**INTOSAI WGEA RESEARCH PROJECT**

**(Work Plan 2017-2019)**

**Development of Training Tool on Environmental Data: Resources and Options for Supreme Audit Institutions**

**Background**

Collecting and analyzing environmental data is often a critical step in conducting environmental audits. The Working Group on Environmental Auditing (WGEA)’s Sixth Survey on Environmental Auditing revealed that Supreme Audit Institutions (SAIs) are conducting an increasing number of environmental audits, and that the most common obstacles to developing and conducting those audits include insufficient data on the environment and insufficient monitoring and reporting systems.

The research paper “Environmental Data: Resources and Options for Supreme Audit Institutions”, prepared by the INTOSAI Working Group on Environmental Auditing (WGEA) in 2013, discusses ways in which SAIs use environmental data; some key sources of environmental data that are available to audit institutions at the global, regional, and other levels, as well as key considerations when using such data along with variety of tools; and methods that audit institutions can use when high-quality environmental data are lacking. In its work plan for 2017-19, INTOSAI WGEA embarks upon developing a training tool on Environmental Data.

Information Technology has made inroads in all fields, including environment. Latest addition in this area is Data Analytics[[1]](#footnote-1) of big data[[2]](#footnote-2) which is extremely versatile, a necessity for the many different environmental needs. Big data can be used to monitor an area as vast and expansive as the Amazon Rainforest, or it can monitor a small city’s water supply. With the ever-expanding options of providers of big data as a service there’s a way to protect the environment at every level — individual, community, country and global. Along with versatility, big data brings two other important traits for enhancing environmental protection. First, it allows entities to gather more data than ever before. It also characterizes increased speed and ease of obtaining data. In the past, most environmental data came from individual scientists out in the field. It was a slow, laborious process that didn’t provide useful information for many months or years. With big data that same information is gathered much quicker than before. Considering this background, it is also proposed to include certain inputs regarding Computer Assisted Auditing Techniques[[3]](#footnote-3), Data Analytics, etc. in this project.

**Project Objective and Outcome**

Proposed training Toolkit would likely provide following inputs to the trainees.

1. Acquaintance with earlier research work of WGEA titled Environmental Data: Resources and Options for Supreme Audit Institutions
2. Insight intoother contemporary practices and methods being used by various SAIs with regard to data analytics
3. Understand the main ways in which public auditors use environmental data;
4. Broadly identify key sources of environmental data available to SAIs and key considerations when using such data
5. Identify tools and methods SAIs may use when high-quality environmental data are lacking
6. Experiment the use of Data Analytics / Computer Assisted Auditing Techniques (CAATs)
7. Exploring further possibilities for analysis of environmental data in digital form

The potential trainees to participate in the proposed training would need knowledge like CAATs and acquaintance with common functions like data extraction, summarizing, aging, stratification, duplicate checks, etc. The training would include interactive sessions with corresponding materials on above aspects and hands on exercises on using Data Analytics / CAATs using illustrative environmental data. The tentative duration of training is thought out as three days which would be confirmed on the basis of feedback from SAIs during the project implementation. The desired outcome would thus a training toolkit having balanced content of theory, practical examples and hands on training based on environmental data in digital form.

Project outcome would be a toolkit capable of equipping an Environmental auditor with competence to choose and use appropriate Data analytic tools.

**Project Scope**

Making of the training toolkit will involve survey and compilation of recent developments and practices regarding environmental data and data analytic tools being used in various SAIs. An effort would be made to customize data analytics for Environment audit. Attempts would be made to identify, collect / write appropriate case studies on the lines of earlier INTOSAI WGEA research on Environmental Data duly updated to address contemporary needs of SAIs.

While developing the training tool feasibility of including following potential applications could be explored.

* Use of GIS in environmental audits
* Use of specific datasets to explain their usage in specific environmental issue. For instance, Biological Oxygen Demand (BOD), which is a standard method for indirect measurement of the amount of organic pollution in water can be used in audit analysis of water quality across regions
* Use of illustrative databases pertaining to environmental audit concerning issues like Climate change — Global warming, Air quality, etc.

**Planned Methodology**

Approach to the project would be to follow, to the extent possible and appropriate, Guide for Project Leaders: How to Develop INTOSAI WGEA Training Materials. Project subcommittee would further build on the project “*Environmental Data: Resources and Options for Supreme Audit Institutions”* adopted by WGEA in 2013.

Technology and data analysis will be an important enabler of public sector auditing in the future. INTOSAI has increasingly recognised the importance of embracing use of digital data and tools for public audit the latest addition in this being use of Data Analytics of big data. Environment is one such sector where there would be lot of scope for exploring the availability of digital data and development of tools for audit of the same. To benefit from advancement in this area, the project team would work closely with the Centre for Data Management and Analytics (CDMA) established by SAI India recently and its counterparts in other SAIs who may be willing to offer constructive support.

The project leaders: Supreme Audit Institution of India will plan and steer activities involved in the proposed project as indicated in timeline. CAG of India (SAI India) as well as GAO USA (SAI USA) members of the sub-committee for this research project are also members of newly created INTOSAI Working Group on Big Data which would help this project.

**Participants / Responsibilities**

The project leader would regularly update the progress of the project, as per the timeline below and with active involvement and contribution by the sub-committee member deliver a high quality training Toolkit.

The WGEA Secretariat / Steering Committee members would be approached for inputs / feedback when required.

**Timeline and key milestones**

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| Stage | Action | Date |
| 1. | Draft of Project Plan to WGEA Secretariat | May 2017 |
| 2. | Comments from the Steering Committee | June - July 2017 |
| 3. | 15th Steering Committee, review and approval of the Project Plan | September 2017 |
| 4. | Commencement of work on various components of the research project | October 2017 |
| 5. | Final version of the Project Plan | October 2017 |
| 6. | Elaborated table of contents of the training materials | November - December 2017 |
| 7. | Agreed elaborated table of contents of the training tool sent to WGEA Secretariat | January 2018 |
| 8. | Focus group discussion at 18th WGEA Assembly | March 2018 |
| 9. | Draft Project output | September 2018 |
| 10. | 16th Steering Committee meeting, approval of the Project output | November 2018 |
| 11. | Final draft of the project output to the Secretariat | February 2019 |
| 12. | Final version of the project output, i.e. translation, editing, printing etc. | June 2019 |
| 13. | Presentation of the work done at 19th WGEA Assembly | September 2019 |

**Contacts**

**Project Leaders:**

Supreme Audit Institution of India

On behalf of SAI India following would be the contact persons for the present:

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1. Data Analytics refers to the process of analyzing big data during audit to provide (i) deeper insights, (ii) discover patterns (correlation and causation) and (iii) to throw up abnormal behaviour, red flags and outliers that are otherwise hidden. [↑](#footnote-ref-1)
2. Big data refers to extremely large, complex data sets that exceed the traditional processing capabilities of the IT infrastructure due to their size, format diversity and speed of generation. [↑](#footnote-ref-2)
3. 1.Applications of auditing procedures using the computer as an audit tool (ISSAI 1003)

   2. IT tools, which help an Auditor in carrying out various automated tests to evaluate an IT system or data and are very useful, where a significant volume of audited entity data is available in electronic format. (ISSAI 5300) [↑](#footnote-ref-3)