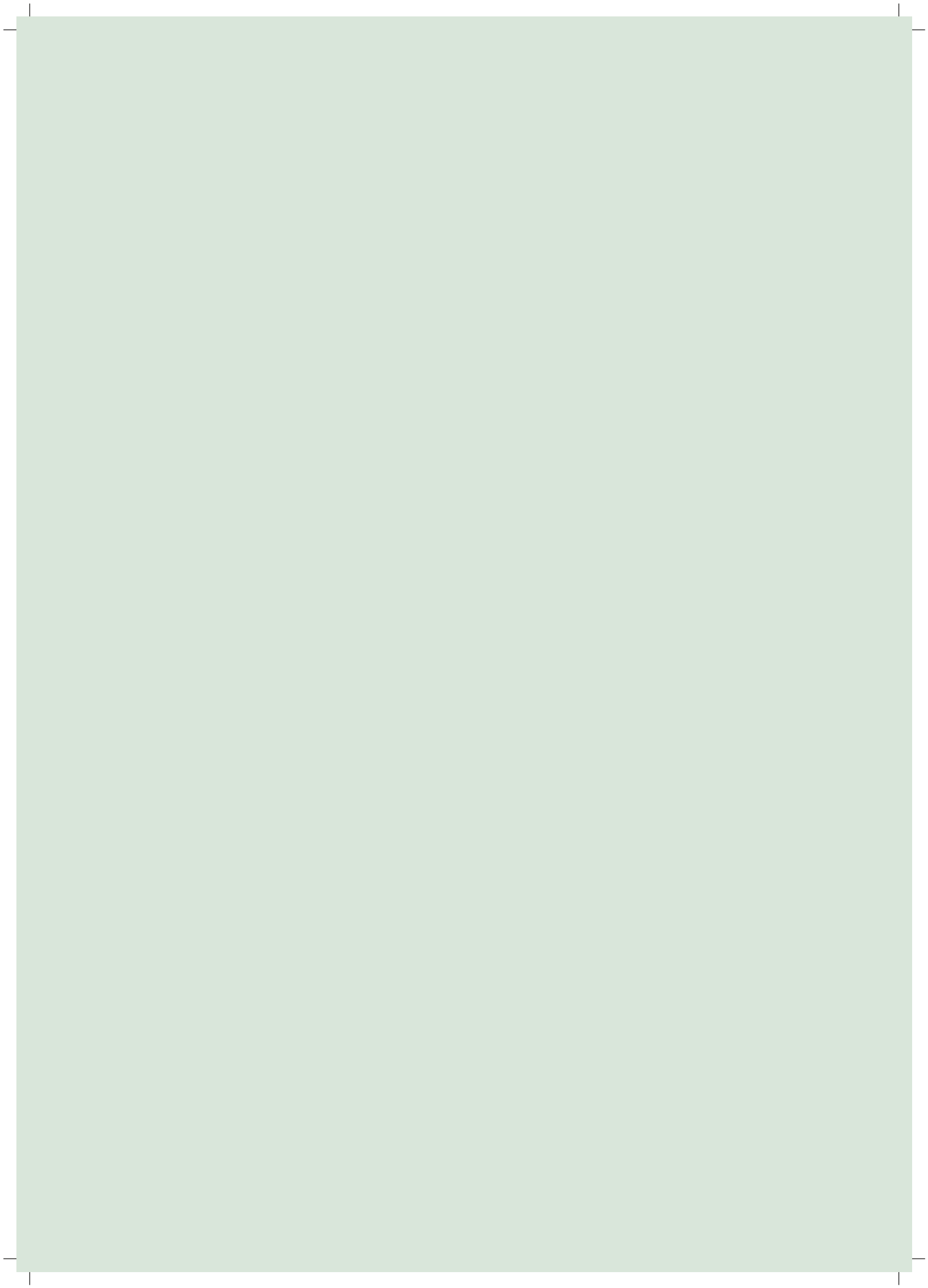
AWARD CATEGORY

Problem oriented Performance Audit on

"Degradation of Kshipra River"

using Technology and Innovative techniques

Madhya Pradesh

The first ever performance audit with problem-oriented approach was undertaken on "Degradation of Kshipra River" using several innovative techniques and technology solution. In this audit, various innovative methods like testing of Water quality by IIT Indore, use of Google Earth software for Remote Sensing based Audit evidence, use of GPS-enabled applications during Joint Physical Verifications, analyses of Water quality, Water Flow, Groundwater data, etc. have also been utilized to bring a detailed analysis of the problem under consideration.

Challenges in undertaking a proper performance audit on "Degradation of Kshipra River" in the State of Madhya Pradesh were manifold. An appropriate method of audit was needed to be chosen which can cater adequately to such a complex ecosystem i.e. Kshipra River. Thereafter, the bigger challenge was to design an appropriate methodology for audit as due to river being a complex ecosystem, it required a very deep study of the various mechanisms that could have an impact on health of river. Also, there were multiplicity of departments that were involved in this case (totaling 14). It was also challenging to manage the extensive data related to audit of departments across the length and breadth of Audit scope.

Several innovations were used for this Audit, as detailed below:

1. Performance Audit of "Degradation of Kshipra River" was done through Problem-oriented approach.

• This approach deals primarily with problem verification and problem analysis, normally without reference to predefined audit criteria.

• Root Cause Analysis was done using Fishbone diagram.
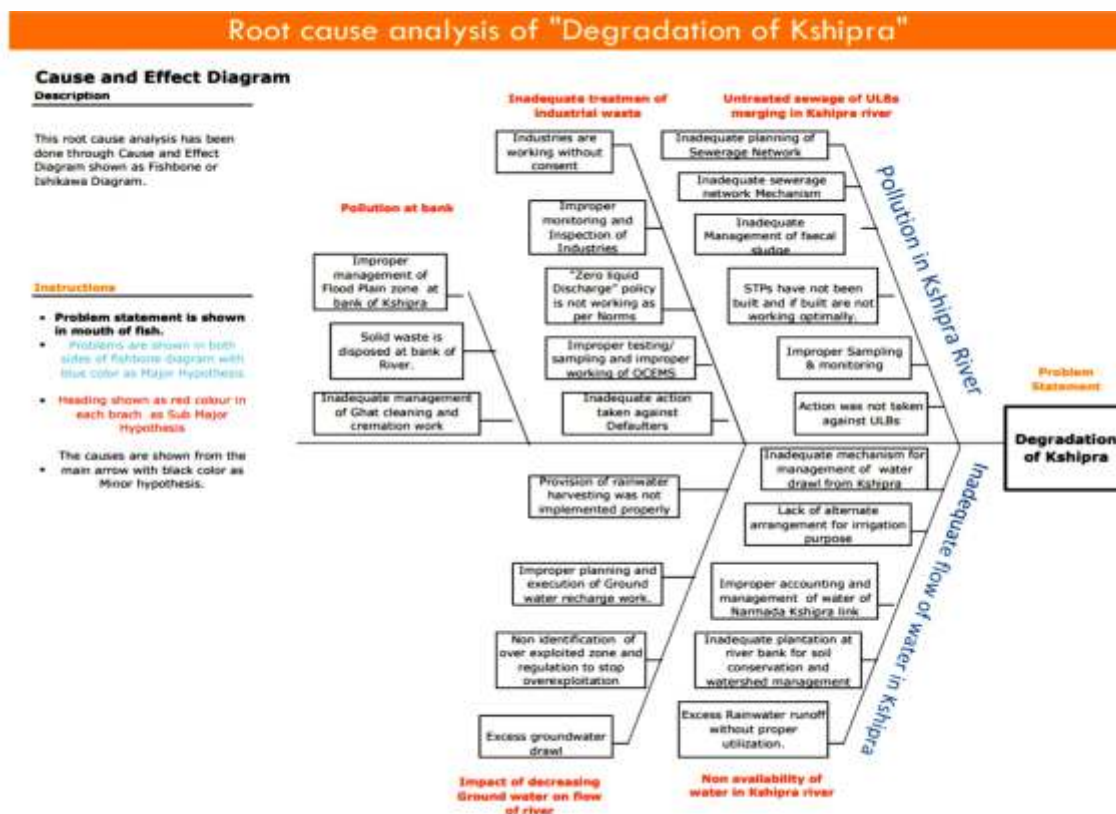
• Shortcomings and problems were the starting point of the audit. Hypotheses about possible causes and consequences were formulated and tested and conclusions were derived based on that.

The major audit conclusions developed based on the hypotheses tested were as under:

(i) Untreated sewage is merging in Kshipra River;

(ii) Treatment of industrial waste is inadequate;

(iii) Water Quality of Kshipra and its tributaries has been adversely affected due to pollution at Riverbanks;

(iv) Water flow in Kshipra River has reduced drastically; and

(v) Flow of Kshipra River is affected due to decreasing ground water in the sub-basin.

2. Third party water analysis of River and STP water was done through IIT, Indore to support the observation and cross check test results of MPPCB.

3. Physical verification was done by use of GPS enabled camera showing date/time and GPS co-ordinates.

4. Google Earth Map was used to analyse Encroachment and Plantations.
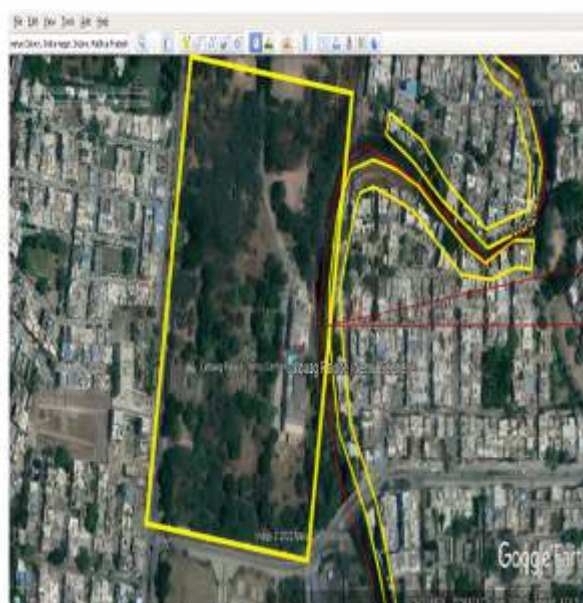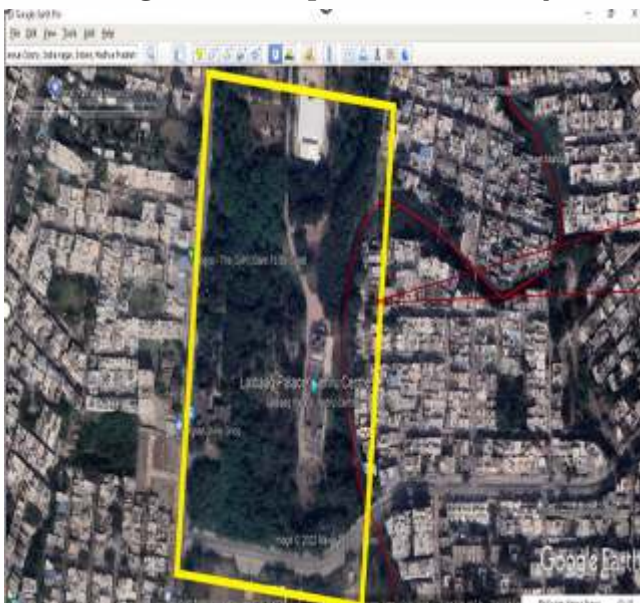
5. Special access of 'Industries accessed through eXtended Green Node' (XGN) software was taken from MPPCB for analysis of Industrial details

The Exposure Draft on Problem-oriented approach was used as a guidance material to plan and develop the Guidelines and Audit Design Matrix. For a deep analysis of various issues concerned, variety of literature was studied for the purpose and multiple training sessions and interactions were held. Thereafter, multiple parent and child hypotheses were created to be tested during Field Audit. All these hypotheses were further divided into multiple questions which were to be checked while testing the hypotheses. All these resulted in a detailed evaluation of the problem under consideration.

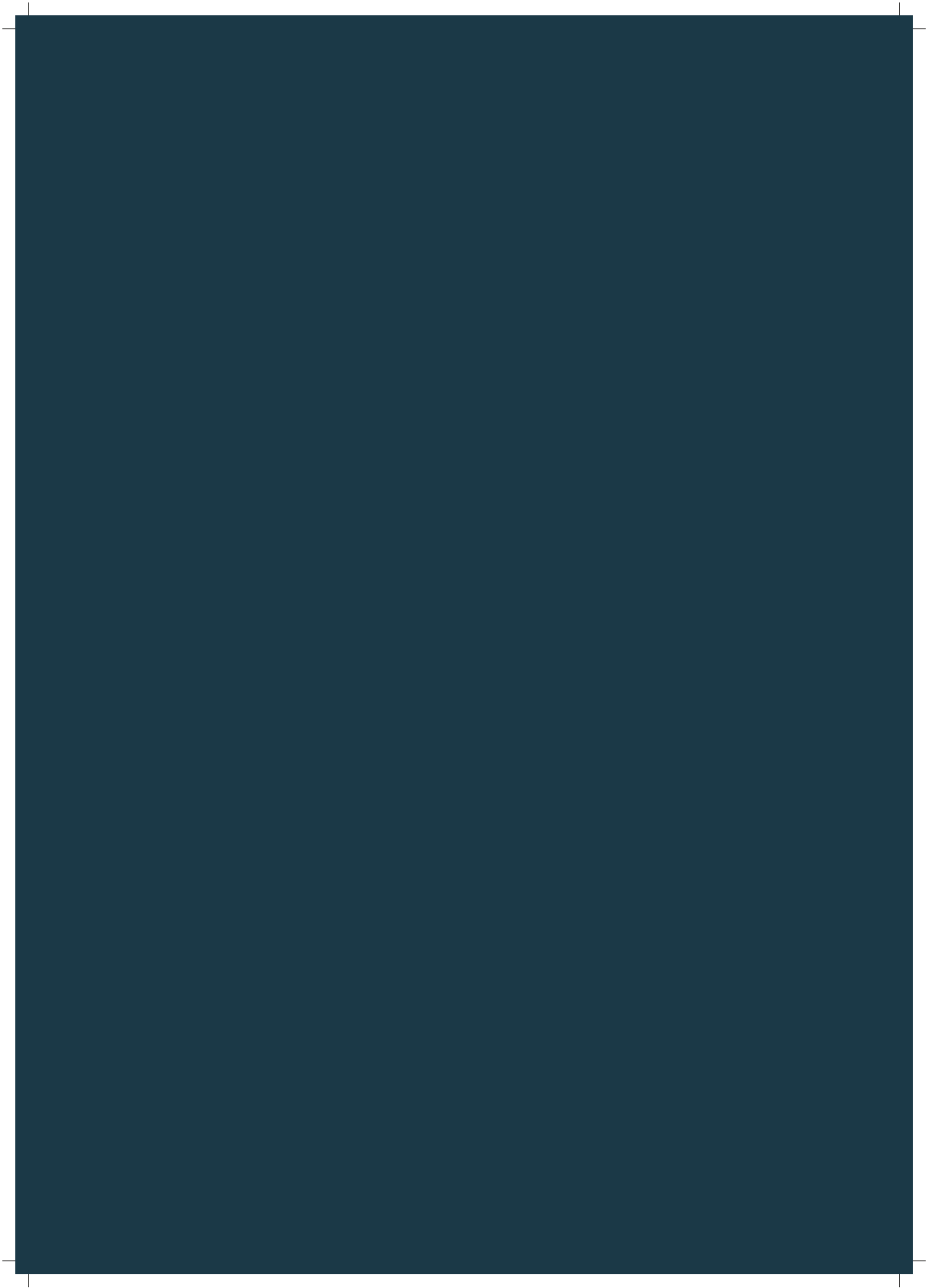Various legal cases were studied to develop strong criteria for testing these hypotheses. Further, IIT Indore was engaged for Water Quality testing. One of the major issues was management of multiple Departments across the State.

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Tamil Nadu

AUDIT OF ONLINE REGISTRATION APPLICATION OF TAMILNADU

In Tamilnadu, the Registration department implemented STAR 2.0 (Simplified and Transparent Administration of Registration), an end-to-end online application with a view to ensure transparent, efficient, reliable and secured registration process. An IT Audit on the application of the Registration Department was conducted to ascertain the effective implementation of computerisation of the registration process. The Audit Report was placed in the State Legislature in April 2023.

This Audit, being an IT intensive audit with public interface, was quite challenging for the State audit office as they had to review the entire planning, testing and implementation of the application at a macro level.

Major Challenges faced during the Audit were:

- **Procurement and Restoration of Data:** The foremost challenge was to obtain the data dump and restore it in the Audit's server. The restoration process was challenging as there were many policies, users and roles embedded in the database dump provided by the department. The registration database was voluminous, around four Terabyte.

- **Analyzing the database without data dictionary:** The department, did not provide the Data Dictionary which is essential to understand the database. With 4,488 tables in the database, understanding the process flow through the huge number of tables, in the absence of data dictionary posed a huge challenge.

- **Verification of Identity details:** Aadhaar, PAN and Driving License comprised of 95 % of the Identity proofs submitted by the citizens. Attempt of Audit to get assistance of UIDAI and Income Tax Department for verification of Aadhar & PAN numbers was unsuccessful. Hence, Audit had to create new methodologies to run a standard level of verification of all these categories.

Enter the PAN to be verified in Column A		
PAN	**Validity Status**	**Reason**
ADGPC1375B	Valid	Nil
ADGNC1375B	Invalid	Invalid Assessee Type
ADGPC175B	Invalid	Incorrect String length

- **Verification of land records:** Land records are created and maintained by the Directorate of Survey and Settlement under the Revenue Department, wherein each land parcel is identified by the ward / block, survey number, etc. Audit could not obtain data pertaining to land records from Revenue Department for cross verification.

The office adopted multi-modal audit methodologies involving the following steps:

- Creation of own data dictionary for the database

- User Acceptance Testing (UAT) of the STAR Application's Citizen and back-office interfaces

- Data analysis/extraction & identification of control failures and subsequent substantive testing

- Identity verification with in-house developed, Aadhaar validity-checker, PAN Validity checker and

- Creation of digital survey records from physical records for cross-verification of survey numbers

The innovative and multi-modal approach of audit enabled a comprehensive and 360° analysis of the STAR Application and brought out significant loopholes of the application. Audit also established the cause-effect relationship of the identified loopholes by bringing out instances of fraudulent registration of documents thereby exposing the poor data integrity of the application.

The following benefits accrued from the audit undertaken:

- **Identification of Impersonations:** With the assistance of the developed audit tools/queries i.e., Aadhaar and PAN-validity-checker tools, and cross-verification of third party data (Driving licence), Audit identified a whopping 1,55,796 incorrect identity card submissions in the STAR Application.

- **Identification of Multiple Mutation of Documents:** During User Acceptance testing, Audit noticed that the application allowed multiple transactions to be initiated from the same document in respect of the same property.

- **Identification of Government Land Registrations:** Audit identified a significant loophole wherein the application accepts any value for survey number (by selecting 'Not available' option in the dropdown) and continues with the registration process.

TOTAL DOCUMENTS - 10, 931

832   308

9791

- Documents with valid survey numbers

- Documents with Invalid survey numbers - valuing ₹3.32 crore

- Documents with survey numbers of Government land - valuing ₹3.56 crore
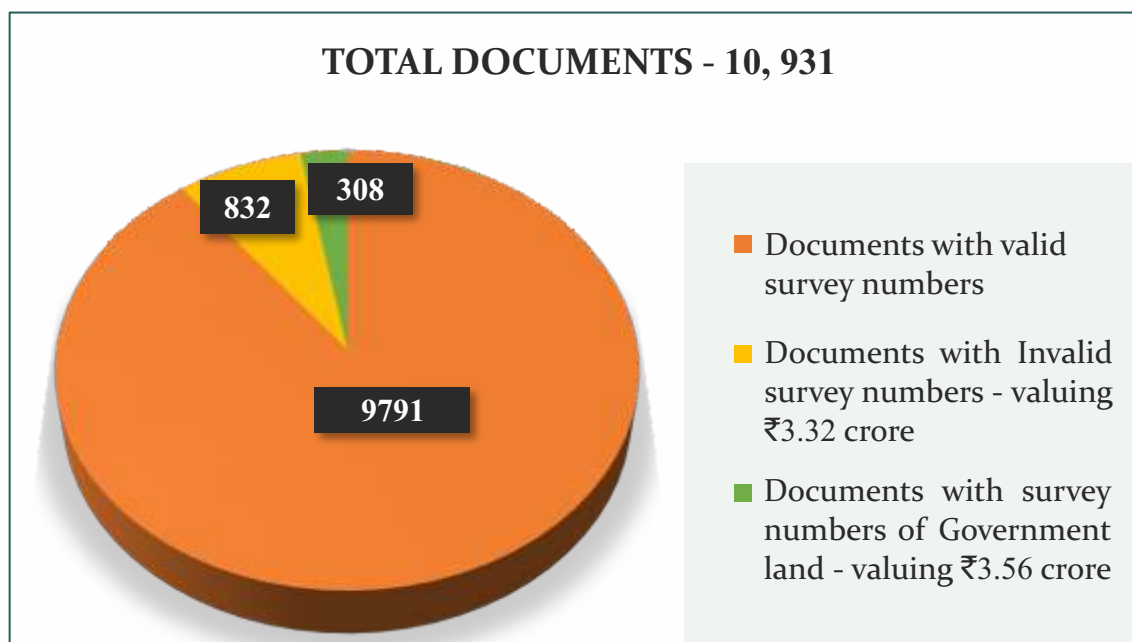
- **Identification of Temple Land Registrations:** During UAT and Data Analysis, Audit viewed the non-updation of entitlement / authorization to handle the property also a significant control weakness. Audit independently verified some of the survey numbers and identified cases of Registration of Temple Land as Private Land.

The significant aspects of the audit viz., submission of invalid identity cards, fraudulent document, compromised data integrity etc., were widely covered in the media and gained significant attention in the state.

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Odisha
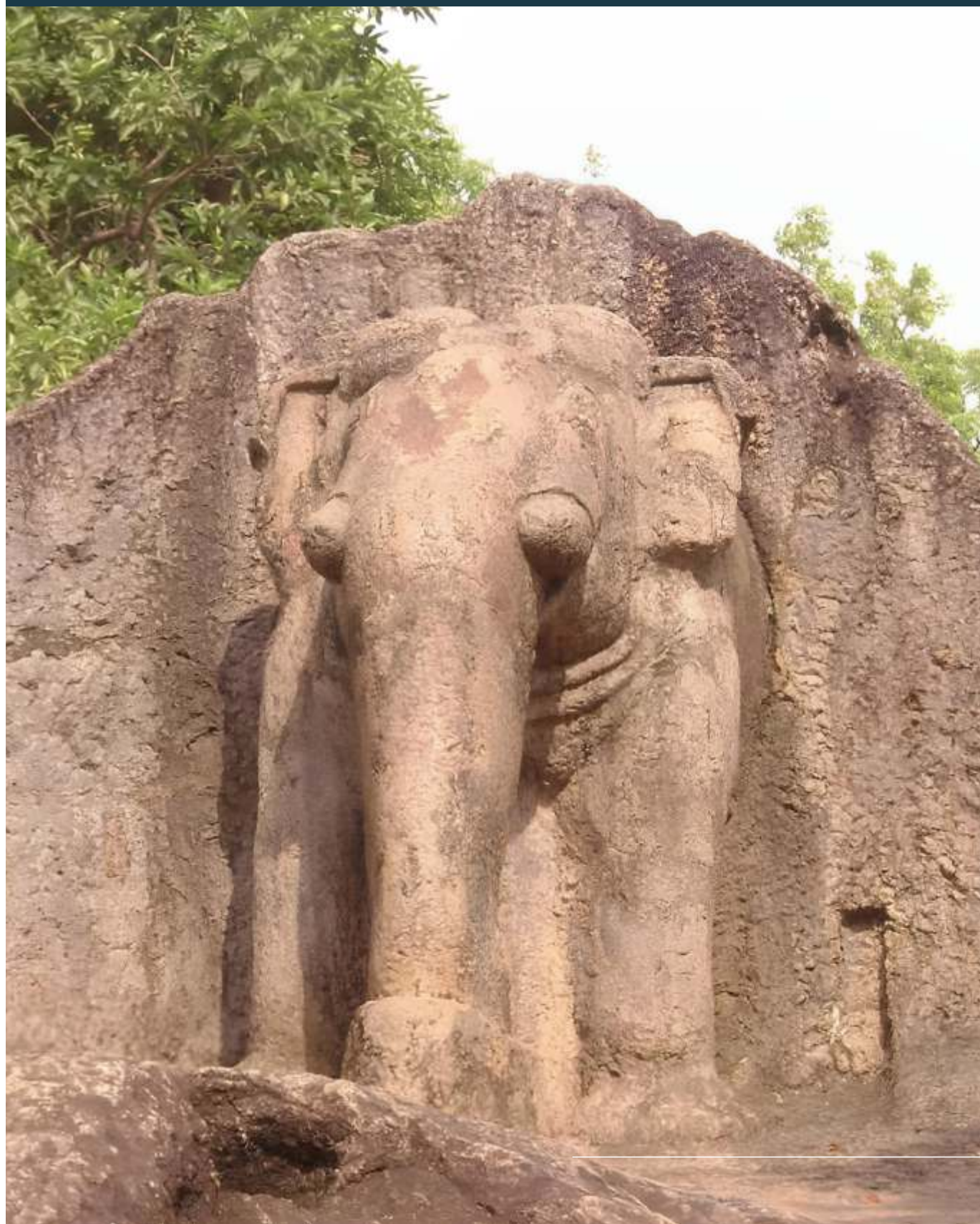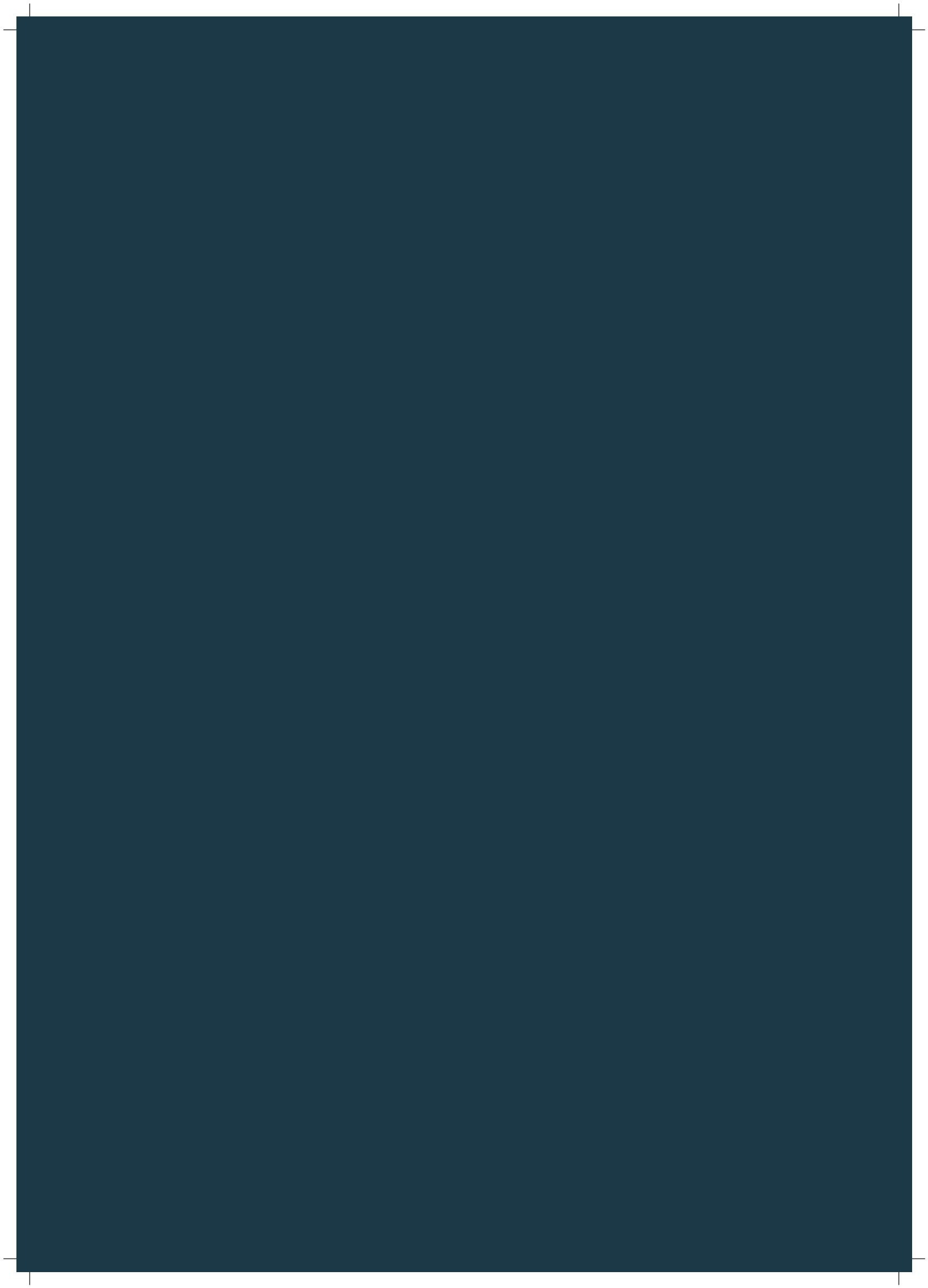
Implementation of e-NDC Solution in Odisha

Transactions relating to House Building Advance (HBA), Motor Cycle Advance (MCA) and Computer Advance (CA) relating to State Government employees are maintained in the Treasury Sections of Accounts and VLC Group in the O/o the Principal Accountant General (Accounts & Entitlements), Odisha. After receipt of Pension applications, Pension Group sends requisitions for No Dues Certificates (NDCs) for HBA, MCA and CA to concerned Local Treasury Sections and subsequently local Treasury sections used to issue NDCs manually to Pension Group to release Gratuity and other pensionary benefits. In most of the cases it was taking substantial time in receipt of all the three (NDCs) (i.e. HBA/MCA/CA) from concerned treasury sections. As a result, Pension sections were issuing pensionary benefits like pension and commutation of pension in respect of a Government Servants withholding Gratuity. The Gratuity was released after obtaining NDCs from Local Treasury sections in respect of individual loanee.

To ensure the timely payment of Gratuity to the retired employee, O/o the Principal Accountant General (Accounts & Entitlements), Odisha decided to implement e-NDCs in co-ordination with the Pension Group and Accounts & VLC Group. The issue of NDC online through pension System Automation Initiative (SAI) System has been streamlined, so that Gratuity Payment Order (GPO) is released along with Pension Payment Order (PPO) and Commutation Payment Order. In SAI System, a mechanism has been developed to send

requisition through online mode along with attachments. All the documents of a pensioner (i.e., Loanee/Non-loanee Certificate, history of service, recovery statement of loan) are scanned and uploaded in SAI Portal, so that the attachments can be viewed by any Front-End user of SAI. Local Treasury sections can generate and send NDC Certificate digitally through SAI System after digital signature which can be viewed directly by the Pension Sections. After implementation of e-NDC, pensionary benefits (e-PPO, e-GPO and e-CPO) are being authorised simultaneously in a timely manner.

Following benefits are derived after implementation of the initiative:

1. **Tracking of outstanding cases:** Before implementation of e-NDC outstanding NDCs were tracked by weekly and monthly report however, after implementation of e-NDC day to day tracking of outstanding NDCs is possible.

2. **Paperless work:** In the earlier scenario, Pension Group prepared requisitions in respect of individual Loanees for each category of loans such as House Building Advances, Motor Cycle Advances and Computer Advances enclosing History of Service, Loanee/ Non–Loanee certificates, Recovery Statement, etc. Final NDCs were issued by Treasury Section in A–4 size papers. After implementation of e–NDCs, all the above activities are done through online system and there is no requirement of paper.

3. **Time saving:** Earlier it was taking a lot of time to issue a requisition manually and in most cases it took minimum 30 days to receive all the three NDCs (i.e. HBA/MCA/CA) from the respective treasury sections. Further, Staff of concerned treasury section used to visit pension section to collect required information from pension file, which was time consuming. Now after implementation of e-NDC, NDCs are being issued from Treasury sections to Pension Group through SAI portal, thereby all the user sections of Pension Group of the O/o the Principal Accountant General (Accounts & Entitlements), Odisha are able to access the NDCs immediately.

4. **No Misplacing of documents:** Due to manual intervention at every stage, many a time hard Copies of NDC Requisitions as well as Final NDC Certificates issued from the Local Treasury Sections got misplaced. This caused delays and repetition of work. Introduction of e-NDC eliminated these manual glitches and has made the working environment better.

5. **Concurrent processing of Gratuity with Pension cases:** Before implementation of e-NDC, withheld gratuities of pensioner were released separately after authorisation of Pension and Commutation. After implementation of e-NDC from 1st April 2024, in up to 87 *per cent* of cases Gratuities are being released along with Pension and Commutation.

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Kerala
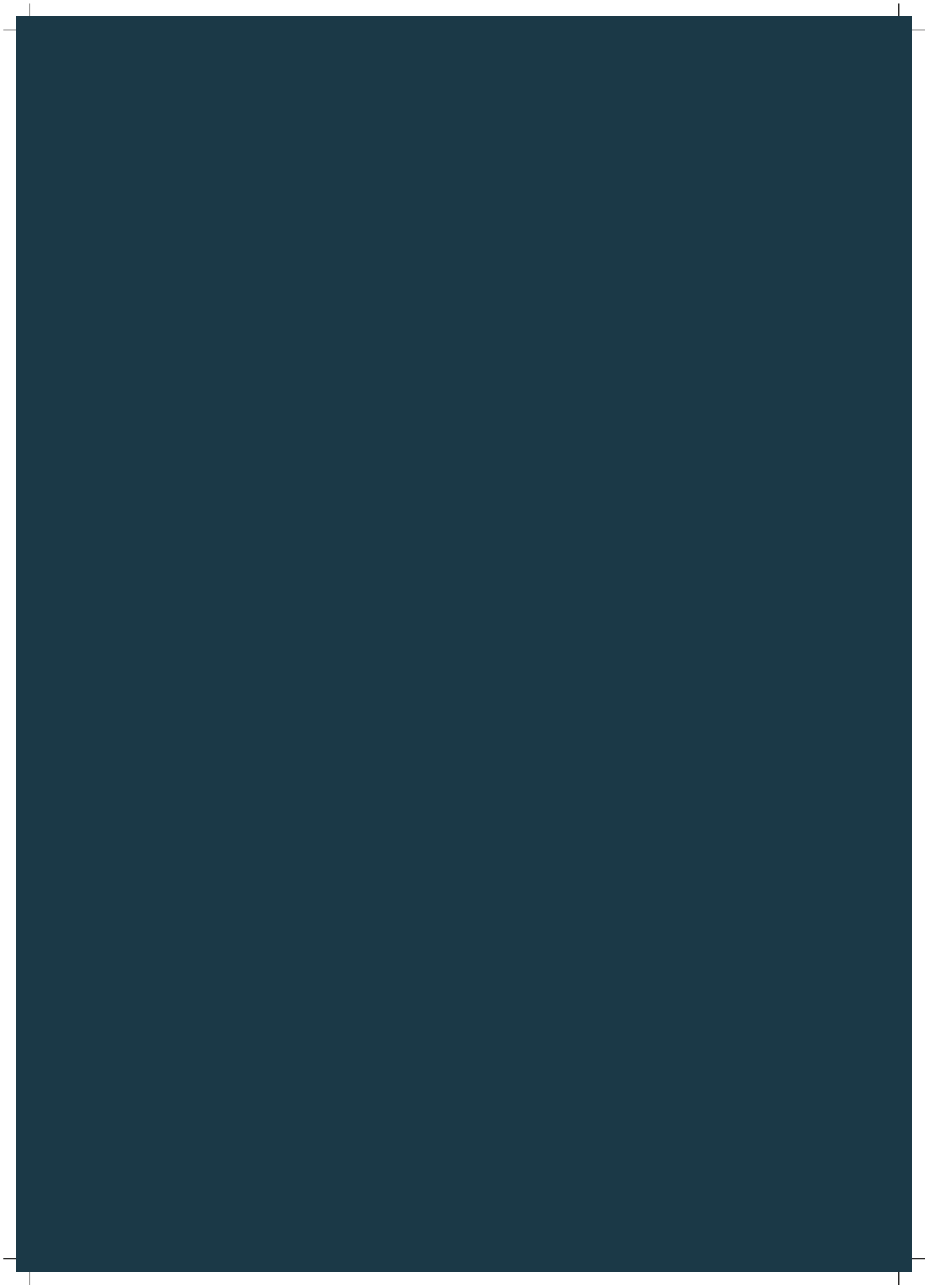
Phase 3 of General Provident Fund (GPF) Digitisation in Kerala

The Office of the Accountant General (A&E) in Kerala is uniquely placed as it has a presence in five cities of the State, i.e. Main Office in Thiruvananthapuram and four branch offices located in Thrissur, Ernakulam, Kozhikode, and Kottayam. These offices together handle the accounts of 3.92 lakh live accounts of state Government employees including All India Service personnel, High Court Judges and part time contingent employees. Monthly around 1,500 fresh admissions, 1,200 closures and 10,000 Non Refundable Advances (NRA) are handled in addition to the other General Provident Fund (GPF) work.

Phase 1 of the GPF digitisation completed in 2022 introduced online application system and e-DAK/Dashboard system. After successful implementation of phase 1, Phase 2 was completed in 2024 with the development of round robin system of allotment. The following additional features were introduced in Phase 3 of GPF digitisation:

- **Fine tuning of e-DAK system and round robin system:** As part of fine tuning the e-DAK/Dashboard system, other modules Rejection, Return, Reallotment and revalidation were later incorporated in 2024.

- **Real time balance of GPF subscribers:**

Timeline (top labels): Monthly balance shared to the subscriber through AG portal and state HR application — Monthly data available in GPF aggregated with the daily transaction received from Treasury — Net balance shared with the stakeholders through the state HR application

Timeline (bottom labels): A module developed in house to generate the monthly balance at the credit of 3.92 lakh subscribers — A new webservice to collect daily transaction details from Treasury. — Real time balance shared to the subscriber through AG portal. — The eligibility for various applications limited in accordance with the daily balance shared

- **Online challan module:** After the closing of Monthly Civil Accounts, the data pertaining to Challan transactions used to be manually entered based on copies of the schedule forwarded by the 23 Treasuries. This process required a minimum of 20 days to complete the challan posting, causing delays in completing the GPF data posting. With the introduction of online challan module, the GPF annual account closing, which earlier took 20 working days, was completed this year, just six days after the closure of the Monthly Civil Accounts.

Following benefits are derived after implementation of the initiative:
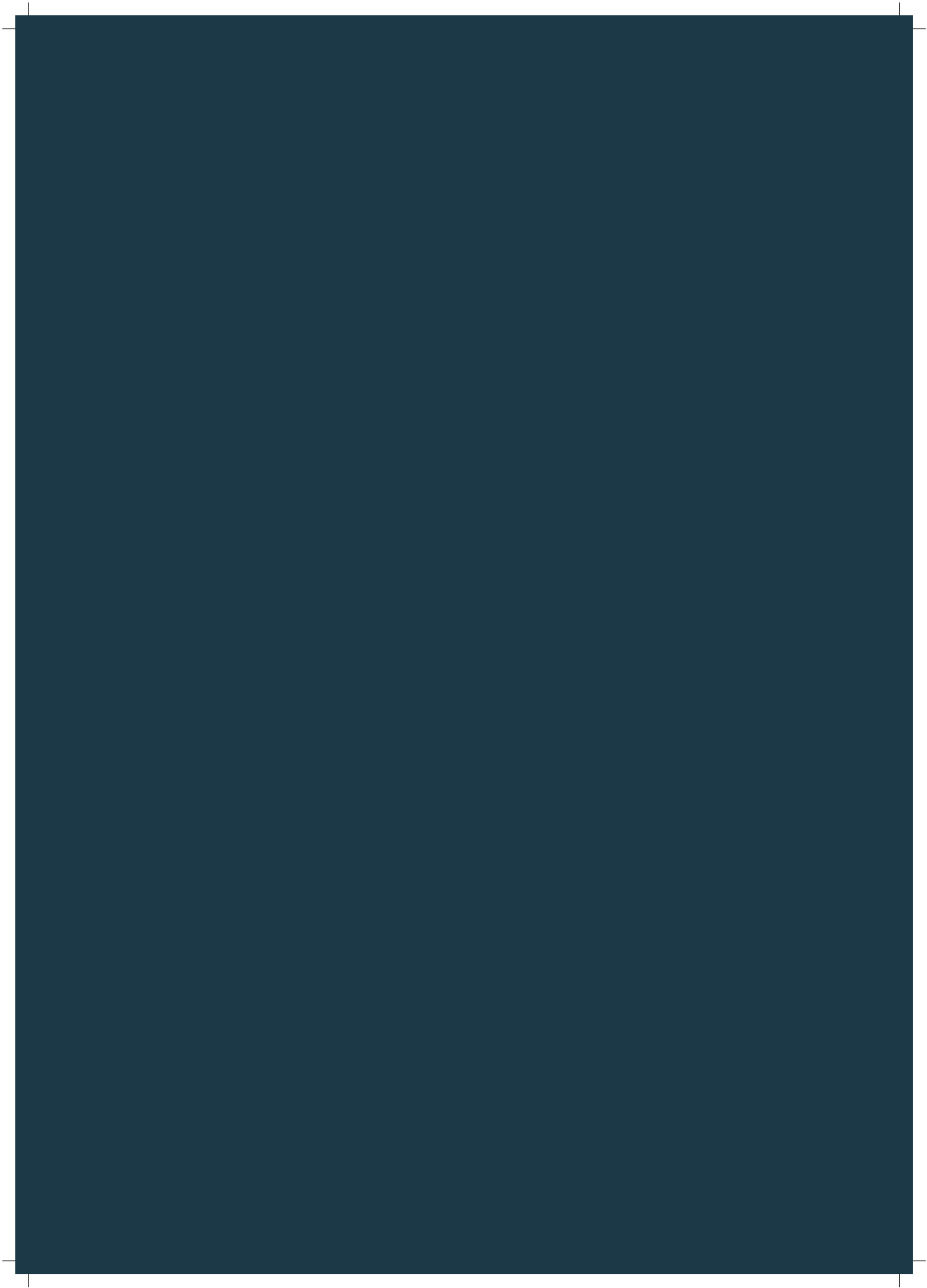
- **Time saver**

ITEMS	Challan posting	Balance in the GPF account	Real time balance	Application to reach office	Authorization to reach subscriber	Release of Annual Account Statement	Revalidation	Manpower involved for a day's activity
Time required previously	25 days after Monthly Accounts closing	Every year By May	Not available	Minimum 10 days	Minimum 10 days	By May end of every year	45 days	35 units
Time required after implementation of new initiatives	Immediately after the Monthly accounts closing	On the day of transaction	On the day of transaction	Real time Receipt (when DDO sanctions)	Real time dispatch of Authorization (when SAO approves)	Completed in April	4 5 days	19units

- **Empowering stakeholders:** The knowledge about net balance in the respective accounts and the status of application has empowered the responsible subscriber, giving him more financial control over his GPF account.

- **Economic and environmental advantages:** The system has eliminated the need for manual applications and authorizations, significantly reducing the use of stationery and printouts. This shift towards digital processes promotes a greener environment by cutting down on paper usage and printing.

- **User satisfaction amongst beneficiaries**

- **Robust and reliable:** The meticulous approach to custom checks and thorough testing guarantees that any office replicating this system will experience the same level of efficiency and accuracy.

- **Easy Data Retrieval and Preservation:** Digital systems allow for quick access to stored data, robust preservation methods and systematic backup, ensuring data remains intact and accessible over extended periods without degradation.

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Tamil Nadu

Use of Python in Determining Cartel Formation in the Audit of E-procurement system in Tamilnadu

A Performance Audit on the Construction & Maintenance of Roads by the State Highways Department was conducted, covering the period 2016-21.

As part of the Performance Audit, a thorough examination of the e-procurement system for awarding contracts through e-tenders was conducted. The main purpose of conducting the audit was primarily to assess the effectiveness of the e-procurement portal and investigate the presence of any cartels. However, there were challenges in obtaining the data as a single consolidated dump from the Tamilnadu Highways department and in comprehending the complex database schema, which required thorough examination and understanding of the intricate relationships between tables, entities, and data organization.

The following innovative approach was adopted:

- Acquisition of Database Dump from the Highways Department and analysis of all the tables within the schema

- Exporting Data to Excel using PostgreSQL for queries further analysis

- **Python Programming for Cartel Detection and Identifying Bid Collusion Patterns:** Python was utilised to examine the data, specifically looking for contractors who were using the same phone numbers, IP addresses, and other relevant factors. To ensure the accuracy of findings, the results were manually verified by cross-verifying them with the documents uploaded in the portal. This approach proved effective in identifying various types of cartels, including those formed among family members and business partners.

- **Python-based Automation for Bulk Document Downloading:** The office implemented an innovative method by utilizing Python to automate the process of downloading all these documents uploaded in the portal. This approach significantly reduced the time and manpower required for manual downloading.

- Comprehensive engagement with Department

The Performance Audit revealed:

- **Cartel formation**

Cartel in highway tenders: CAG

Tamilnadu State Highways Department was divided into Eight circles. A thorough analysis was conducted by filtering our data circle-wise. The analysis revealed extensive cartelization across all circles within the state.

- **Registration of bidders as partnership firms and proprietorships**

Another noteworthy finding was the registration of bidders in the e-tendering portal as both partnership firms and proprietorships. By registering as different entity types, these bidders could potentially submit multiple bids for the same tender, which indicated formation of cartels to clinch the contracts without competitive bidding and compromising the objective of fair competition.

- **Collusive Pattern in EMD Submissions: Same Supporting Document Usage**

The analysis of bid data pertaining to the submission of Earnest Money Deposits (EMDs) revealed a consistent pattern: the same supporting document was uploaded in multiple scenarios. This consistent usage of the same supporting document for EMDs strongly indicated collusion among contractors.

- **Collusive Bid Submissions:** Common IP Addresses and Department System Usage

A comparison was made between the IP addresses used by contractors for bid submissions and those of department officials and it was discovered that contractors utilized the computer systems of the Highways department.

CAG Flags Rampant Violations In Highways Dept Bids; Faults Official-Tout Nexus

'Official computers used to file e-bids'

- **Non-Segregation of duties**

An analysis of the data pertaining to the segregation of duties of the departmental officials revealed that officials in the cadre of Typist, Junior Engineers were assigned the role of Procurement Officer to publish, open & evaluate tenders in the portal. Officials in the cadre of Junior Engineers to Superintendent Engineers were assigned the role of a Procurement Officer besides the generation of reports. Assigning multiple privileges to various officials could influence the misuse of the system by individuals and violates the principle of segregation of duties.
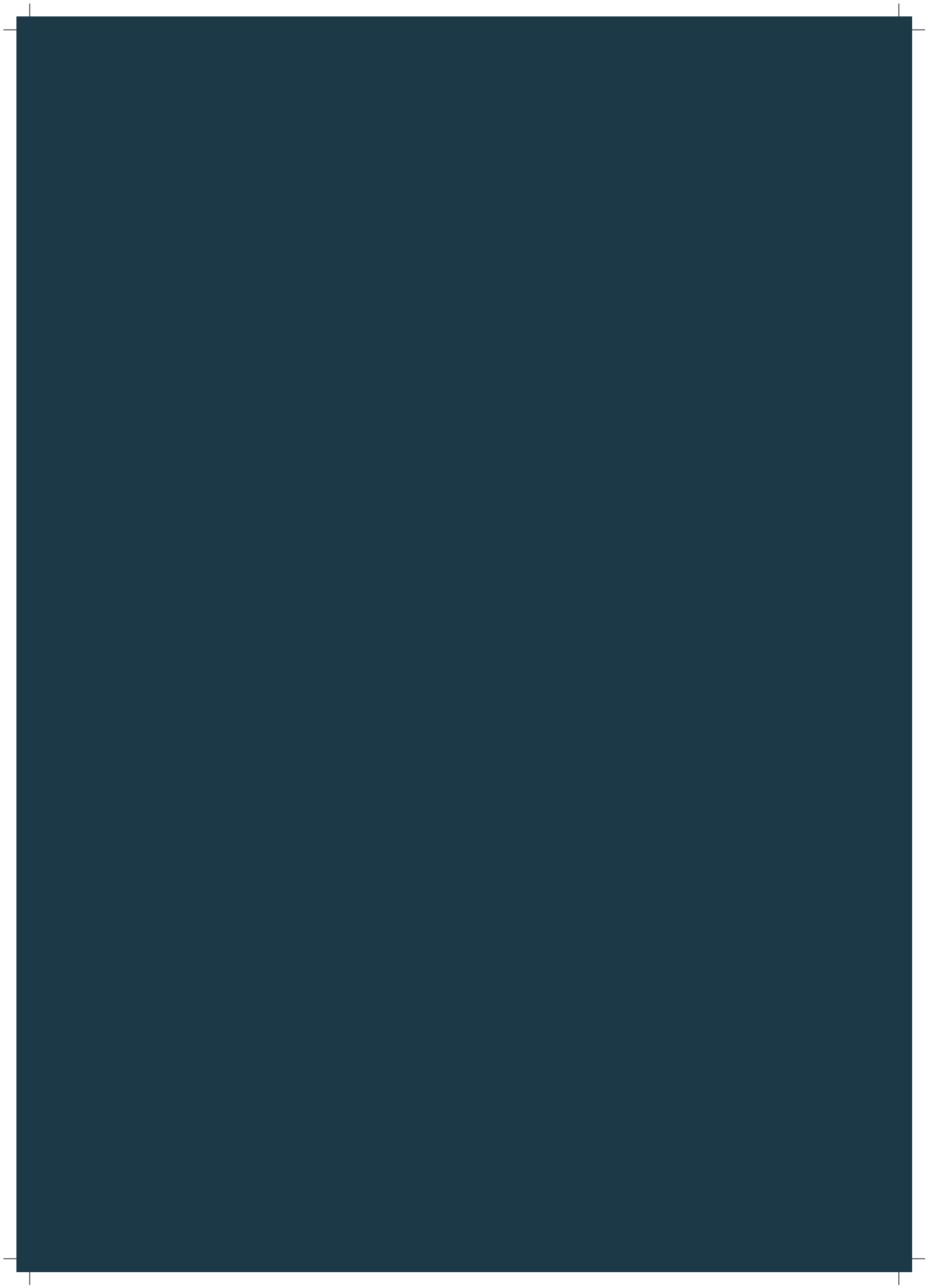
Team Members:
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Ms. Leela Sivaraman, SAO

Development and Implementation of Dalma, the Departmental Canteen Management System

The Departmental Canteen managed by the O/o the Principal Accountant General (Accounts & Entitlements) in Bhubaneswar serves breakfast (9 am to 10 am), lunch (1:30 pm to 2:00 pm), and tiffin (after 2:30 pm) to employees of Accounts and Audit offices. Approximately 200 employees had Lunch/Tiffin daily from canteen. However, due to an influx of 300 new recruits last year, the canteen faced issues such as long queues for booking, difficulty in assessing daily requirements, and lack of proper feedback data. This process was even more inconvenient for differently abled staff. To overcome the problem, an Online Web Application was developed by O/o the Principal Accountant General (Accounts & Entitlements), Odisha. The app has features wherein,

- Registered users can load their **e-wallet.**
- See the daily menu & **pre-order** their lunch and tiffin from their seat or during commute.·
- Payments can be made from the e-wallet, **avoiding need to stand in queue.**

- Ordering is available till 11 am only after that app locks for the day. Canteen team can see the bookings for the day and prepare the quantity accordingly.

- Users can give **feedback** on quality of food.

Following benefits have accrued from the innovation:

- **Efficient Ordering Process:** Registered users can load their e-wallet, view the daily menu, and pre-order lunch and tiffin from their seats or during their commute. Payments are made directly from the e-wallet. This also increased financial transparency.

- **Reduced Food Wastage:** The ordering window through app is until 11 am only which ensures accurate planning. By allowing the canteen team to see daily bookings, the app helps them prepare the right quantity of food, minimizing wastage.

- **Quality Feedback:** Users can provide feedback in app on food quality, which is valuable for continuous improvement. The Canteen Management Committee can make informed decisions based on this data.

- **Enhanced Staff Welfare:** Employees no longer need to queue multiple times (once in the morning and later during lunch/tiffin).

- **Popular Adoption:** With over 350 registered users, the app has become a preferred way to order meals, with 60% of canteen orders placed through it.

Initially started on pilot basis for tiffin booking, gradually when canteen staff got accustomed with the operational app it was expanded for lunch and breakfast also. The solution was fully implemented from 5 March 2024 onwards. Booking via app is voluntary in nature, still 60 *per cent* of canteen users have adopted the app, indicating its user acceptance.

DALMA, the Canteen Management System developed in house at minimal cost, has contributed towards streamlining the ordering process, reducing food wastage, and providing a platform for quality feedback. The app has not only resolved practical challenges but also enhanced staff welfare. Its popularity among users underscores its success, making it a shining example of how simple technology driven solutions can transform our everyday experiences at workplace.

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Mr. Gaurav Yadav, AAO
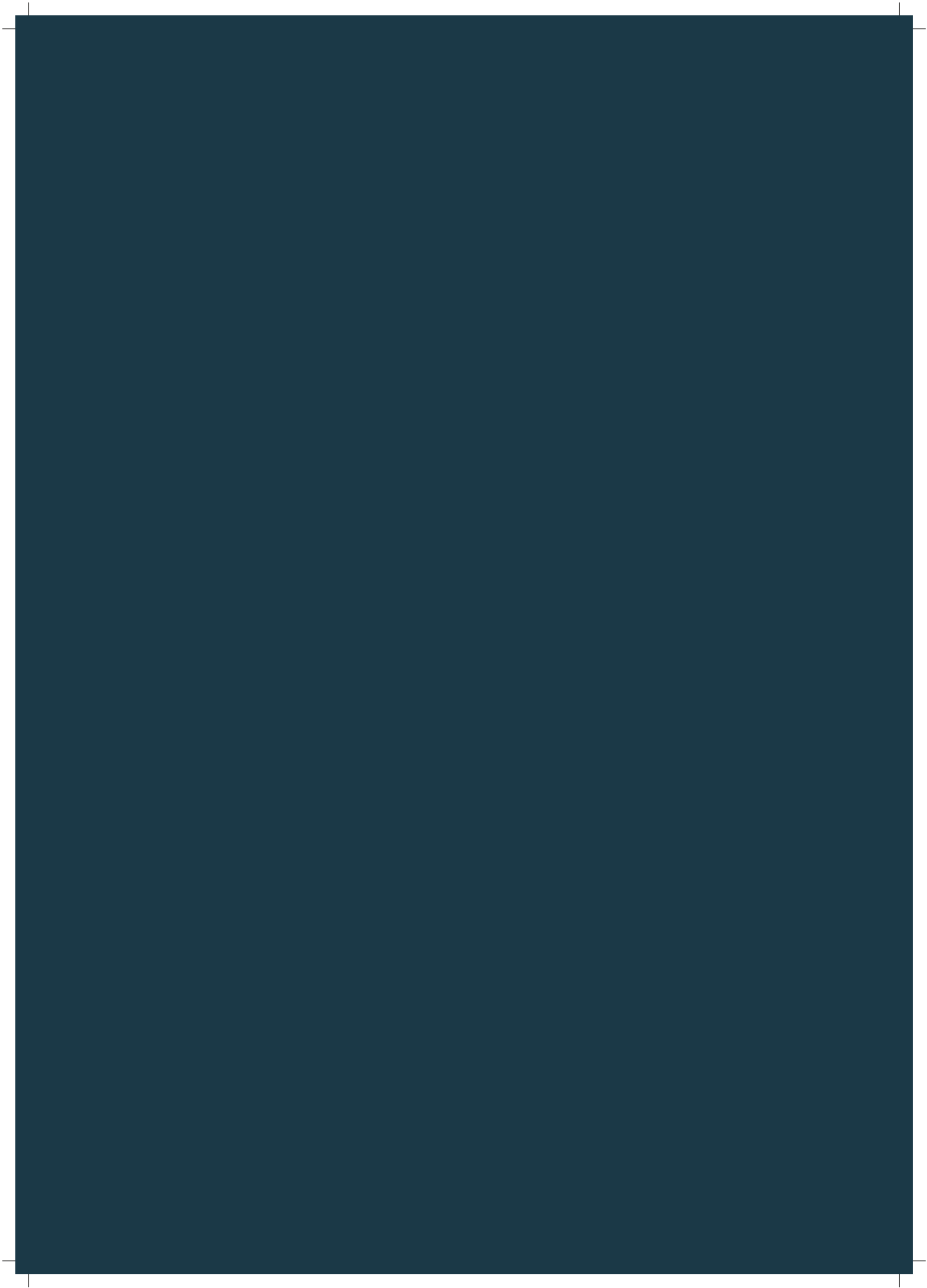**Mr. Biswo Prakash Sahoo, Canteen Manager**

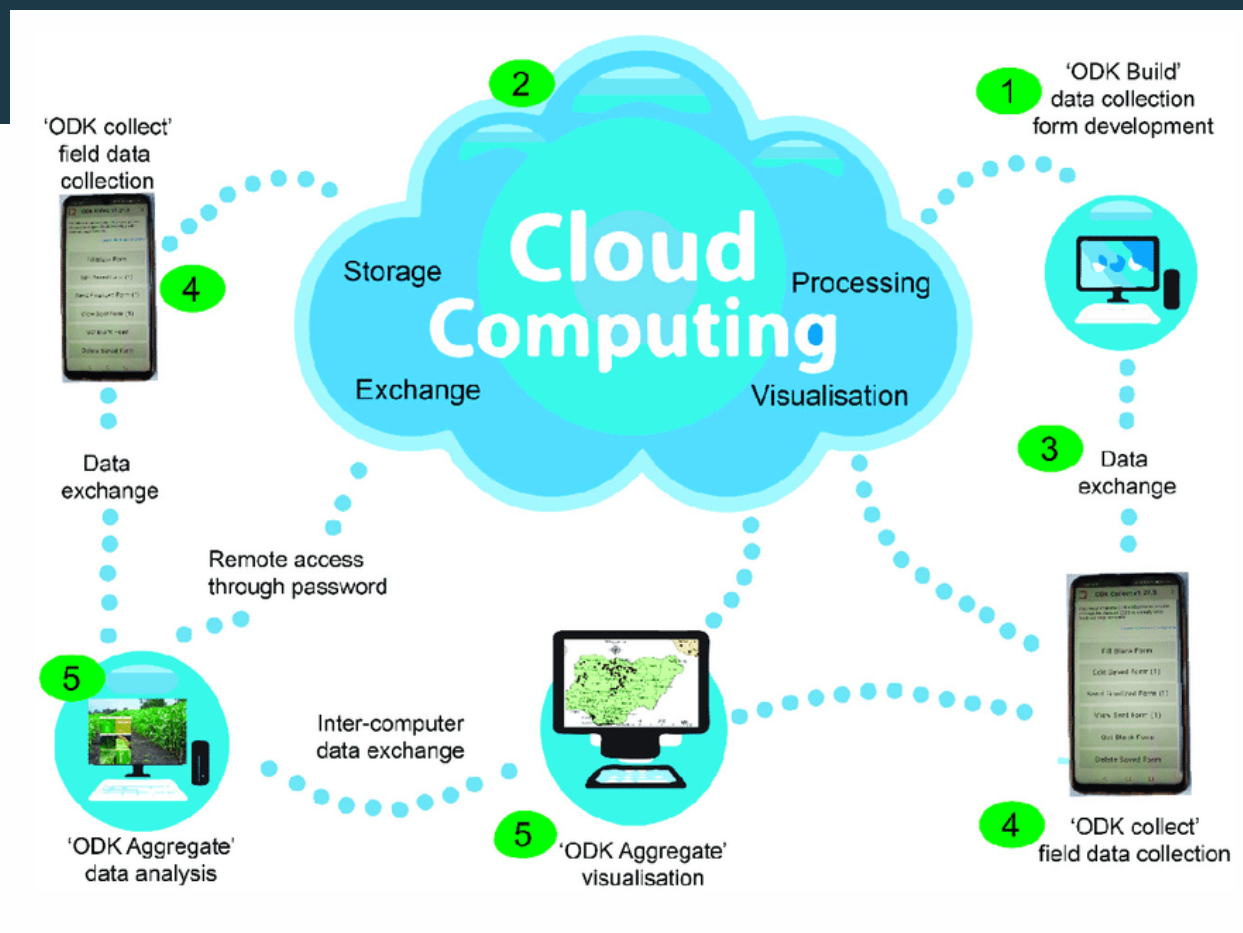# INNOVATIONS IN AUDIT PRACTICES AND TECHNOLOGY

Telangana

Beneficiary survey using Open Data Kit of OIOS Platform

BACKGROUND

Beneficiary Survey is one of the sources for information for audit planning as well as for collection of audit evidence. It is used to collect information for identifying problem areas warranting additional review. Integrated Open Data Kit (ODK) platform of OIOS (One IAAD One System), which has been implemented as an end-to-end solution for automated audit process, provides facility for automated beneficiary survey. In the audit assignment for the "All India Performance Audit on the establishment of AIIMS at Mangalagiri and Bibinagar", a patient satisfaction survey was conducted by the audit team using ODK tool, which included survey of 450 patients (150 Inpatient & 300 Outpatient) for each of the two AIIMS (a total of 900 patient) with over 70 Questions.

HOW WE DO IT CONVENTIONALLY

Conventionally, the survey is done in physical mode and face to face or through filling up of questionnaire physically. This, being done physically, would have been time consuming. Also, it would have required collation of documents and information from different sources, such as patient's profile, patient-related details, hospital's details, etc.

GOOD PRACTICE APPROACH

In place of the conventional method, the audit used the OIOS integrated ODK platform for automated online survey. An ODK form, namely, Data Collection Toolkit (DCTK) was designed for collection of the survey data based on the pre-determined survey questionnaire and additional details. The tool kit was made bilingual (English and Telugu) for facilitating the beneficiaries to access the questions in the preferred language by a simple language selection switch. Further, the tool kit is not required to be downloaded, it can be opened and filled up and submitted directly. It is usable across different platforms i.e. Mobile, Desktop / Laptop, Web Portals etc.

OIOS INTEGRATED CORE ODK TOOLS:

ODK Form	ODK Central	ODK Collect	OData API
Survey Questionnaire in XLS Form OR OIOS DCTK	Central server where ODK Forms will be Published, and submission Data is downloaded	• Android Mobile App • Link ODK Form for survey data collection • Offline/Online	Live data feed for analysis with tools like Excel, Power BI, and Tableau

THE END-TO-END PROCESS OF SURVEY AND ITS LIFE CYCLE: -
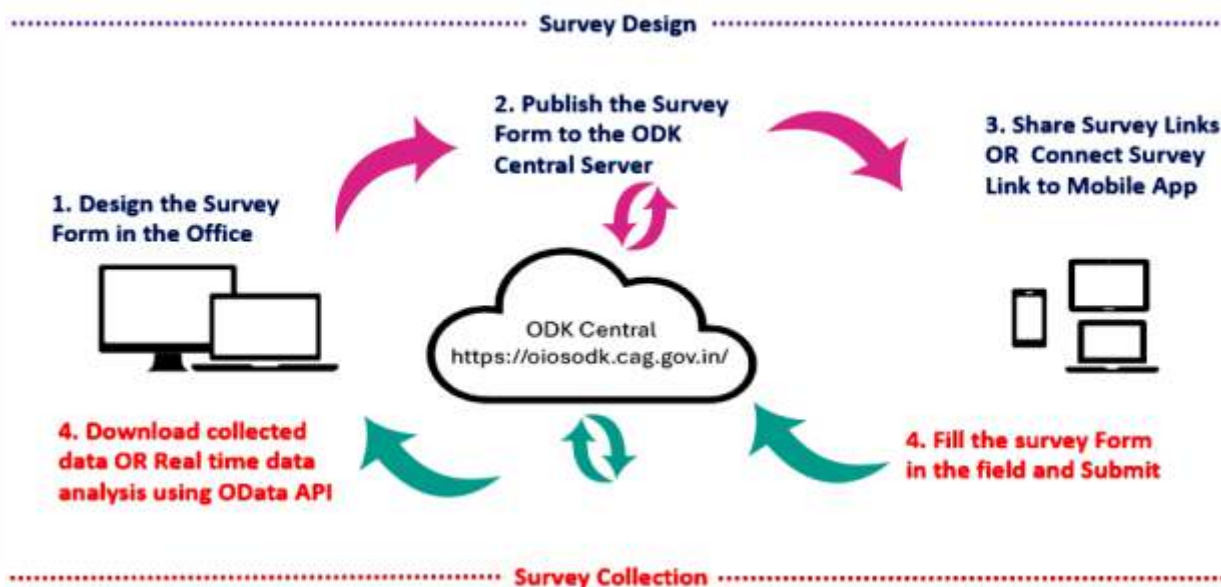
BENEFITS, REPLICABILITY AND SUSTAINABILITY

The ODK Platform (Data Collection Portal) is already integrated with the OIOS and is a powerful tool in the suite of OIOS applications. ODK Platform is used by IA&AD auditors for designing, collecting, and managing data through ODK forms alias toolkits. Foremost benefit of the toolkit is minimal design time that is, the lead time taken to launch the survey. In this case, it was around three days. The second benefit is ease of survey i.e. beneficiaries can take a survey at their own convenient time, on any type of device, without any restrictions or installations.

The approach is replicable, and it can be used in other offices by imparting training. It facilitates minimal lead times to design and publish the ODK form and supports wide variety of questions. It also offers flexibility in filling up the form, compatibility with multiple devices, remote monitoring and live data-analysis capabilities. The ODK form/platform including the "ODK Collect" mobile app of the OIOS suite of applications is highly beneficial and recommended for the beneficiary surveys across IA&AD.

The beneficiary survey helps the audit party in designing audit objectives and areas for further investigation.

Gujarat

Capacity Building and Handholding of Examiner Local Funds Accounts

BACKGROUND

Technical Guidance and Supervision (TGS) Practice Guide (November 2022), issued by the Office of the Comptroller and Auditor General of India, provides that training should be provided to the officials of the Examiner, Local Fund Accounts (ELFA) by the Audit Office, such a training for the officials of the examiner would enhance their capacity to conduct audit of local funds.

HOW WE DO IT CONVENTIONALLY

Conventionally, under TGS an audit office conducts reviews and inspections on its own and prepares reports. The approach is less structured & there is low emphasis on training.

GOOD PRACTICE APPROACH

A training calendar for the year 2023-24 was prepared in coordination with the Examiner, Local Fund Accounts, Gandhinagar. In 2023-24, against the seven planned trainings, six trainings were organized successfully, under TGS for the officials of ELFA.

The training covered areas of selection of audit subjects, planning including audit universe, risk assessment, sample selection, preparation of audit design matrix etc. The training also included areas of performance auditing, fraud detection and risk of irregularities in local

government. Sessions on drafting of half-margin memos and preparation of inspection report were also conducted.

A total of 215 officials of ELFA participated in the aforesaid training. They would apply the learning in their audit work for better results. Feedback submitted by them on topics covered and interactions with faculty for all relevant issues was highly positive.

Inauguration of training (7th August,2023) by Examiner, Local Fund Account, Deputy Accountant General, office of the Principal Accountant General, Gujarat, Vice Chancellor of Anand Agricultural University and Vice Chancellor of Sardar Patel University (left to right).

Inauguration of training (29th February 2024) by Deputy Accountant General, office of the Principal Accountant General, Gujarat, Sr. Audit Officer of TGS (Cell), Dean of Horne Science Faculty, MS University, Regional Deputy Examiner and Treasury Officer (left to right).

Group Photograph of all the participants and faculties with dignitaries at Anand Agricultural University (7th August, 2023)

Sr. Audit Officer as faculty delivering his lecture on 29th February 2024 at MS University, Vadodara.

BENEFITS, REPLICABILITY AND SUSTAINABILITY

Currently, ELFA, Gandhinagar conducts only Financial Audit. With the efforts of this office, ELFA has included conduct of Performance Audit in their plan "Procurement of Streetlight in PR's and their maintenance in selected districts," on pilot basis.

The effort of this office has resulted in capacity-building of the local funds officials and in widening of audit areas and also increase stakeholder engagement.

The approach could be useful for stakeholder interaction as well as support and guidance in capacity-building for Examiner, Local Fund Accounts (ELFA).
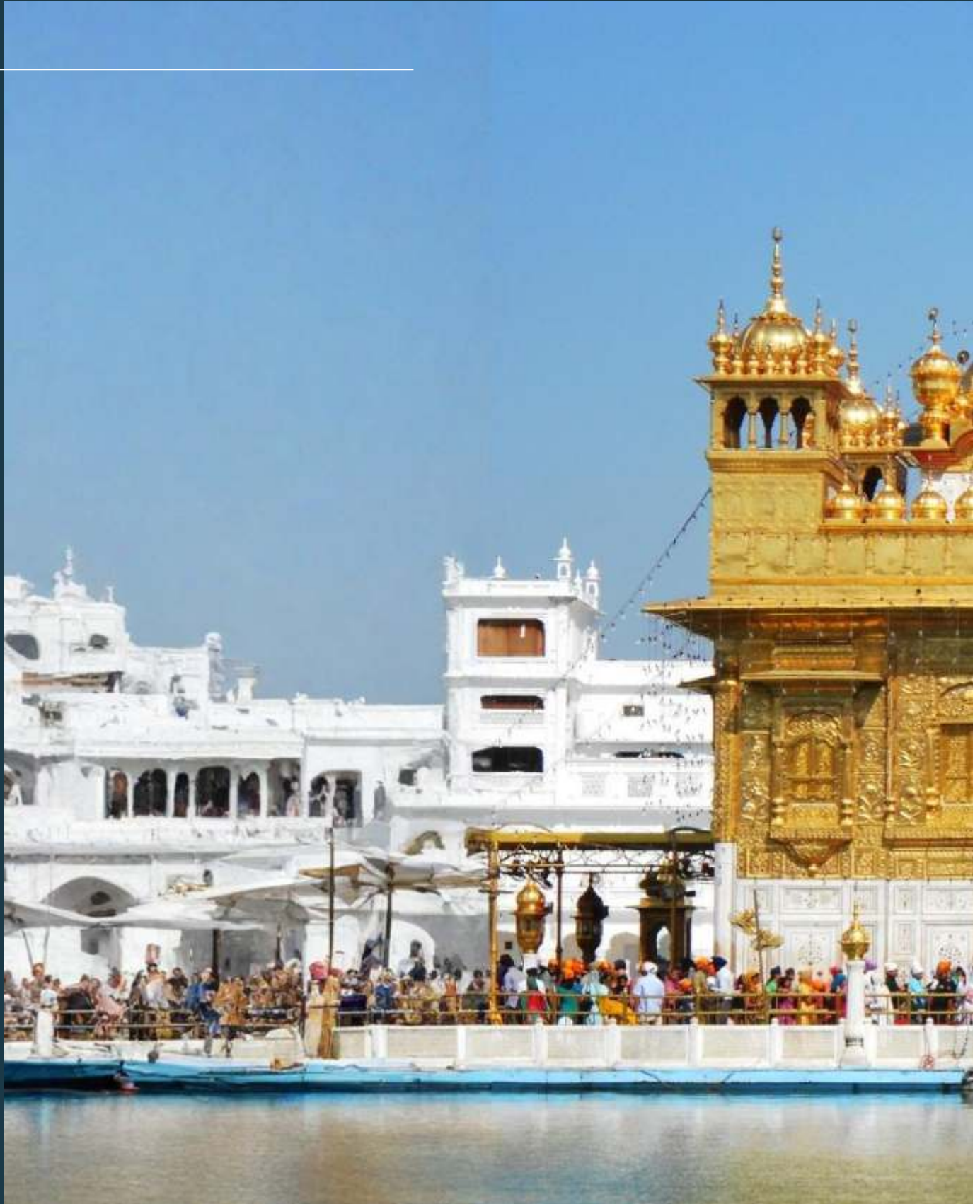
Punjab

Treasury Inspection through digital platform & OIOS

BACKGROUND

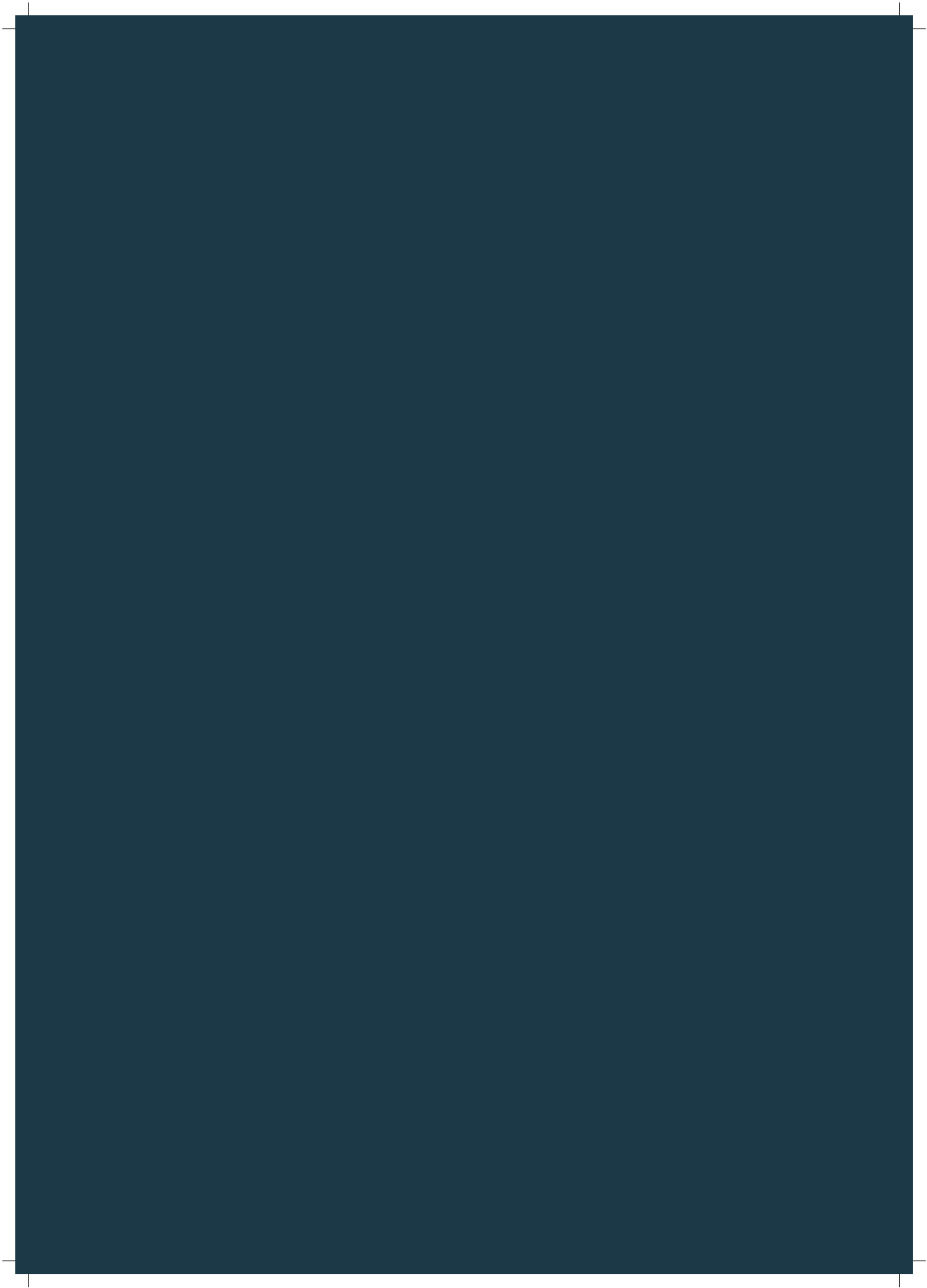Inspection of the State treasury is done by the offices of the Accountant General (A&E) as per the conventional mode of field visit and physical inspection. Treasuries are the basic units of financial transactions and compilation of accounts.

HOW WE DO IT CONVENTIONALLY

The conventional treasury inspection process would involve the following in physical mode:

Planning

Risk Analysis

Identification of Units for inspection

Nomination for inspection teams

Communication to Auditee

VETTING

Submission of Draft Inspection Report to Vetting section

Vetting section to scrutinize the observations w.r.t. Key documents uploaded

Approval by Competent Authority

Issuance of Inspection Report

EXECUTION

Entry Conference

Issuing Requestions, Audit Enquiries, Audit Observations

Communicating Audit Observations to DTO

Exit Conference

Because of manual inspection, it is difficult to monitor the inspection and also the implementation of the inspection reports by the treasury easily.

Good practice approach

OIOS is encrypted end-to-end application with fully automated audit process. O/o the Accountant General (Accounts & Entitlements), Punjab & UT Chandigarh for the first time took up treasury inspection by using OIOS. In 2023, pilot inspection was done in a few treasuries and subsequently, all treasury inspection is being done through OIOS.

By using the OIOS, the entire process of treasury inspection, right from planning to execution, vetting and issuance of inspection report, has been done in OIOS.

In the new initiative, the office collected a variety of available information on the Knowledge Management System (KMS) of the CAG's website. Training was given to the inspection teams through OIOS learning module and the feasibility of Treasury inspection was established through pilot in a few treasuries of Punjab.

With the availability of entire documentation in the OIOS, it is now easy for the inspection team to carry out its work, monitor the reporting and implementation and for the vetting team to cross check all the processes and documents.
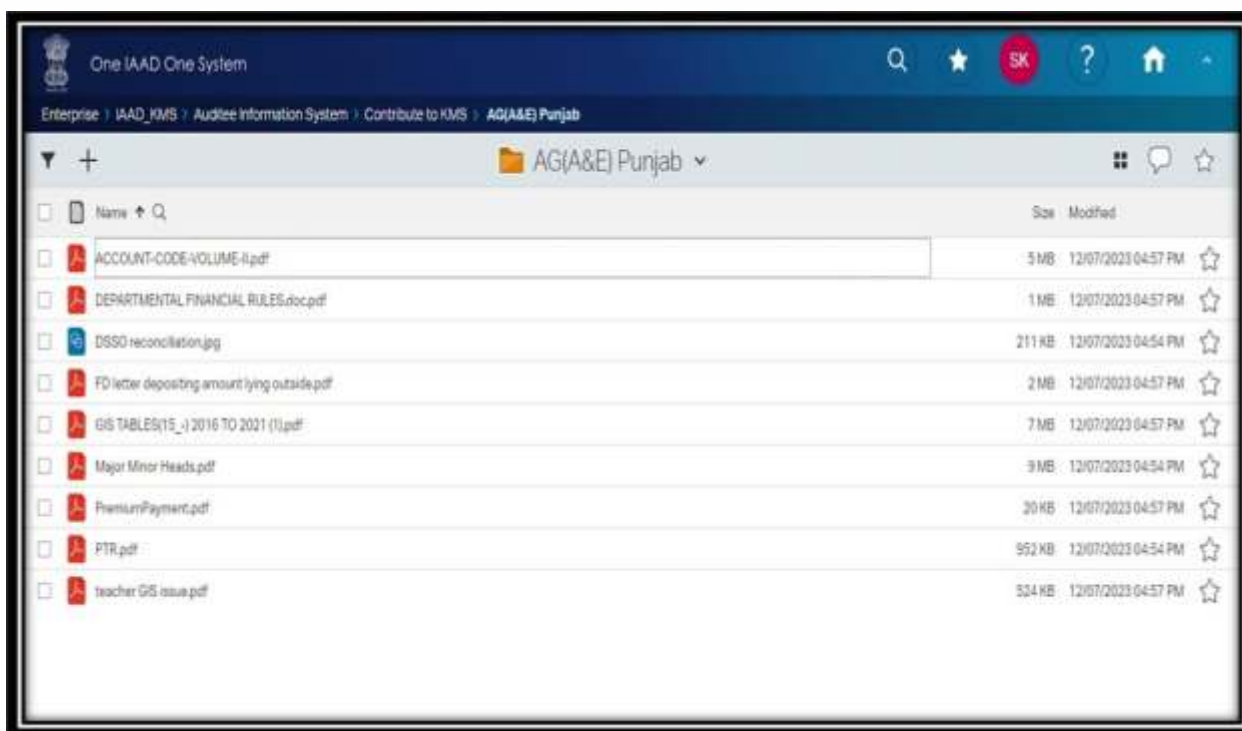
BENEFITS, REPLICABILITY AND SUSTAINABILITY

The following benefits have been derived:

a)   The 'One IA&AD One system' (OIOS) project aims at creating a single source of truth regarding Treasury Inspection conducted by (A&E) Offices.

b)   All activities and workflow will be performed in real-time through the IT system.

c)   Expeditious flow of information to and from HQs office/Treasury inspection team.

d) Easy monitoring of the working of inspection team by HQs office/Inspection officer.

e) A single IT system will ensure consistent, reliable data in a uniform format across all Offices.

f) Inspection Report (IR) will be stored in OIOS database, linking with related observations and Key documents (KDs) thereby easy to access

g) Maintenance of Uniform Standards for the procedure followed and observations raised during inspection by Field Inspection Teams with the help of Audit Design Matrix (ADM).

h) Creation of the repository of the necessary documents/guidelines/rules/provisions/ and the accessibility of the same through single application i.e. Knowledge Management System (KMS).

Inspection of all the treasuries planned in 2023-24 have been conducted through OIOS.

Treasury inspection through OIOS by AG (A&E), Punjab office is first of its kind which actually has encouraged other AG (A&E) offices to take up treasury inspection through OIOS. The office has prepared an SOP, which has been circulated to all A&E offices by the Goverment Accounts (GA) Wing of the Headquarter (Hqr.) office for all offices to conduct the inspection of treasury through OIOS. AG (A&E), Punjab office has also provided sample data, sample inspection report, audit design matrix and other documents to AG (A&E) offices as technical support to enable them to undertake such inspection through OIOS.

Performance of Local Body in management of sewerage and drainage systems

BACKGROUND

Management of the Sewerage and Drainage System in a city (Ranchi) was conducted and the Audit Report was tabled in August 2023.

The drainage project was intended by the State Government (Urban Development & Housing Department, henceforth Department) to establish an efficient and effective sewage collection mechanism from households to intercept and prevent direct discharge of untreated household septic tank effluents, through the existing street drains, into the ponds, nallahs and rivers such as *Jumar, Harmu, Subarnarekha* and their tributaries around the city. The system, once set up, was designed to limit contamination and pollution of ground and surface water in the municipal area.

In view of the extensive delays (more than 17 years) in completion of the project the management of the project was reviewed with the objectives of assessing the future viability of the project and bottlenecks faced during project execution. It involved examination of records in both the administrative department and the Municipal Corporation covering the period from June 2006 to March 2021.

HOW WE DO IT CONVENTIONALLY

Conventionally, audit of local bodies involves inspection, training, guidance and support to them. Performance evaluation extensively of a project of such a size is not taken up.

GOOD PRACTICE APPROACH

The compliance and performance audit of the project covering a period of 17 years, as the project was incomplete even after 17 years, and covering the Urban Development and Housing Department as well as Ranchi Municipal Corporation was taken up for the first time.

OBSERVATIONS

Delays in approvals

It took eight years from the date of survey to commencement of the work and that too in only one out of four zones. Approvals were phased out and were not obtained in one go which led to project bottlenecks, as in the intervening period the original survey for the project alignments was literally redundant due to construction of new roads, buildings, changes in ground levels, encroachments of right of way of approved alignment by local residents, emergence of new habitations etc. This extended the completion period of the project for one zone by almost two decades. In the remaining three zones, the project had not been taken up.

Designing Deficiencies

Several designing deficiencies were seen in the project since its inception. The details are as follows-

- There was lower projection (by 41 per cent) of sewage generation in the Detailed Project Report (DPR), *vis-à-vis* the Master Plan of the city. The capacity of the constructed Sewage Pumping Stations (SPS) was lower than the required capacity.

- The designing of main trunk line (11.736 km) was done in the submerged areas of the river *Jumar* which may result in water submergence and trunk line bed erosion.

Incomplete main trunk line in the submerged areas of the river Jumar (20 October 2021)

These deficiencies indicated that the sewerage system was not sufficient to dispose off the sewage generated in the near future years.

Irregularities in Awarding Tender

Audit noticed that the lead partner of the JV contractor awarded the contract did not have the requisite experience and financial capacity to meet the tender eligibility conditions and had submitted forged and fabricated documents of joint venture to qualify for the tender.

Despite deficiencies in the bid documents submitted by the lead partner of the JV, the Procurement Committee and Project Management Consultant did not flag these issues for the Department. It came to notice that the tender was managed in favour of the contractor, who was otherwise ineligible, inexperienced and had not complied with tender requirements.

During the execution phase, the contractor failed to provide required manpower and machinery at the work site, made slow progress and stopped the work, despite grant of time extension twice. Consequently, Municipal Corporation terminated the contract. By that time only 23 per cent of the work had been completed.

Irregular Award of Tender for Balance Work

In the tender of balance work of the sewerage project, Ranchi Municipal Corporation (RMC) wilfully awarded (February 2021) the work to only lead partner of another joint venture contractor though the tender was applied by the contractor as a JV. Neither did the lead partner of the JV have experience in designing, constructing and commissioning a Sewage Treatment Plant (STP) of 30 MLD capacity in a single contract nor had it successfully operated and maintained an STP of minimum 20 MLD capacity.

Payment of Mobilization Advance on Fake Bank Guarantees

The contractor was paid mobilisation advance of ₹54 crore. One instalment of the mobilisation advance amounting to ₹18 crore was granted without securing it by Bank Guarantee (BG) or any other instrument. The BG for this instalment was submitted by the contractor after 10 months of payment of the advance. The other two instalments amounting to ₹36 crore were granted against fake BGs submitted.

BENEFITS, REPLICABILITY AND SUSTAINABILITY

The Audit of Management of Sewerage and Drainage System in the city was not only technical but also complex in nature. The conventional mode of auditing was relevant in such a case and the task of securing audit evidence to substantiate the audit findings on project failures at different levels was quite a challenge. This was handled with the in-depth study and correlation of Manuals of Central Public Health and Environment Engineering Organisation (CPHEEO) with the Detailed Project Report (DPR) and all the technical drawings.

The outcome of this entire exercise revealed the various causes of project failures arising from delay in approvals, designing deficiencies such as lower projection of sewage generation, lower capacity of sewage pumping stations, designing of main trunk line in river submerged areas, fraud in awarding tender and use of fake bank guaranties for getting mobilisation advance, etc.

All available documents, minutes of procurement committee, correspondences, tender documents, bank guarantees etc. were examined to establish cases of multiple types of

irregularities in the project. Genuineness of bank guarantees from the authorities of Reserve Bank of India were third party confirmed, which proved these BGs as fake.

This is a complete, comprehensive and technical document for the Indian Audit and Accounts Department (IA&AD) for imparting knowledge to auditors in iCED, iCISA, Regional Capacity Building & Knowledge Institutes to make them understand the concepts of auditing sewerage projects, including cases of fraud in procurement of goods and services.

State Government agreed to take remedial actions, including for regulating tenders given to JV contractors.

Subject Specific Compliance Audit (SSCA) on Attachment of Property of an assessee by the Income Tax Department (ITD) under Section 281B

BACKGROUND

A Subject Specific Compliance Audit (SSCA) on Attachment of Property of an assessee by the Income Tax Department (ITD) under Section 281B was undertaken by the Director General / Pr. Director of Audit (Central) offices with the objective to examine whether there are policy or procedural gaps in the existing provisions of Section 281B of the Income Tax Act applicable to attachment of property of an assessee; and to examine the extent
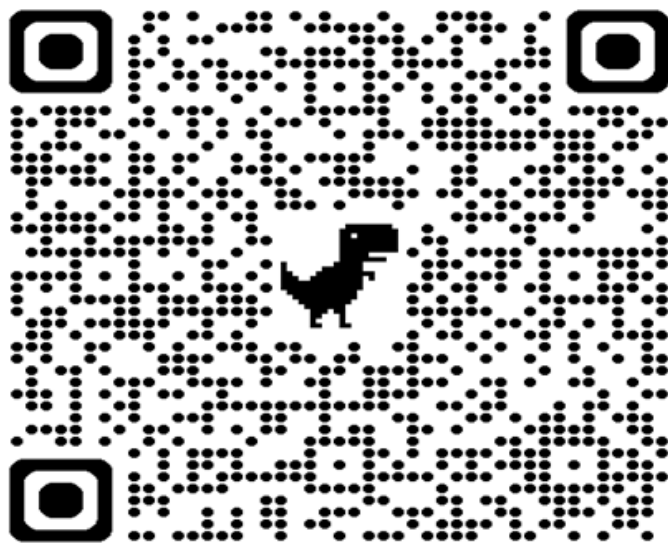
of compliance or consistent application of the provisions of Section 281B of the Act in individual cases.

HOW WE DO IT CONVENTIONALLY

Conventionally, receipt audit focuses on compliance with rules and regulations and the provisions of the Act and comments on non-compliance and resulting deviations.

GOOD PRACTICE APPROACH

Audit attempted to conduct assurance based audit in this SSCA by formulating a standard questionnaire for collection of data/information from the Department, covering all possible issues for analysing the adequacy of the provisions of the Act relating to provisional attachment under Section 281B and its application including monitoring aspects of provisional attachment of property. Audit also attempted to ascertain whether provisions were effectively utilised to safeguard the interest of revenue.

Audit further attempted to use information available from external sources for verification of status of property through triangulation. Audit noticed from Tamil Nadu Government's Registration Department's website viz., "tnreginet" in Chennai charge that the assessee sold one of the attached properties (Salem district) and the Assessing Officer (AO) was not made aware of the sale of the attached property, even after notifying the order under Section 281B to the jurisdictional Sub-Registrar Officers. Subsequently, without verifying these facts, the AO issued extension to the order under Section 281B rendering the attachment infructuous since the attached property was no longer in the possession of the assessee.

Audit attempted to assess the effectiveness of provisional attachment made by the Department by examining the post-assessment status of the audited sample of 350 provisional attachment cases.

Several best practices were implemented for the first time for the benefit of designated field party personnel of all Field Audit Offices (FAOs) during the conduct of the SSCA:

• A Checklist was prepared by providing drop-down options for choosing the most appropriate one for each of the audit checks in accordance with the approved Audit Design Matrix, through multiple discussions between the Group Officer/HoD and the lead team members;

• To facilitate correct interpretation of the audit checks, a set of Standard Operating Procedures (SOPs) were prepared;

• An Audit Memo template based on the audit checks was prepared for use by Audit personnel of all FAOs during field work;

• An online Workshop was held for guidance on the correct interpretation of Checklist questions, etc.

• During consolidation stage of draft reports of all FAOs, a master checklist template was devised for compiling various data of the audit checks, which was of large help in finalizing the consolidated draft report.

These innovative processes enhanced the efficiency and effectiveness of the audit processes undertaken both during field work and finalization of SSCA.

PLANNING

For conducting this SSCA, we selected Principal Commissioners of Income Tax (Central), as the AOs of Central Circles are vested with the powers of making assessments in the case of an assessee who has been subjected to search and seizure as per provisions of Section 132[1] of the Act and also taking into consideration travelling and other restrictions caused by COVID-19 pandemic situation prevailing across the country.

A total of 354 cases were identified where orders under Section 281B were issued by AOs holding assessment charge of 72 Central Circles under the jurisdiction of the 18 Principal Commissioners of Income Tax (Central) covering 14 States[2] during FYs 2017-18 to 2019-20 which were selected for audit examination.

METHODOLOGY AND EXECUTION

The execution of this SSCA included an entry conference with the jurisdictional Pr. CIT (Central) by the Lead Office, conducting of field audit of 354 cases where orders under Section 281B were issued by Assessing Officers from November 2020 to March 2021 and further verification of records and documents produced by ITD, which continued till June 2022.

The draft consolidated Report was issued to the Ministry for giving them the opportunity to offer comments on the audit findings as well as on Audit recommendations. An Exit Conference was also held with the Ministry/Central Board of Direct Taxes to discuss the issues incorporated in the Report. Response of the Ministry was suitably incorporated in the Report.

The Report included findings derived from the data compiled through a questionnaire given to the Department along with significant findings which emerged during the course of field audit. Based on the audit findings and also from the study of other relevant Acts, we suggested a proforma and other relevant recommendations for consideration of the Ministry/CBDT to make the provision more effective, efficient and transparent. We also commented on the process and execution of the Provisional Attachment which would facilitate in protecting the interests of revenue and avoiding/minimising litigation for the Department.

BENEFITS, REPLICABILITY AND SUSTAINABILITY

Audit observed that scrutiny assessments were completed in 291 cases as of July 2022 and a net cumulative tax demand of ₹12,621.23 crore was raised after considering the effect of rectification orders due to enhancements/ reductions/appeals etc. Of these, recovery of only ₹407.09 crore was effected in 103 cases which constitutes 3.22 per cent of the net tax demand.

From an outcome perspective, the provisional attachment of properties envisaged to protect the interests of revenue remained largely unfulfilled as the rate of recovery of tax demands was low. Audit acknowledges that the reasons for non-recovery of tax demands would go beyond the use of provisional attachments alone.

There was no institutional guidance for either defining the types of property that could be provisionally attached or laying down the hierarchy/priority of assets for selection. Therefore, Audit recommended that the CBDT may bring out specific guidelines to facilitate AOs in ascertaining details of and record all the property(ies) available with the assessee to

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[1] Under Section 132, an Authorised Officer of the Investigation Wing of ITD can enter and search any building, vehicle etc. and seize books of account, bullion etc. of an assessee under the prescribed circumstances, in cases where the assessee is suspected of evading tax.
[2] New Delhi, Madhya Pradesh, Chhattisgarh, West Bengal, Maharashtra, Tamil Nadu, Kerala, Karnataka, Goa, Telangana, Orissa, Gujarat, Rajasthan and Chandigarh.

facilitate selection of appropriate and sufficient property for the purpose of maximising the interest of revenue.

The Ministry accepted the suggestion given by the Audit and implemented vide para 3.4 of the Instruction No. 1/2024 in File No. 402/31/2022-ITCC dated 03.06.2024.

The AOs were not adequately establishing and documenting the basis/grounds for invoking these provisions and in the absence of documentation, Audit could not draw assurance whether the applicability of the provisions was justified in those cases.

Therefore, Audit recommended that the CBDT may frame specific criteria for opinion formation, perhaps with illustrative examples and clarify "Exceptional circumstances" to facilitate the AOs in initiating provisional attachment proceedings in an effective, transparent and legally sustainable manner.

The Ministry accepted the suggestion given by the Audit and implemented vide para 3.1.6 of the Instruction No. 1/2024 in File No. 402/31/2022-ITCC dated 03.06.2024.

Notification of provisional attachment orders to Registering Authorities was found to be inadequate, which eventually defeated the purpose of such notification in a few cases.

Therefore, Audit recommended that

(i) the CBDT may consider issuing a comprehensive SOP for provisional attachment, including notification of provisional attachment order under Section 281B to the concerned authorities to ensure uniformity in implementation of relevant provisions of the Act and to protect the revenue of the Government.

(ii) The CBDT may make it mandatory to notify the provisional attachment orders under Section 281B to the concerned Authorities, including CERSAI, with specific directions to the Authorities for making note of the provisional attachment and to monitor the assessee's compliance to the directions issued therein.

The Ministry accepted the suggestion given by the Audit and implemented vide para 3.2.2 of the Instruction No. 1/2024 in File No. 402/31/2022-ITCC dated 03.06.2024.

Audit noticed that the AOs did not comply with the Board's instructions of ascertaining details of all assets in the possession of assessees that could be considered for provisional attachment. Audit also noticed deficiencies in respect of list of assets provided in the Appraisal which resulted in incorrect attachment of a property. The process of identification of assets was found to be deficient.

Therefore, Audit recommended that the CBDT may enforce the extant instructions for enquiry into all assets of the assessee during search and seizure by devising or suggesting appropriate guidelines for selecting the appropriate assets for provisional attachment to ensure maximum coverage of likely tax demand and thereby achieve optimum protection of revenue, as intended. Further, such enquiry should be appropriately documented.

The Ministry accepted the suggestion given by the Audit and implemented vide para 3.1.3 of the Instruction No. 1/2024 in File No. 402/31/2022-ITCC dated 03.06.2024.

Audit noticed that the AOs did not establish evaluation of property of assessees for their ownership requirements as well as for their non-encumbrance status before considering them for provisional attachment in majority of cases.

Therefore, Audit recommended that the CBDT may devise an appropriate mechanism for ensuring the verification of ownership status of the property to be attached. If enquiries have been made from the concerned registering or other authorities for confirmation of ownership/non encumbrance, in such cases where properties are sold or transferred shortly before the issue of the attachment order, necessary penal action against the assessee may need to be considered.

The Ministry accepted the suggestion given by the Audit and implemented vide para 3.4 of the Instruction No. 1/2024 in File No. 402/31/2022-ITCC dated 03.06.2024.

Audit noticed that the value of attachment was either excessive or insufficient as compared to the estimated tax liability, which may have resulted in either undue harassment to the concerned assessees or insufficient coverage of the estimated tax liability. Audit also noticed that the AOs did not ascertain the fair market value of properties in majority of the cases. As a result, the probability of achieving the primary objective of protecting the interest of revenue seems remote.

Therefore, Audit recommended that the CBDT may ensure compliance to the provisions of Section 281B of the IT Act and the CBDT's Instruction of September 2004 regarding adequacy of provisional attachment of a property by determining its fair market value, where found necessary, for ensuring appropriate protection of interest of revenue.

The Ministry accepted the suggestion given by the Audit and implemented vide para 3.2.4 and 4 of the Instruction No. 1/2024 in File No. 402/31/2022-ITCC dated 03.06.2024.

Audit noticed that the validity period of several orders under Section 281B lapsed either before the tax demands raised were fully recovered or even before completion of assessments.

Therefore, Audit recommended that the CBDT may enforce implementation of extant provisions relating to validity period of order under Section 281B to ensure that the cases remain continuously protected till the tax demand(s) on assessment is fully recovered.

The Ministry accepted the suggestion given by the Audit and implemented vide para 2 of the Instruction No. 1/2024 in File No. 402/31/2022-ITCC dated 03.06.2024 prescribing a proforma for quarterly report on provisional attachment which will ensure proper monitoring.

The assessee had disposed-off the property even after notifying the order under Section 281B to Sub Registrar. Therefore, Audit recommended that the CBDT may consider investigating from a penal perspective, changes in ownership after the issue of the attachment order, to evade the consequences thereof including any role of the registering authorities.

The Ministry stated that suggestion by the Audit requires an amendment to the Income Tax Act and agreed to examine during budgetary exercise.

Audit noticed that there was no prescribed format containing essential information for issuing Provisional Attachment orders. In the absence of requisite details in the order, the Department as well as the notified authority would not be able to effectively monitor the attached property(ies) to achieve the intended objectives of protecting the interest of revenue. Further, non-recording of the above details rendered these orders non-transparent to the assessee and also made them susceptible to legal disputes.

A sample format containing requisite details viz. specific reasons for initiation of provisional attachment, brief description of provisionally attached property, estimated tax liability,

validity period of the order etc. was suggested by Audit for consideration by the CBDT. This would facilitate not only the Department/the notified authority for effective monitoring of the provisional attachment but also enable the concerned assessee for a better and quick compliance.

Therefore, Audit recommended that the CBDT may prescribe a format for the order under Section 281B to include all the elements of essential information required for Provisional Attachment to ensure consistency and legal sustainability.
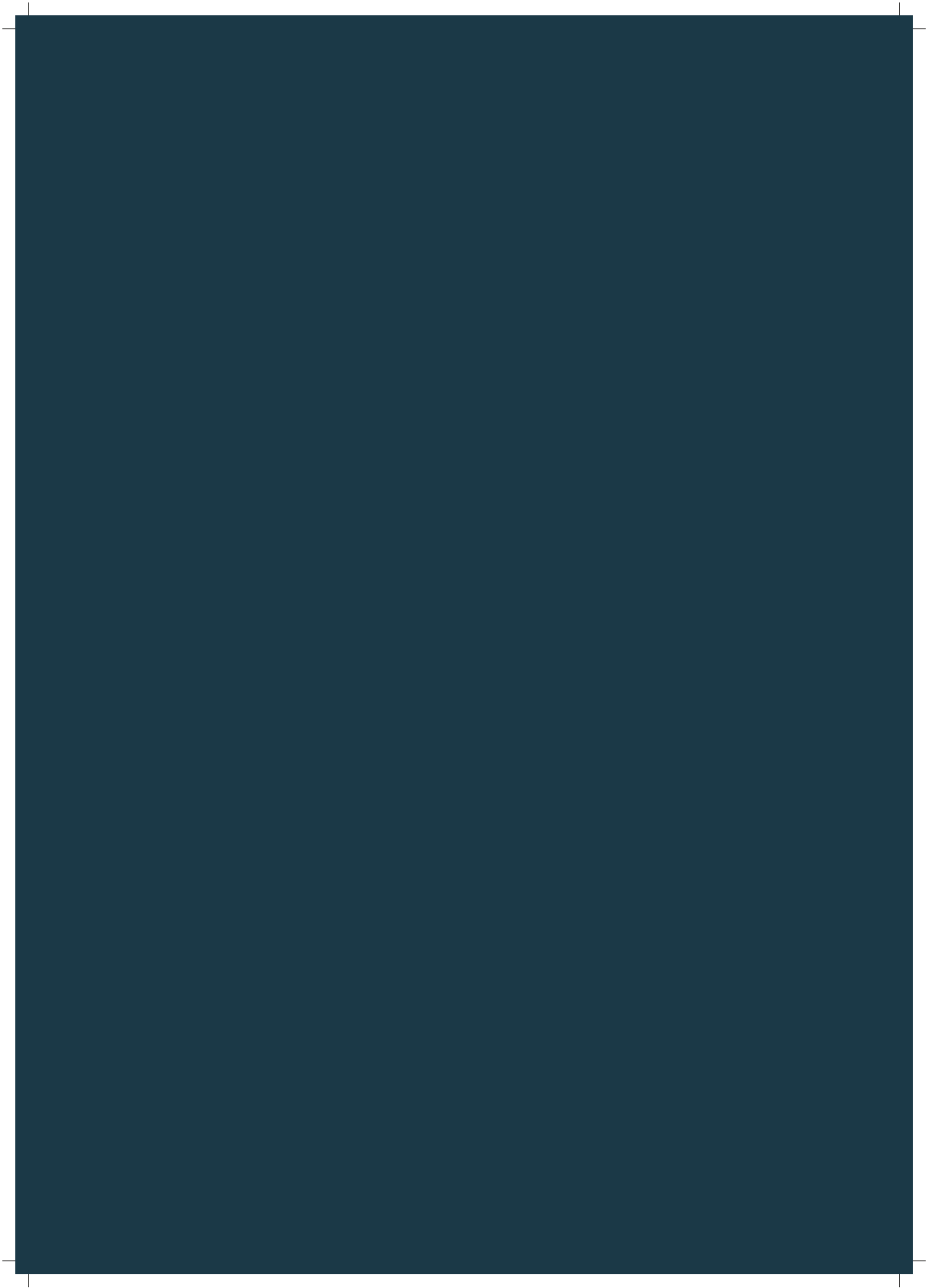
The Ministry accepted the suggestion given by the Audit and guidelines along with format of order under Section 281B have been prescribed vide Instruction No. 1/2024 in File No. 402/31/2022-ITCC dated 03.06.2024.

'Some other important audit findings of the Report'

· In certain cases, the savings/current bank accounts of assessees were provisionally attached by the jurisdictional AOs without establishing that they were attached only as a last resort.

· Audit further observed that in certain cases, the orders under Section 281B were extended with a time gap ranging between two and 166 days from the date of expiry of previous order under Section 281B; Audit could not ascertain whether the concerned assessee had disposed off the attached property in the intervening period when there was no provisional attachment.

· Audit further observed that the time gap from the date of search to the date of initial order under Section 281B ranged between 208 days and 1220 days. Absence of a prescribed time limit for issuing order of provisional attachment has an inherent risk of the assessee alienating property(ies), which are being considered for attachment, in the intervening period in case of abnormal delay in issuance of orders under Section 281B. Further, provisional attachment orders were not being issued within a reasonable time after the date of search proceedings could result in a perennial but indefinite risk hanging over the assessee, which is susceptible to misuse.

Use of Machine Learning In e-Procurement.

BACKGROUND

Governments spent large sum of their budgetary spending on procurement of goods and services. Financial, compliance and performance audits cover procurement expenditure with special focus on pattern of bidding, cartelisation, association between different bidders, etc. e-Procurement refers to ecosystem and technologies which helps procurement process through automated system.

HOW WE DO IT CONVENTIONALLY

Machine learning has not been deployed so far for identifying hidden associations between bidders, pattern of bidding, etc. Such associations might not be easily found out through conventional data analytics and tools.

GOOD PRACTICE APPROACH

To discover hidden associations that are not possible to detect through the classical data analytics approach, CDMA tried one of the Association Rules Mining techniques, i.e. apriori principle, which is part of unsupervised machine learning algorithms.

Using this ML technique, associations between bidders in the same tenders was discovered. The discovered associations, called as association rules, may not imply causation, as some of the associations may be spurious (happening by chance). The algorithm, however, provides us with some measures using which we can evaluate the discovered patterns for their spuriousness.

Association rule mining, using Apriori Machine Learning, resulted in discovering 361 associations (rules) involving 167 bidders in total, all having confidence score of 90 per cent or above and simultaneously having the support score (the minimum number of tenders for discovering such rules) of at least 50 tenders. Out of these361 rules, 252 rules were non-redundant[3]. Interestingly, there were 57 associations involving 49 bidders having a confidence score of exactly 1 (i.e. 100 per cent). In other words, the consequent (RHS) bidder was found to be bidding certainly (100 per cent probability) given the antecedent (LHS) bidders, bidding for a tender. These associations are shown in the following plot.
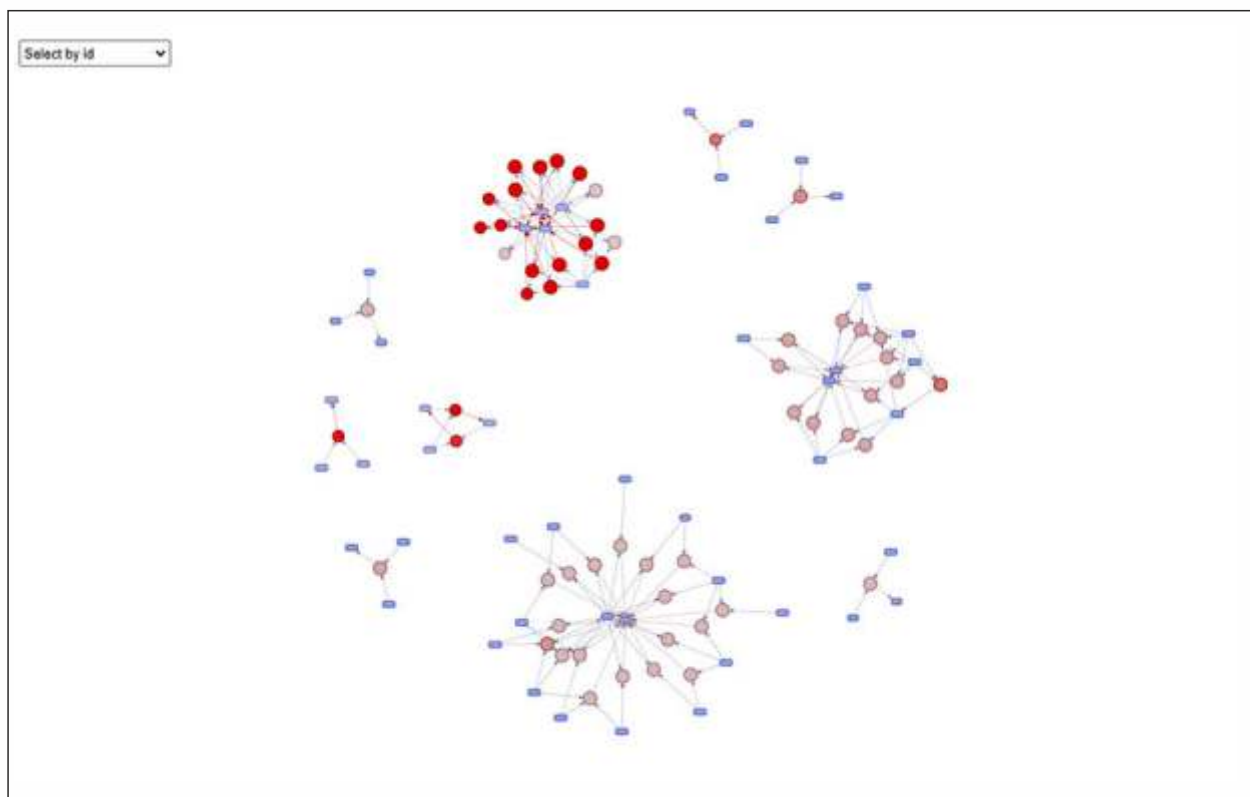
For this machine learning, we used only open-source tools and techniques, mainly R programming language, which are replicable as well as scalable.

BENEFITS, REPLICABILITY AND SUSTAINABILITY

This approach of the integration of Artificial Intelligence (AI) and Machine Learning (ML) into auditing practices shall facilitate finding out hidden relationships among the bidders, for example, thereby providing valuable insights into the procurement ecosystem and pattern of bidding, etc.

As these are ever-evolving technologies, public auditing would benefit through insights in planning and evidence gathering.

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[3] Any association rule is redundant, if a more general rule with same or higher confidence exists.

Data analysis of VAAHAN & SARATHI dataset

BACKGROUND

Centre for Data Management & Analytics (CDMA) is the nodal centre of the Indian Audit & Accounts Department (IA&AD) and acts as facilitator to coordinate all the activities of data analytics and big data policy in the Supreme Audit Institution (SAI) of India .

As part of its analytics, CDMA brings out data analysis reports for different offices of the SAI India, involving large databases. Such insights focus on anomalies such as tracking of IP addresses for registering bids or applications, duplicates beneficiaries, mismatch of business rules and transaction date related insights, which have been reused by several offices.

Key projects, which CDMA handles as part of continuous audit is Transport database consisting of data from Vaahan, Sarathi and e-Challan. The Vaahan database developed by the Ministry of Road Transport and Highways (MoRTH) is an online platform designed to manage services relating to the registration of vehicles, issue of fitness/permit certificates, payment of taxes etc. across the country. The data is collected bi-annually from MoRTH and analysed for identifying potential risks and is also shared across field offices on a request basis for audit purposes.

The Sarathi application was designed to streamline the process of registration of driving licenses across the nation. The objective of this application was to enhance the efficiency and

accessibility of driving-related services like managing driver's licenses, learner's permits and related documentation.

HOW WE DO IT CONVENTIONALLY

Outside CDMA, such analytics were either not used or if used, were on random and individual effort basis. Data Analytics and analysis of dataset, especially of Vahan and Sarathi was rare.
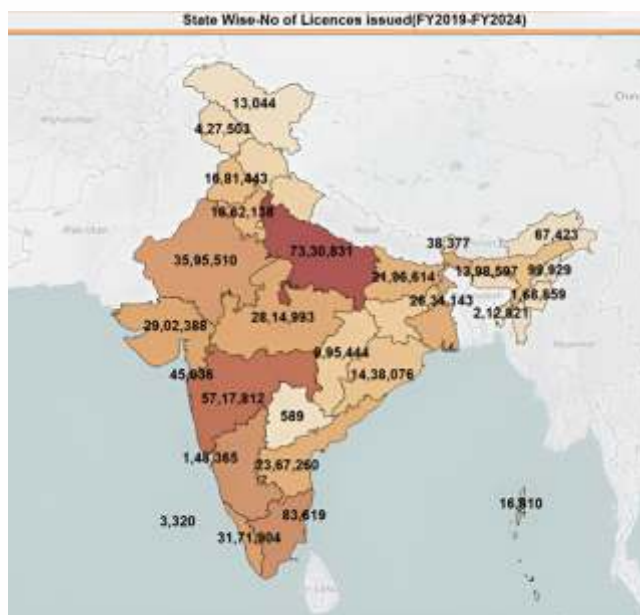
GOOD PRACTICE APPROACH

Earlier CDMA issued Vaahan Sarathi manual with certain Audit Insights which was circulated to all field offices for reuse in audit reports. Further, new Insights have been prepared and shared with Field Offices. Some of the audit insights are:

(i)   Data Profile of VAHAN

A detailed description of state-wise vehicles registered in the country is given below:

(ii)   Data Profile of SARATHI

State Wise-No of Licences issued(FY2019-FY2024)

(iii) Misclassification of Maxi Cab as Motor Cab

Section 2 (22) of The Motor Vehicle Act, 1988 defines 'Maxi Cab' as any motor vehicle with seating capacity of more than 6 persons but not more than 12 persons excluding the driver for hire or reward. A motor cab is defined in section 2 (25) as any motor vehicle with a seating capacity of not more than six passengers excluding the driver for hire or reward.

Since the MV Tax is levied at different rates based on the seating capacity of the vehicles, there is a risk of motor vehicles with seating capacity of more than seven getting incorrectly registered as motor cab, either intentionally or unintentionally, resulting in short collection of taxes. Some of the data analyses did provide instances of such cases.

(iv) Licenses Issued to Underage Applicants

As per Rule 4 of The Motor Vehicles Act, 1988 the age criteria for issue of driving license is as follows:

1. 18 years of age for LMV (Light Motor Vehicle) & MCWG vehicle class (Private Vehicle)

2. 20 years of age for Transport Vehicle

There is a risk of licenses being issued to persons not eligible. Data analysis supports such red flagging and found cases of the licenses having been issued to applicants, who have not yet reached the permissible age limit.

The heat map given below displays the state-wise number of possible licenses issued to underage applicants.

State Wise DL issued before permissable age
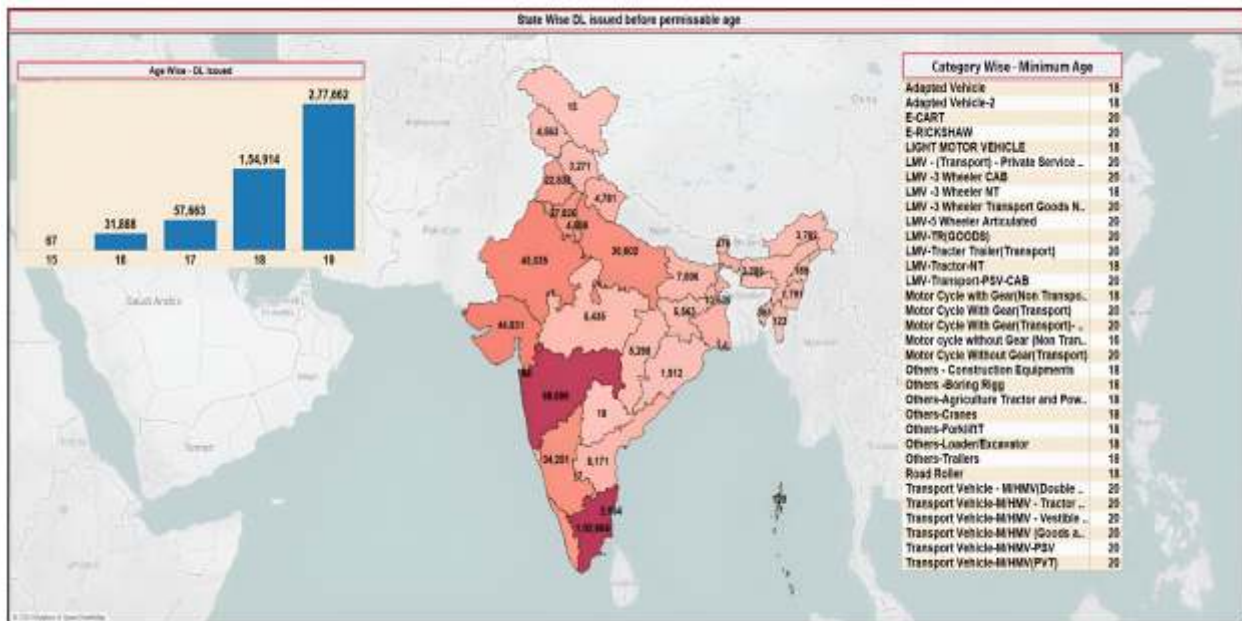
BENEFITS, REPLICABILITY AND SUSTAINABILITY

Data analytics and analyses of data set, both are integral to audit planning and audit evidence gathering. Insights from the CDMA helps in identification of red flags, risk areas and areas of potential non-compliance, fraud, irregularities etc.

CDMA also handholds different field offices who are undertaking performance audit of Transport Department.

This is being reused by other office and is being replicated. Since CDMA is a permanent centre, it shall continue to extend the analysis and support.

IMPROVING STAKEHOLDER ENGAGEMENT
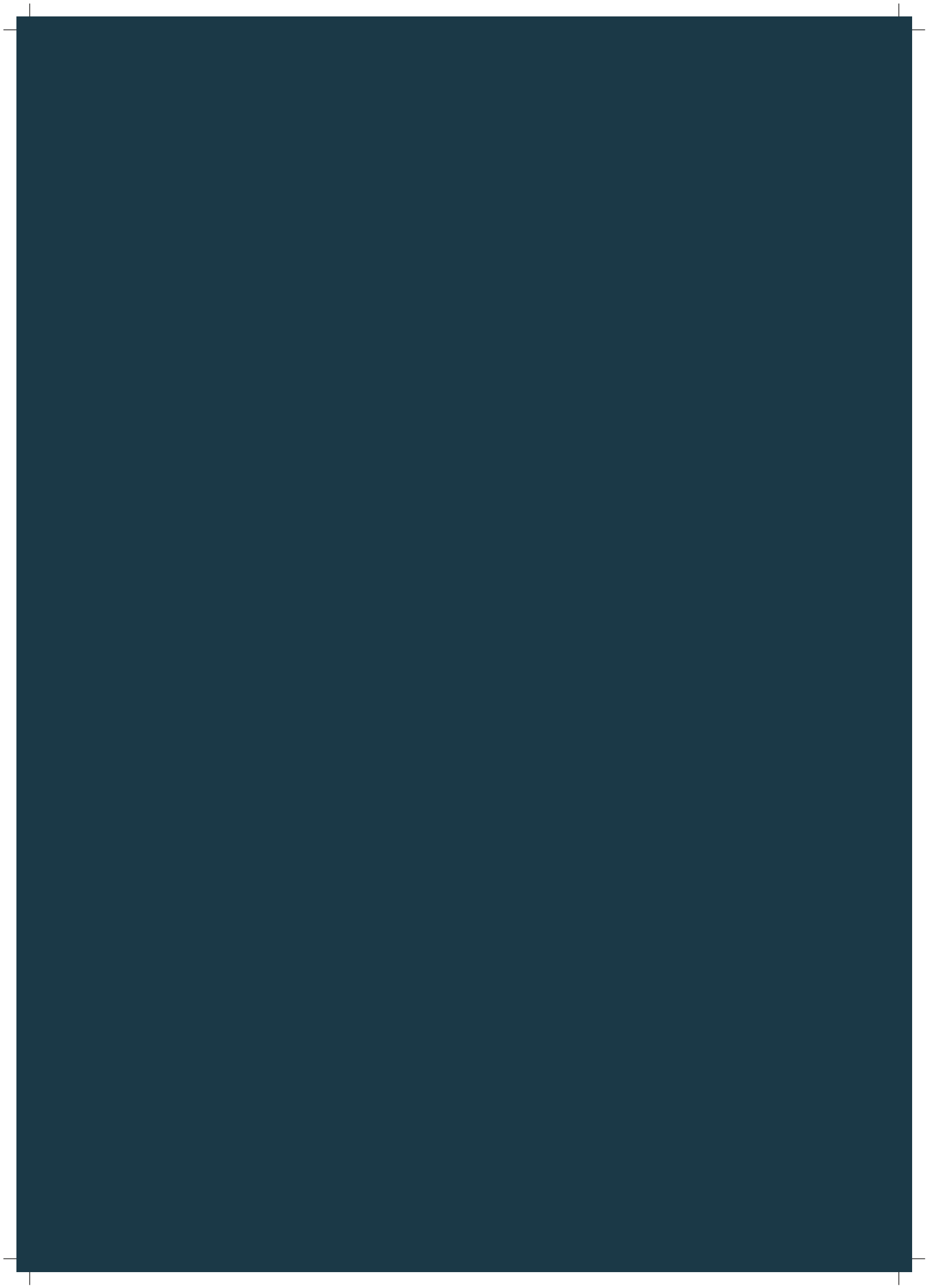
International Engagements

The Comptroller and Auditor General of India (CAG), also called the Supreme Audit Institution (SAI) of India has a significant presence in the international public sector audit community. At the global level, CAG of India is a member of the Governing Board of the International Organization of Supreme Audit Institutions (INTOSAI), as well as the Chair of the INTOSAI's Knowledge Sharing Committee (KSC), the INTOSAI Working Group on Information Technology Audit (WGITA) and the Compliance Audit Sub-committee. CAG of India has taken over as the Chair of the Asian Organization of Supreme Audit Institutions (ASOSAI) for the period 2024-2027.

Global footprints of the CAG of India are further strengthened in its role as the external auditor of World Health Organization (WHO), Food and Agriculture Organization (FAO), International Atomic Energy Agency (IAEA), Organization of Prevention of Chemical Weapons (OPCW) and International Labour Organization (ILO).

SAI India is a member of several other multilateral forums and has strong bilateral relationships with several other SAIs. The important Multilateral and Bilateral engagements conducted in the recent period are briefly elaborated in the ensuing paragraphs.

- **16th ASOSAI Assembly**

The 16th ASOSAI Assembly from 21st to 27th September 2024 at New Delhi was inaugurated by the Hon'ble President of India. The ceremony highlighted the significant role of SAIs in fostering good governance and showcased SAI India's initiatives and priorities as the incoming Chair of ASOSAI for 2024-2027.

The 1st Plenary Session was held immediately after the Opening Ceremony. The session began with the announcement of participating delegations and observers by the Secretary General of ASOSAI, followed by the presentation of the Secretariat's activity report since the last Assembly.

- **9th ASOSAI Symposium**

The 9th ASOSAI Symposium with the theme "Digital Public Infrastructure and Gender Divide – Issues of Inclusion and Accessibility." was inaugurated by the CAG of India, who delivered the opening address, followed by an overview of the theme by SAI India.

Delegates from SAIs of Indonesia, Israel, Malaysia, Oman, and Thailand presented their perspectives on the theme. The symposium addressed critical issues related to digital inclusion, accessibility, and gender equity in public infrastructure development.

- **16th KSC Steering Committee Meeting, Nairobi, Kenya**

The 16th Steering Committee Meeting of the INTOSAI Knowledge Sharing Committee (KSC SC) was successfully held in Nairobi, Kenya, from 14 – 16 October 2024, hosted by the office of the Auditor General of Kenya. CAG of India, as the Chair of both WGITA and KSC, delivered his opening remarks at both events. In his remarks, CAG of India emphasized the key role played by the KSC in promoting global knowledge dissemination. He highlighted key achievements, including the upcoming approval of GUID 5101 - Guidance on Audit of Information Security, and other milestones that strengthen professional guidance for SAIs.

- **33rd Annual Meeting of INTOSAI Working Group on IT Audit (WGITA)**

On 15 October 2024, the 33rd WGITA Meeting commenced with CAG of India highlighting the growing importance of advanced technologies like AI and machine learning in IT audits. He reiterated the need for IT audit practices to evolve in response to technological changes, emphasizing WGITA's achievements in this domain, including the finalization of GUID 5101. He also outlined the need for a forward looking WGITA's next work plan for 2026-2028, focusing on cutting-edge IT audit projects, capacity building, and the development of relevant toolkits and guidelines.

In conjunction with the WGITA meeting, a seminar on "Repositioning SAIs for Impactful IT Audits" was held on 16th October 2024. It featured presentations from SAIs of various countries, including Brazil, Egypt, and South Africa, on topics such as Auditing Ransomware Defences, Data Privacy, and Strategic Audit Planning. SAI India presented its approach to enhancing IT audits, focusing on the integration of digital ecosystems and emphasizing security measures and auditor skill development.

- **GSAI Support for SAI Belize**

The Global SAI Accountability Initiative (GSAI) led by INTOSAI Donor Cooperation (IDC) aims to strengthen and maintain the capacity of SAIs and identifies SAIs in challenging environments and provides support to strengthen their capacities and performance.

GSAI support was officially launched in 2023 with SAI India as the main technical partner for SAI Belize. Ms. Parveen Mehta, DAI signed the Cooperation Agreement between SAI Belize, SAI India and IDI under the ambit of the Global SAI Accountability Initiative, virtually on 19 December 2023.

SAI India officers carried out site visit to SAI Belize in August 2023 for undertaking the detailed needs assessment for technical support in the area of Digitalization and improved quality of audit processes, Digitalization of SAI's management information system (HR Management, Records), Stronger SAI Independence and Stakeholder engagement (Joint Public Accounts Committee-JPAC).

In August 2024, a team from the SAI of Belize visited the SAI of India as part of the peer-to-peer support development project within the Global SAI Accountability Initiative (GSAI).

- **WGITA webinar on the topic "Use of Geospatial Analysis in Audit"**

As per Work plan of INTOSAI Working Group on IT Audit (WGITA), a project for conducting Webinars on IT Audit Topic has been taken up with the aim of enhancing knowledge of member SAIs and other interested organisations in the field of Information Systems Audit by disseminating information on relevant areas through quarterly webinars. SAI India is Project Co-Lead for the Project along with U.S. Government Accountability Office (US GAO).

SAI India hosted WGITA webinar on the topic "Use of Geospatial Analysis in Audit" on 28th May 2024.

During the webinar Ms. Monica R, Director, Mr. Surjith K, Director and Ms. Monali Phadtare, DAG, presented on Use of GIS in detecting illegal mining, Use of GIS analysis for analyzing Assisted Natural Regeneration and Use of GIS analysis for analyzing storm water drainage, respectively.

- **MOUs entered with various SAIs**

MOUs were signed with SAI Bulgaria, SAI Nepal, SAI Uzbekistan, SAI Saudi Arabia, SAI United Arab Emirates, SAI Bahrain and SAI Seychelles. The MOUs were to enhance collaboration and the exchange of expertise

SAI SAUDI ARABIA

SAI UAE

- **Climate Scanner Workshop in Jaipur**

International Centre for Environment Audit & Sustainable Development (iCED), as the Global Training Facility (GTF) of INTOSAI Working Group on Environmental Auditing (WGEA) organised an International Workshop on "Renewable Energy Development Strategies and Mechanisms with special reference to Solar Energy" from 05.02.2024 to 09.02.2024 in two batches through virtual mode. A total number of 51 participants represented 17 SAIs in the workshop.

During the workshop, experts from European Court of Auditors (ECA), SAI Brazil, SAI Estonia, SAI Finland, SAI Indonesia, SAI India, and other key Institutions such as the Ministry of New & Renewable Energy, Govt. of India, National Maritime Foundation (NMF), New Delhi etc. shared their perspectives with relevant case studies to elaborate the various aspects of Audit of Renewable Energy.

- **Workshop on Climate Finance**

Workshop on Climate Financing was held in March 2024. In his address the CAG had stated Climate financing is key to our collective efforts to move towards a more resilient and sustainable future. It is a catalyst for change, empowering nations, communities, and businesses to adopt green technologies, invest in renewable energy, and foster sustainable practices.

Ms. Chandini Raina, Economic Advisor, Ministry of Finance; Shri Saurav Sinha, Executive Director, RBI; Mr. Divyank Singh, CEO, Smart City Indore and Additional Nagar Nigam Commissioner Indore, Dr. Satya Priya Rath, Director (Budget), Finance Department, Government of Odisha and Shri S. Alok, Director General of Audit, Defence Service shared their experiences on topics like Overview of climate finance and audit perspective on climate finance; Key components of India's climate finance strategy; Addressing financial risks from climate change; Unlocking climate finance- transitioning to a sustainable future

- **CAG selected as Vice Chair of UN PANEL**

The Panel of External Auditors held its 63rd regular session at UN Headquarter in New York during 20-21 November 2023. During the UN Panel meeting, CAG of India was elected as the Vice Chair of the Panel for 2023-2024. Going by the precedent, consequent to taking over as the Vice- Chair, CAG of India would take over as the Chair of the Panel for 2024-2025.

During the UN Panel meeting, CAG of India led the session on 'Financial and Management-Critical Issues'. CAG highlighted important financial and management issues relating to cash flow, debt, and budget constraints that limit UN's ability to spend as planned, risks of delayed or irregular payments of Assessed contributions, and the possible misalignment of voluntary contributions with the UN's strategic goals, risks relating to donor reporting, private sector fund-raising, challenges in implementing new IPSAS 47 etc.

Sh. Girish Chandra Murmu, Comptroller and Auditor General of India along with other members of UN Panel of External Auditors met Mr. Antonio Guterres, Secretary General of United Nations during the 63rd Regular Session of the UN Panel of External Auditors at UN HQs New York on 20th November 2023.

Strengthening Accounting in Local Self-Governments: Initiatives and Developments

- **International Conference on "Strengthening of Grass Roots Democracy and Accountability"**

An International Conference on "Strengthening of Grass Roots Democracy and Accountability" was organized at office of the CAG of India from 28th February 2024 to 1st March 2024. Representatives from ten countries namely Georgia, Malaysia, Maldives, Malta, Morocco, Nepal, Oman, Poland, South Africa and Uganda participated in the Conference. The Conference served as a pivotal platform for fostering collaboration, exchanging best practices, and enhancing accountability in Local Governance across the globe. The conference stressed on the need to prioritize audit procedures for regional and local level auditors based on identified risk, focusing on areas with the highest potential for fraud, mismanagement, or regulatory non-compliance. There was stress on institutionalized collaboration among SAIs and with international audit organizations to share best practices, exchange knowledge and experiences of local auditors.

Inauguration of iCAL

The International Centre for Audit of Local Governance (iCAL) was inaugurated in Rajkot, Gujarat on 18th July 2024 by the Comptroller and Auditor General of India. iCAL is a pioneering initiative by SAI India aimed at enhancing audit capacity, promoting financial performance assessment, and improving service delivery in Local Governments. The Centre would serve as a platform to train and empower auditors, elected representatives, and executives involved in Local Government, contributing to the achievement of Sustainable Development Goals (SDGs). iCAL builds on SAI India's successful track record with other international training centers, such as iCISA and iCED, furthering its commitment to enhancing local governance audits and promoting global knowledge sharing and collaboration among Supreme Audit Institutions (SAIs).

Selected Sarpanches from Panchayati Raj Institutions (PRIs) and officers from Urban Local Bodies (ULBs) showcased their governance achievements. There was also a panel discussion on "Local Governments at 30 Years: Achievements and Way Forward," chaired by the CAG and featuring key dignitaries.

A two-day training program focused on a District- Centric Audit approach was organized involving participants from the Indian Audit and Accounts Department (IA&AD) and Directors of Local Fund Audit (DLFA) of various states. The sessions addressed key issues such as the role of Local Governments in service delivery, audit planning, sample selection, and the preparation of inspection and audit reports.

Need for iCAL

- **To enhance collaboration among** 2.5 lakh panchayats and 8,000 Urban Local Bodies (ULBs), and exchange knowledge, promote best practices etc.

- **Aligned with Global practices as** 40 countries have their respective Supreme Audit Institutions.

- **To train auditors to point out Inefficiencies in fund utilization,** as most municipalities do not use their audited financial statements for **cash flow management.**

- **Certification Course for Accountants of Local Bodies**
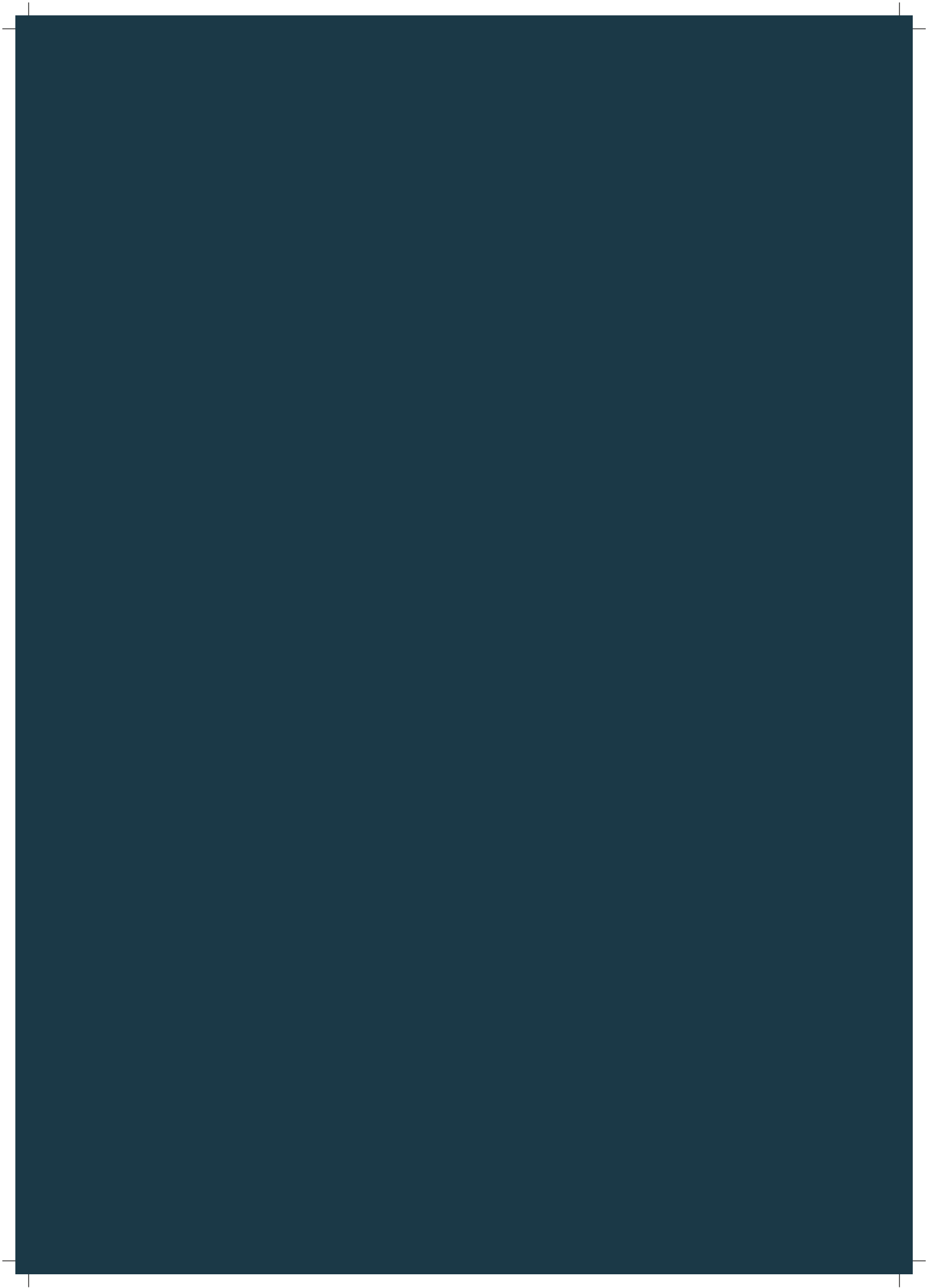
The O/o the CAG of India has entered into an MoU with the Institute of Chartered Accountants of India (ICAI) to develop a set of online courses for different categories of Local Governments. At the conclusion of each such course the participants/students would be required to clear a skill-based examination to get certified to be employed as an Accountant for Local Governments (LGs). This would create the requisite pool of accountants for different types of LGs and resolve the problem of shortage of Accountants in LGs. The CAG of India launched the said course on 16th November 2023 on Audit Diwas.

A Self-Regulatory Organisation (SRO) under the aegis of the ICAI is running the Courses and would issue the certificates. The approach to the training is multi-modal, using pre-recorded lectures and live virtual revisionary classes. There are E-study material for the entire course, prepared by ICAI, available in 10 languages currently, with scope for more languages being added later. The current languages are Bengali, English, Gujarati, Hindi, Kannada, Marathi, Odiya, Punjabi, Tamil and Telugu.

Candidates have to take two examinations. The Screening Examination has Multiple Choice Questions (MCQ). The Main Examination has both MCQs and subjective questions (hands-on accounts preparation). The Tests are conducted as per prescribed days and time slots at designated examination centres. Option of using regional languages is available to candidates.

The final results for the first batch of the examinations for the Certificate Course for Accountants of Panchayats and Municipal Bodies have been declared recently and total 84 candidates have qualified and they are ready to serve as accountants in Local Bodies.

Government Accounts Wing: Initiatives and Developments

·   **State Finance Secretaries Conference**

The Comptroller and Auditor General (CAG) of India organized the first State Finance Secretaries Conference in New Delhi on 8th October 2024. The first-of-its kind Conference under the aegis of the CAG of India, was attended by Secretary (Expenditure), Government of India, Additional Chief Secretaries / Principal Secretaries / Secretaries (Finance) of the States, representatives from the RBI,

constituted accounting services of the Centre and Ministry of Finance, Government of India, State Accountants General dealing with the Accounting and Entitlements functions of the States, Senior Management and officers of the CAG of India.

CAG of India plays an important role in the federal fiscal space, serving as a common thread between the Union and State Governments. The Conference sought to institutionalise CAG's outreach with the stakeholders, by making this assembly of public finance officials of the States and the Union Government an annual event in India's fiscal calendar. The Conference will strengthen communication with the State Governments and other stakeholders to address public financial management issues, including the strengthening of transparent and accountable financial reporting and its reforms.

The public financial management areas focused in the Conference included a host of subjects relating to the State finances, fiscal parameters, proposed Annual Publication on State Finances, harmonization of expenditure classification at the primary level of expenditure across the States, advancing the closure of monthly accounts of the States and review of practices relating to Utilization Certificates against the Grants-in-Aid expenditure of the States.

The deliberations in the Conference and the common view reached would go a long way in strengthening and sustaining the public financial management practices, including timely and quality financial reporting and comparative fiscal information across the States, for informed decision making.

- **Annual Publication on State Finances**

As a first-of-its kind, the Comptroller and Auditor General (CAG) of India has brought out an Annual Publication, commencing with FY 2022-23 on State Finances containing an overview of fiscal parameters of all the States at one place. In addition to being a Public Finance repository, it will help in providing a comparative fiscal perspective across States. It contains analysis and trends along with 10 years data that will offer insights into the financial health of

each State and will serve as a valuable tool for stakeholders involved in fiscal policy and Public Financial Management.

In this connection, a meeting of the stakeholders was held on 8th July 2024 at the Office of the CAG of India for consultation on the CAG's Annual Publication on State Finances. The meeting was chaired by the Comptroller and Auditor General of India. Secretary, Department of Economic Affairs, Ministry of Finance; Secretary, Ministry of Statistics and Programme Implementation (MoSPI); Secretary, XVI Finance Commission, representatives from NITI Aayog along with representatives of the Finance Departments of Meghalaya and Uttar Pradesh, Reserve Bank of India, the National Council of Applied Economic Research (NCAER) and the National Institute of Public Finance and Policy (NIPFP) participated in the meeting.

Inputs on the CAG's Annual Publication was sought from the stakeholders. The active participation of stakeholders from various Ministries, State Governments, RBI and research bodies provided useful insights for making the Annual Publication on State Finances a comprehensive and reliable source of information for fiscal parameters of all States.

Government Accounting Standards Advisory Board (GASAB) - Strides in Natural Resources Accounting

Government Accounting Standards Advisory Board (GASAB) has been working on Natural Resources Accounting (NRA) and released the Concept Paper in July 2020, which laid down the road map for implementation of NRA in India. This is part of a four-stage implementation strategy coined by the System of Environmental-Economic Accounting (SEEA) – Central Framework. This is also linked to the Sustainable Development Goals (SDGs) of which India is a signatory. Further, despite being an untraversed territory, GASAB not only hand held the country and its States but also led it from the front by playing a crucial role in implementing NRA in the country.

Sustainable development – Use for present generations without compromising the future

- **Compendium of Asset Accounts on Mineral and Energy Resources for the year 2021-22.**

GASAB had already prepared a Compendium of Asset Accounts for the year 2020-21 and released in October 2022. As a sequel to that the next edition of the Compendium on Mineral Resources for the year 2021-22 has been released. These accounts have been validated by the 28 States AsG and 3 UTs.

The Asset Accounts, are designed to aid in evidence based decision-making and good governance by providing the following for the policy makers.

- Compilation of physical and monetary values to enable cross verification of revenues vis-à-vis actual extractions.

- Indicating the pace of exploitation to bring out sustainability of resources - in years.

- Analysis of revenue vis-à-vis market value/export value will make it easier to assess and review the royalty rates to protect State's revenue interest.

- Assessment of new areas of revenue generation in future.

- Data on stock and flow of Mineral resources – Pan India.

- **Compendium of Asset Accounts on Water Resources (2021-22)**

The Sustainable Development Goals (SDG) of United Nations under **Goal 6: Clean Water and Sanitation** focuses specifically on Water Resources. GASAB has taken the initiative to prepare asset account on water. The first of its kind initiative with respect to water resources involved obtaining and compiling water resource data from 31 States/Union Territories across India.

Accordingly a compendium on Water Resources has been released for the year 2021- 22.

India faces several challenges in managing water resources in an economic, efficient and effective manner. The challenges include water scarcity, groundwater depletion, water quality degradation, Inter-State Water Disputes, Climate Change Impact etc. The focus of managing water resources is planning and regulating water usage and distribution to meet the needs of various users while ensuring sustainability and environmental protection.

The data on water resources was sought in the form of three tables and a questionnaire. The tables related to the availability of water (Surface water and Ground water); usage of water in different sectors, natural discharge etc and details of cost of revenue on water supply/extraction of water.

Consultative Committee meeting organised on 19th September 2024.

CDMA - Use of Artificial Intelligence (AI) for development of applications for field offices

Artificial Intelligence (AI) is transforming the auditing landscape by automating repetitive tasks, significantly enhancing the efficiency and accuracy of the audit process. By leveraging its ability to process vast amounts of data, AI minimizes manual effort and streamlines various auditing activities, ultimately reducing the risk of errors and fraud.

AI-powered tools can efficiently handle tasks such as data collection, processing, and analysis, freeing auditors from time-consuming manual checks. This shift not only reduces the timelines of audit process but also improves the overall quality of audits.

In areas like risk assessment, fraud detection, and continuous auditing, AI facilitates comprehensive analysis by enabling full population testing rather than relying solely on sample population testing. This capability makes it easier to identify high-risk transactions that might otherwise go undetected in traditional manual audits.

Data Analytical Tools developed by CDMA

1. **Sampling Tool:** It is a standalone GUI-based sampling tool that will assist audit parties in field offices to expedite their sampling process and overall audit in general. It can be

shared as a Single self-executable file developed in Python programming language. Simple Random Sampling, Stratified Sampling, Cluster Sampling, PPSWOR and MUS are the different types of sampling options available.

2. **Government ID Validator Tool:** It is a standalone application to verify whether the Government ID (Aadhaar, PAN, GSTIN) furnished by beneficiaries is valid or invalid. It can be shared as a Single self-executable file, developed in Python programming language. It will be able to check and validate both single IDs as well as a list of Government IDs.


3. **Duplicate Identifier Tool:** This application assists in detecting duplicate beneficiaries/ transactions in data using multiple criteria simultaneously. It has been developed as a single self-executable file in Python programming language.

4. **CSV File Splitter:** It is a standalone application to split a .csv file based on a column/field. It will show all columns available in a .csv file, the user is prompted to select one column and one of the unique values available in the selected column. It will fetch the records based on the user input to enhance working on huge datasets. It will shared as a Single self-executable file, developed in Python programming language.

5. **Image Analytics tool:** The application can be used to detect duplicate/near duplicate images as well as similar human faces out of the whole image universe. It will perform complete end-to-end image analytics on image/facial images in the audit of schemes that require photographs of beneficiaries. It will shared as a Single self-executable file, developed in Python programming language. The application also produces a Sankey chart to understand the results simply.
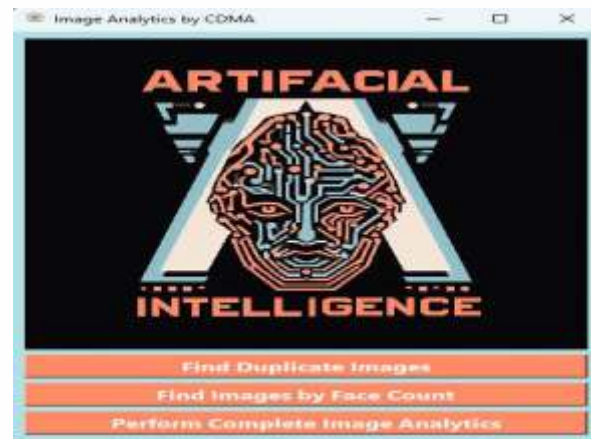
6. **Text Analytics tool:** This tool will find similar/duplicate names, spelt differently but sounding similar, and/or written out of order, and/or with different salutations, etc. It will:

   (i) Perform one to one match from given two names and generate a similarity score;

   (ii) from a given similarity score threshold, detect duplicates from a list of names
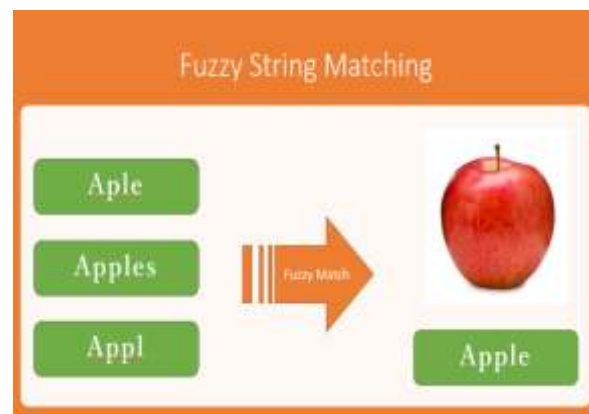
It is a Web-based application developed in Shiny for R, using Fuzzy matching techniques along with phonetic similarity algorithms.

Centre for Data Management and Analytics (CDMA) – Data Centre

CDMA has been steering use of Analytics in IA&AD by providing support to field offices in undertaking advance analytics projects to generate high risk entities and transactions for further field validations. Over the period CDMA has inculcated capacity to run Artificial Intelligence (AI)/Machine Learning (ML) models like on PA on Scholarship data, Image analytics in PMGDISHA, Geo-spatial analysis in mining, forest and conservation of lakes audit etc.

However, dependency to hold confidential data as per various acts and regulations of government and thereafter to run analytics has been a challenge. To address this, CDMA inaugurated its new datacentre during ASOSAI meeting in September 2024 wherein more than 20 countries SAI delegation visited the centre and were showcased recent analytics work undertaken by CDMA.

CDMA now has high performance compute capability supported by enterprise-wide dashboard creation and hosting capability with four separate verticals to address the challenges and consume the data available from auditee. These four verticals are:

1. GIS and Robotic process automation (RPA)

2. AI and ML modelling and data transformation

3. Social sector expenditure audit and Receipt audit analytics

4. Accounting data analysis and dashboarding and Support services

CDMA is now providing dual services to field offices :

1. Analytics as a service (AaaS)

2. Infrastructure as a service (IaaS)

SAI India has been chair of WGITA and has been doing exceptional work under the ambit of WGBD and WGISTA of INTOSAI working groups. The interactions with various SAIs has been focused on analytics work undertaken by SAI India over the period and various SAIs have been requesting bilateral support from CDMA. Today, CDMA is expanding its services with aim to bring in expertise in form of data engineers and ML engineers who will work under the defined four verticals to address the challenges in using AI in audit and also prepare tailor made courses to assist training needs of IAAD.

CDMA had also contributed in bringing out Responsible AI auditing framework during SAI20 conference and aims to generate capacity of auditors to understand how AI is used and what can an auditor see while observing checks and controls in any IS systems.

A Command & Control centre to monitor network of entire IAAD offices to ensure security of IT infrastructure was also inaugurated as part of the data centre wherein any threats/attacks on offices under new SDWAN environment can be traced and remedial measures can be undertaken centrally.

CDMA – MoU with IIT Delhi with CAG on Use of AI

A new collaboration between the Comptroller and Auditor General (CAG) of India and the Indian Institute of Technology Delhi (IIT Delhi) has been signed on 20th March 2024. This partnership is set to leverage artificial intelligence (AI) and machine learning (ML) to drive advancements in government auditing and foster innovation in public sector accountability.

Under this partnership, CAG and IIT Delhi will work together to develop AI-driven tools for auditing, perform joint research on data analytics, and explore ways to automate complex processes in the audit field. By focusing on areas like AI audits, capacity building, and infrastructure development, the collaboration aims to enhance CAG's ability to analyze large datasets, identify potential risks, and optimize resources.

One notable outcome will be the creation of an AI Systems Audit Manual, providing comprehensive guidelines on auditing AI systems, algorithms, and applications. This endeavor will also support CAG officials through specialized courses and workshops, ensuring they remain at the forefront of technological advancements.

This partnership marks a pivotal step in modernizing public auditing and underlines our commitment to accountability and good governance through technological innovation.

IMPACT OF AUDIT

Impact of audit (Recoveries, savings etc. at the instance of audit)

INTRODUCTION

The section on Impact of Audit is included in the current edition, where we aim to highlight some real outcomes and achievements of our audit efforts. The CAG as the Supreme Audit Institution of the country plays a crucial role in the governance framework by evaluating the performance of operations and compliance to set norms, within all entities in its audit jurisdiction, in particular government departments and public sector enterprises. Through comprehensive audits, the CAG identifies inefficiencies, potential fraud and non-compliance, safeguarding public funds and enhancing the performance and delivery of government programs. These independent assessments foster accountability and transparency among public officials, ensuring resources are used effectively for the benefit of citizens. Findings of the CAG are an important input in legislative oversight and the broader public discourse, strengthening governance and building trust in public institutions, ultimately reinforcing democratic processes.

Impact of Audit section is divided into three categories.

a.   **Financial impact of audit (recoveries, savings etc. at the instance of audit)**

By identifying undercharges, overpayments and other discrepancies, our audits have pointed

out and facilitated substantial recoveries. These efforts have not only enhanced operational efficiency but have also contributed to improved fiscal health. The status of recoveries effected at both Union and State levels is given in the tables below:

Union Government – Recoveries at the instance of audit

(In crores of Rupees)

Sl. No.	Union Audit Vertical	Recoveries pointed out in 2022-23	Recoveries accepted during 2022-23	Recoveries effected during 2022-23
1	Commercial Audit[4]	319.93	125.86	120.73
2	Customs	1792.56	183.11	268.89
3	Defence	399.47	200.11	202.16
4	Direct Taxes	191740.97	21075.05	51.21
5	Finance & Communication	445.94	169.23	167.48
6	GST	53969.41	578.32	133.6
7	Railways	2283.7	380.23	223.22
8	Report Central	2833.04	2563.75	224.6
	Total	**253785.02**	**25275.66**	**1391.89**

State Government – Recoveries at the instance of audit

(In crores of Rupees)

Sl. No.	State Audit Vertical	Recoveries pointed out in 2022-23	Recoveries accepted during 2022-23	Recoveries effected during 2022-23
1	NCR[5]	102107.03	4,180.41	35.2
2	NER[6]	4616.73	1811.11	961.69
3	WR[7]	9770.21	6456.75	1008
4	ER[8]	10362.94	6069.04	881.77
5	SR[9]	2196.62	996.26	228.29
6	NR[10]	1970.25	1689.64	212.42
7	CR[11]	19843.03	1380.8	318.09
	Total	**150866.81**	**22584.01**	**3645.46**

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[4] Responsible for audit of major Union Ministries/ Departments.

[5] NCR (North Central Region): Delhi, Uttar Pradesh and Uttarakhand

[6] NER (North Eastern Region): Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura

[7] WR (Western Region): Goa, Gujarat, Maharashtra and Rajasthan

[8] ER (Eastern Region): Bihar, Jharkhand, Odisha and West Bengal

[9] SR (Southern Region): Karnataka, Kerala, Tamil Nadu and Puducherry

[10] NR (Northern Region): Haryana, Himachal Pradesh, J&K and Punjab

[11] CR (Central Region): Andhra Pradesh, Chhattisgarh, Madhya Pradesh & Telangana

Total financial impact of Audit

(In crores of Rupees)

	Recoveries accepted	Recoveries effected
UNION	25275.66	1391.89
STATES	22584.01	3645.46
Total	**47859.67**	**5037.35**

b.   Changes in Policy, Laws, Rules and procedures at the instance of audit

Our Audit Reports have significantly influenced changes in policies, laws and procedures across various sectors. Through detailed assessments and recommendations, we have highlighted areas needing improvement, leading to enhanced regulatory frameworks and compliance measures. This proactive approach has resulted in greater transparency, accountability, and operational efficiency, ultimately strengthening governance and oversight. Some significant changes are highlighted below:

(i)   Commercial Audit Vertical

Report No. 8 of 2023: Role of Tea Board India in Development of Tea in India

- **Systematic Inspection Mechanism:** The Tea Board has mandated the Licensing Committee to establish a systematic inspection and monitoring mechanism, ensuring adequate quality testing of tea.

- **Transparency in Tea Waste Sales:** All tea waste will now be sold through the Tea Board auction portal, enhancing transparency in the sales process.

- **Committee Meeting Calendar:** A formal calendar of meetings for various committees, including the Welfare Committee, has been devised to streamline operations and oversight.

Report No. 1 of 2023: Compliance Audit on Maintenance of Houses by CPWD

- **Annual Action Plan Revision:** The Maintenance Manual 2023 has been amended (Para 2.2) to change the preparation process of the CPWD Annual Action Plan, improving efficiency.

- **Digital Asset Management:** The asset maintenance data has been digitized, following amendments to the Maintenance Manual (Para 1.5), facilitating better management and accessibility.

- **Building Inspection Data:** Amendments to the Maintenance Manual (Para 1.6) have digitized inspection data of buildings, enhancing record-keeping and accountability.

Report No. 33 of 2022: Corrections/Rectifications by Eastern Coalfields Limited Standardized Accounting Policy:

Following our observations, Coal India Limited, the parent company of Eastern Coalfields Limited formulated a uniform accounting policy for coal quality variance to be adopted by all its subsidiaries. This rectification ensures consistency and accuracy in reporting across all subsidiaries.

(ii) Direct Taxes Audit Vertical

Audit Report No. 06 of 2022 on the Gems and Jewellery Sector, Audit Report No. 12 of 2022 on Charitable Trusts, and Audit Report No. 04 of 2023 on Property Attachment by Income Tax Department—have driven important changes in policies and procedures. The Ministry, vide Finance Act 2023, amended Section 10AA of the Act by inserting a new sub-section (4A) to fix the time limit of six months for bringing the export proceeds into the country for claiming deduction under Section 10AA (effective from 1 April 2024).

- The Ministry, vide Finance Act 2023, inserted clause (iii) in Explanation 4 to sub-section (1) of Section 11 of the Income Tax Act to provide that any amount credited or paid by a trust or institution to another trust as donation out of current years' income shall be treated as application only to the extent of 85 per cent of such donation. Similar provisions have been proposed to be inserted under clause (iii) of Explanation 2 to the third proviso of clause 23C of Section 10 of the Income Tax Act.

- A new ITR-7 from the Assessment Year 2023-24 is applicable for Charitable Trusts/Institutions.

- The Audit findings were brought out in the Union Audit Report (Direct Taxes) No.4 of 2023, which was placed before the Parliament on 29 March 2023. The Report contained a total of 13 Recommendations on different aspects. Consequently, the Central Board of Direct Taxes of ITD accepted ten out of 13 Recommendations and issued Instructions covering nine Audit Recommendations, in June 2024, giving detailed guidelines (SOP) to Income Tax Authorities.

(iii) Principal Accountant General (Audit) Uttarakhand

Through the medium of Management Letter (February 2022) to the entity, we highlighted, the deficiencies in the preparation of Schedule of Rates (SoRs). At our instance, a new Standard Operating Procedure (SoP) with regard to preparation of SoR was issued by the Government of Uttarakhand (Public Works Section-2 vide No. 2200 / III (2) /22-17 (General) 2008 dated 17 June 2022). This SOP is to be implemented by all the Engineering and Civil Departments for construction works in the State.

c.   Impact of audit in strengthening and enforcing accountability (strengthening internal controls, new institutional mechanism etc.)

Our audits contribute to improvement in systems, process and controls, leading to improved efficiencies. Some of the significant changes are highlighted below:

(i)   Railway Audit Vertical:

East Coast Railway (ECoR), Central Railway (CR) and South Western Railway (SWR) Zones have each taken significant steps to enhance operational efficiency. ECoR has established a mechanism to prevent short charging of chargeable distances due to incorrect loading point bookings. In response to CAG Report No. 25 of 2022, CR has revised its level crossing construction policy, mandating 100% Railway funding and requiring a Detailed Project Report from the outset. Meanwhile, SWR has implemented a Joint Procedure Order to streamline land acquisition processes, setting specific timelines for activities related to land acquisition cases in construction.

(ii)   Commercial Audit Vertical

Report No. 1 of 2023: Compliance Audit on Functioning of National Mineral Exploration Trust (NMET)

- **Partial Reimbursement Scheme:** In March 2023, the Ministry introduced a scheme to partially reimburse exploration expenses for composite license holders, aimed at encouraging private sector participation in mineral exploration.

- **Engagement of Private Exploration Agencies:** A scheme launched by NMET in May 2022 focuses on enhancing the involvement of notified private exploration agencies.

- **Standard Operating Procedure:** A detailed Standard Operating Procedure has been established to outline the mechanisms for evaluating project proposals and the timeline for project approvals.

Report No. 1 of 2023: Compliance Audit on Operation of Coal Mines Pension Scheme 1998 and Coal Mines Deposit Linked Insurance Scheme 1976

- **Centralized Pension Disbursement:** The Coal Mines Provident Fund Organisation (CMPFO) has set up a Centralized Pension Disbursement Cell at CMPFO HQ to improve monitoring and reconciliation of pension disbursements. An Exit Policy on Investment Fund Management has also been approved.

- **Digitization Initiatives:** The digitization of CMPFO activities is underway, including the development of a web portal.

- **Pension Liability Management:** To address the significant gap between pension liabilities and assets, a high-level committee under the Additional Secretary, Ministry of Coal, has been constituted.

Report No. 2 of 2023: Compliance Audit on Scheme for Integrated Textile Parks

- **Scheme Closure:** The Integrated Textile Parks scheme is currently closed and not accepting new projects. However, during a Project Approval Committee meeting in

September 2023, the Ministry acknowledged several recommendations and decided to conduct a detailed inquiry into actions against defaulters.

Report No. 9 of 2023: Compliance Audit on Departmental Trading Unit including Supply Chain Management in Khadi and Village Industries Corporation (KVIC)

- **Production Unit Assessment:** KVIC undertook assessment of its production units, carried out maintenance of machineries that resulted in improved production.

- **Renewable Energy Initiatives:** Energy audits have been performed, and renewable energy sources have been installed. There has also been a transfer of usable machinery from defunct units to functional ones.

- **Marketing Enhancements:** KVIC is enhancing the marketing of Khadi products by refurbishing Khadi Bhavans and exploring franchise arrangements.

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