



INTOSAI  
Working Group  
on Environmental  
Auditing

# Extended Outline

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## Auditing Water Issues: The Experiences of Supreme Audit Institutions



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# **Chapter One**

## **Introduction**

### **Why We Conducted this Study**

In recognition of the growing importance of water issues to WGEA members, this project aims to provide an assessment of current key global water challenges and to examine the role SAIs play in helping to address these issues through their evaluations of government activities. The Netherlands Court of Audit laid the groundwork for this current project with its excellent 2004 study entitled, “Auditing Water Issues: Experiences of Supreme Audit Institutions.” The study described the critical water issues facing the world at that time and catalogued existing efforts by SAIs to conduct audit work in these areas. In addition to updating some of the information in the Netherlands’ study to reflect how water issues have evolved since 2004, this project seeks to provide detailed insights into the methods SAIs have used to audit water issues.

### **Objectives**

Building upon the previous work of the Netherlands Court of Audit, the objectives of this project are to:

1. Examine critical water problems facing nations around the globe and describe efforts by national governments and international institutions to respond to these issues, paying particular attention to the water-related impacts of emerging issues such as climate change;
2. Provide information on a wide variety of SAI water-related audits and evaluations, focusing in particular on creative and innovative methods SAIs have used to analyze and report on their priority water challenges; and
3. Analyze the usefulness of different methodological tools for auditing water issues and identify circumstances in which the use of particular methods has proved to be effective.<sup>1</sup>

### **Background**

Water issues have long been a matter of great interest to WGEA members and have increasingly become a matter of growing concern to national governments and international institutions around the world. While the specific details of water-related problems vary across the globe, numerous common challenges have emerged that are shared by countries in all geographic regions of the world and affect both developed and developing nations.

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<sup>1</sup>The objectives presented here have been expanded somewhat from those initially listed in the project plan approved at the WGEA Steering Committee meeting in March 2010. Whereas describing governments’ efforts to address water issues was previously listed as a separate objective, this topic has now been fully incorporated into Objective 1. Furthermore, based on the preliminary results of our work, we also expect to be able to report on the usefulness of different methods for auditing water issues and have now added a new objective 3 related to this topic to our study (Discussed in Chapter 4 of this outline).

Challenges such as flooding, drought, and the availability of safe drinking water are widespread and often cross national boundaries, thus necessitating responses on both the national and international level if these problems are to be effectively addressed. Furthermore, governments now face increased risks that climate change may amplify many of the most difficult water issues impacting their nations.

In the face of these myriad water challenges, national governments and international institutions have responded by taking a wide variety of actions designed to mitigate the negative effects of these water issues. As the lead entities responsible for ensuring the effectiveness of government programs and activities, SAIs have the potential to play an important role in improving government responses to water issues and ensuring that actions taken to address these challenges are successful. Accordingly, SAIs around the world have increasingly focused on these issues in their audit work, and a growing number of audit institutions continue to express interest in expanding their efforts in these areas.

## **Scope and Methodology**

- **Objective 1** – To better understand the critical water issues facing nations around the world and to describe government actions to address these issues, we:
  - **Worked with our Subcommittee members** and the WGEA Steering Committee to identify a list of priority water issues;
  - **Reviewed literature and other documents** on these water issues, and government responses published by a wide variety of national institutions (such as environment ministries and water departments) and international institutions (such as the United Nations Environment Program, the World Bank, and other recognized organizations);
  - **Are obtaining country-specific information** through reviews of national water audits and, where appropriate, direct contacts with officials from national environment ministries and national water departments.
  
- **Objective 2** – To provide information on SAIs’ water-related audits, focusing on the methodological approaches SAIs have used, we:
  - **Catalogued and examined more than 100 water-related audits** on a range of water issues with an emphasis on documenting their methodologies. These audits were published by SAIs from 40 countries located in all geographic regions of the world and reflect the experiences of SAIs from developed and developing countries. To identify audits to review, we contacted our subcommittee members and other SAI partners, and we researched SAI Web sites and the WGEA Web site; and
  - **Obtained information directly from SAI officials** responsible for conducting some of the audits included in our analysis. This has helped us better understand (1) the experiences that auditors have had using different methods, (2) the reasons why the different methods were chosen, and (3) the challenges that auditors faced when employing different audit methods. We obtained this information through interviews and questionnaires.

- Objective 3 – To better understand the usefulness of different methodological tools for auditing water issues and identify circumstances in which the use of particular methods has proved to be effective, we:
  - **Analyzed the 100+ water-related audits** to determine which audit tools have been successfully employed under which circumstances;
  - **Obtained more detailed information in selected cases from auditors about the successes and challenges they had experienced** using different audit tools under a wide variety of circumstances; and
  - **Reviewed performance auditing literature and various INTOSAI guidance documents** to complement and substantiate the insights gleaned from our audit reviews and direct contacts with auditors.

## **Chapter Two**

# **Global Water Challenges and the Efforts of National and International Institutions to Address Them**

### **Overview**

The primary purpose of this chapter is to provide an updated assessment of water issues confronting nations around the world and to describe actions being taken by governments and multinational institutions to address these issues. Given the dynamic nature of global water issues, we believe this information may be of use to many SAIs in understanding the evolving nature of these issues, and in providing a broad-based “menu” from which to select their highest priority activities and programs. This need is made even greater by the growing prominence of emerging issues such as climate change, which will be included as an area of focus in this chapter.

We believe the information in this chapter is important in providing a setting to understand the rest of the report. However, given the availability of much of this information from widely accessible literature and other sources, we consider the following two chapters—which will focus on the methodologies SAIs have employed in their audit work and circumstances in which different audit tools have been found to be most useful—to provide the greatest overall value to the auditing community from this project.

### **How we selected the issues**

Building upon the results of the Netherlands’ 2004 study and our review of international literature, we worked with our Subcommittee members and incorporated feedback from the WGEA Steering Committee to identify a list of current priority water issues. We paid particular attention to ensuring that the issues were germane to different regions of the world and to both developed and developing countries. *Although this list reflects the global diversity of water issues and encompasses many of the most commonly shared water challenges nations currently face or are likely to experience in the future, it is not intended to include all water issues; nor is it purported to constitute a single “best” list of issues.* In addition, the issues on this list are not all mutually exclusive. The impact of climate change on water resources, for example, cuts across many of the other issue areas and often threatens to exacerbate challenges such as flooding and drought. Finally, this chapter will draw upon information from international literature and interviews with officials from national environment ministries to discuss the role that governments and other international entities (such as the United Nations) have played in addressing these issues.

### **Water issues to be discussed**

The priority water issues that will be discussed in this chapter and focused on throughout the report are summarized briefly below. A recurring theme throughout this chapter will be that the water issues facing nations around the globe are increasing in urgency, but governments have generally been slow to adopt necessary steps to address them.

- *Availability of Safe Drinking Water* - The principal water sources for direct human consumption, including lakes, rivers, and shallow groundwater basins, account for only

0.01 percent of the total volume of water on earth and are often at risk for contamination. The types of challenges involved in ensuring safe drinking water supplies vary greatly among nations, and encompass threats to both the quality and quantity of drinking water.

- *Competing Demands for Limited Water Supplies* - Growing populations, together with the goal of fostering economic development, have increasingly led to situations in which alternative goals are in direct competition for finite water supplies. Worldwide, competing demands over water needs for human consumption, energy, agriculture, and industry have led to difficult policy decisions—and often to direct conflict between competing interests and entities.
- *Drought* - Many countries are already affected by serious drought conditions during many months of the year. Projected increases in temperature and decreases in precipitation associated with climate change, compounded by early snowmelt, are expected to exacerbate the problem in many parts of the world.
- *Flooding* - While some regions suffer from chronic drought, others are primarily concerned with flooding. Here too, projected impacts associated with climate change may worsen the current situation, leading to floods of greater magnitude and frequency. In addition to inundating susceptible areas, flooding often affects water quality, as large volumes of water can transport contaminants into water bodies and also overload storm and wastewater systems.
- *Quality of Surface Waters (including rivers, lakes, and other bodies of water)* - Economic development and industrialization have led to greater threats of contamination that can directly harm human health and aquatic life, as well as reduce the availability of water for agriculture, recreation, and other purposes. Common sources of fresh water impairment around the globe include untreated sewage, industrial runoff, chemical discharges, petroleum leaks and spills, and agricultural chemicals and manure that are washed off from farm fields. Higher water temperatures and changes in the timing, intensity, and duration of precipitation can also deteriorate the quality of rivers, lakes, and other surface waters.
- *Marine Environment* - The major threats to oceans are marine pollution, over-exploitation of fish and other marine wildlife, and coastal habitat loss. Different sectors of human activity cause marine and coastal degradation and contribute to the depletion of fish stocks occurring in many oceans and seas around the world. Furthermore, looming in the future are predictions for sea level rise resulting from climate change—a problem that some countries are already experiencing.
- *Planning and Financing for Drinking Water and Wastewater Infrastructure* - Drinking water systems and wastewater collection and treatment facilities are critical elements of the infrastructure of most nations. Large sums of money are often needed to support capital construction, maintenance, and eventual replacement of these facilities. In some countries, the need for smaller facilities to serve remote areas presents other challenges. Acquiring sufficient funding and technical expertise to establish and maintain sufficient drinking water and wastewater infrastructure in a cost-effective manner is a challenge shared by many nations and has increasingly drawn attention from many SAIs.
- *Implementation and Enforcement of Water Laws* - Most nations have laws designed to ensure a proper allocation of limited water resources and to ensure their quality. Such laws,

however, can only have their intended effect if properly enforced. Many factors, such as limitations in training and resources for compliance activities, and difficulties balancing economic development with resource protection may impede governments' ability to implement and enforce these laws, leading to violations and an inability to accomplish water-related goals.

- *Challenges of Managing Water Resources Shared by Multiple Nations* – Hundreds of river basins and water bodies worldwide are shared by more than one country, and many are seriously depleted and polluted. The unique challenges posed by these shared resources can only be met by cooperative actions among the governments concerned. In a parallel manner, SAIs have shown an increased willingness to audit the effectiveness of their respective governments' actions, including assessing how well they are meeting their international environmental obligations.
- *Adequacy of Water-Related Data* - The availability of reliable data concerning both the quantity and quality of water is crucial for governments to make informed water policy decisions. The adequacy of such data, however, has long been a problem in most developed countries, and is proving to be an even greater problem in many developing countries.
- *Impacts of Climate Change on Water Resources* - The prospect of climate change introduces additional complications, and a significant element of uncertainty, about most of the water challenges listed above. In most cases, climate change can be expected to accelerate and amplify already-challenging problems. As the recent multi-lateral WGEA Climate Change audit noted, a small but growing number of nations are beginning to undertake serious adaptation measures, including water conservation, the use of markets to allocate water, and the application of appropriate management practices to mitigate the effects of climate change on their water resources. SAIs are also paying closer attention to the way in which these adaptation measures are being carried out, and the manner in which the funds that support them are being spent.

## **Chapter Three**

### **An Examination of the Methods SAIs Have Used to Audit Water Issues**

#### **Overview**

This chapter will present a comprehensive and empirical overview of the wide range of methodological approaches SAIs have used to audit the actions their governments have taken to address the critical water issues introduced in Chapter Two. With many of these water challenges expected to grow in the future, it is likely that government actions to address them will also continue to expand, accompanied by a similarly growing need for SAIs to ensure these activities are effective and appropriate.

In recent years, SAIs around the world have performed a growing number of water audits of various types, including individual national reviews and parallel and cooperative audits conducted in conjunction with other SAIs. This chapter will discuss those audits, focusing primarily on reports that have been published since the release of the Netherlands' 2004 study. Although we will include information on audit findings and conclusions within the scope of this chapter, *we will focus primarily on the methodologies used to conduct the audits, with a particular emphasis on creative and innovative methods that produced compelling results.*

The foundation of this chapter will be based upon our analysis of the 100+ recent water-related audits we are examining from 40 countries and, in select cases, insights we are obtaining directly from the auditors that performed some of these audits. We are obtaining audits for our analysis from a geographically diverse array of developed and developing countries, and have worked directly with many of our Subcommittee members and other SAI partners to identify important water-related audits to include in our review.

To illustrate the range of methods SAIs have used to conduct water audits around the globe, we will highlight and discuss one or two noteworthy audits identified through our analysis for each of the eleven issue areas discussed in Chapter Two. *In particular, we will develop design matrices for each of the audits we highlight to help visually present information in a format that we believe will be useful and familiar to many SAIs.* These examples will feature audits produced by countries from all geographic regions of the world and will span both developed and developing countries. Furthermore, where appropriate, we will supplement our empirical presentation of water-related audits with observations on the methodologies that were provided by the auditors that conducted the evaluation.

#### **Countries represented in the audit analysis**

The following graphic illustrates the broad geographic representation captured in our audit analysis, as each of the countries highlighted in orange below produced water-related audits that were included in our review. *Among the observations derived from the map is a relative shortage in audits from the Middle East. We would be grateful if SAIs from that region that have conducted relevant water audits would be so kind as to bring them to our attention.*

**Figure 1. Audit Analysis Map**



**Use of design (or audit) matrices**

Our discussion in this chapter will utilize **design (or audit) matrices** as a tool to present information about the featured audits for each water issue area. Although the exact name and format may sometimes differ between SAIs, we and other SAIs commonly utilize “design” or “audit” matrices as tools to help auditors and management think through an audit’s approach and identify the appropriate methodologies to use to address the audit’s objectives. *The wrinkle here is that in discussing completed audits, the design matrices will be modified to reflect completed audits rather than planned audits.* And so, for example, instead of a column that says “Challenges Anticipated in Conducting the Audit,” the matrices that will appear in our draft will say, “Challenges Encountered in Conducting the Audit or Reporting its Findings.”

The design matrices to be presented in this chapter will include the five columns displayed below in Figure 2. More detailed information on what will be included in the design matrices is presented in Annex 1.

**Figure 2. Design Matrix Columns**

| Objectives / Researchable Question(s) | Audit Criteria, Key Information Required, Source(s) of Information | Scope and Methodology | Challenges Encountered in Conducting the Audit or Reporting its Findings | Audit Results and Key Findings |
|---------------------------------------|--|-----------------------|--|--------------------------------|
|                                       |  |                       |  |                                |

**Examples of analyzed audits by issue area**

To help illustrate the types of audits included in our analysis, below is a sampling of the illustrative examples of the audits we analyzed that could potentially be highlighted in this chapter:

- *Availability of Safe Drinking Water*
  - India – “Sikkim Water Security and Public Health Engineering Department: Urban Water Supply”
  - New Zealand – “Local Authorities: Planning to Meet the Forecast Demand for Drinking Water”
- *Competing Demands for Limited Water Supplies*
  - Cyprus – “Water Management: The Serious Reduction of Water Reserves in Cyprus”
  - United States – “Energy-Water Nexus: Many Uncertainties Remain about National and Regional Effects of Increased Biofuel Production on Water Resources”
- *Drought*
  - Australia – “Drought Assistance”
- *Flooding*
  - Tanzania – “A Performance Audit of the Management of Prevention and Mitigation of Floods at Central, Regional and Local Levels of the Government of Tanzania — A Case Study of Floods in Babati”
  - Norway – “The Office of the Auditor General’s Investigation into the Efforts of the Authorities to Limit Flood and Landslide Hazards”
- *Quality of Surface Waters (including rivers, lakes, and other bodies of water)*

- United Kingdom – “Tackling Diffuse Water Pollution in England”
- Albania – “Audit Conducted at the Ministry of Environment, Forestry and Water Administration, on the Preservation of Ohrid Lake Project”
- *Marine Environment*
  - Sweden – “The Central Government’s Actions for Sustainable Fisheries”
  - Kuwait – “The Environmental Effects of Red Tide Phenomenon Assessment”
- *Planning and Financing for Drinking Water and Wastewater Infrastructure*
  - South Africa – “Report of the Auditor-General on a Performance Audit of the Provision of Sanitation Services at the Department of Water Affairs and Forestry”
  - Estonia – “Development of Wastewater Treatment in Rural Areas with the Support of the Cohesion Fund’s Projects”
- *Implementation and Enforcement of Water Laws*
  - Botswana – “Performance Audit Report on Fishing Industry in Botswana by Fisheries Division”
- *Challenges of Managing Water Resources Shared by Multiple Nations*
  - Colombia – “Coordinated Audit of the Colombo-Peruvian Plan for the Integral Development of the Putumayo River Basin”
  - Ukraine and Poland – “Joint Report on Auditing Implementation of Flood Protection Measures on Transboundary Waters of Ukraine and Republic of Poland”
- *Adequacy of Water-Related Data*
  - Canada – “Monitoring Water Resources”
- *Impacts of Climate Change on Water Resources*
  - Brazil – “Adaptation Measures for Climate Change Scenarios in the Brazilian Semiarid Region Regarding Water Security”

## Chapter Four

### **Water Auditor’s Toolbox: How Various Audit Methods Have Been Successfully Applied in Addressing Different Circumstances**

#### Overview

Whereas Chapter 3 will provide a water issue-by-issue discussion, illustrating how each has been audited by members of the SAI community, this fourth chapter will focus more directly on *the tools themselves*—examining in particular the circumstances under which various audit methods have been effectively used to produce compelling results. In addition to relying on a detailed examination of the audit reports themselves, the information in this chapter will be derived from selective interviews with the auditors who prepared them, and from methodological literature, including INTOSAI guidance documents.

Our preliminary analysis suggests that the tools SAIs have used to audit water issues can generally be grouped into the two broad categories illustrated in Figure 3, based on their frequency of use and the level of resources (and in some cases expertise) they require. In describing these tools, we plan to provide (1) a general definition for each; (2) the frequency and the circumstances in which they have been used among the universe of audits examined; and (3) one or more illustrations from among these audits.

**Figure 3. Auditor’s Toolbox**

| <u>Basic Audit Tools</u> | <u>More Specialized Audit Tools</u>     |
|--------------------------|---|
| Interviews               | Obtaining Expert Opinion <sup>a</sup>   |
| Documentation Review     | Focus Groups                            |
| Questionnaires / Surveys | Database Analyses                       |
| Site Visits              | Economic Analyses                       |
| Case studies             | Scientific Analyses <sup>b</sup>        |
|                          | International Benchmarking <sup>c</sup> |

<sup>a</sup>This audit tool may involve working with individual experts, such as academics, or the use of a formal expert panel.

<sup>b</sup>Scientific analyses may include, for example, such things as the use of geographic information systems (GIS), or the taking and analysis of water samples.

<sup>c</sup>This audit tool involves comparing the audited entity’s programs or activities against similar programs or activities that have been implemented in other comparable countries.

*Overall, we expect that a key message derived from the analysis will be that the basic tools outlined in the left-hand column above—widely used by a broad range of SAIs with varying performance audit capabilities and experiences—can go a long way toward successfully auditing many issues. The more specialized audit tools in the right-hand column have been successfully used in many instances to*

substantiate the audit findings derived from the basic tools, and in some cases to address specific issues for which the basic tools alone may be insufficient (e.g., issues requiring economic or scientific expertise, or policy issues for which defined audit criteria are not available).

### **Basic Auditing Tools**

Our preliminary findings suggest that even for SAIs with the most experience in performance audits of water issues, basic audit tools such as interviews, document reviews, questionnaires, site visits, and case studies often provide their most useful observations and compelling findings. To help illustrate the information we plan to present in the final report for each basic tool, the following bullets include brief descriptions of two of these tools; in each case defining the tool, indicating their frequency of use among the audits examined, and illustrating it with one of the audits examined.

- **Questionnaires and Surveys:** Questionnaires and surveys are popular audit methods because they can be a relatively inexpensive way of obtaining data, opinions, and other information from a target audience. They can also be useful in making forecasts and, under the right circumstances, in projecting findings to a larger universe. A well known limitation, however, is the high potential for variation and error in responses, and often times difficulty in achieving an acceptable response rate. It may therefore be advisable to supplement information obtained through questionnaires and surveys with other basic audit tools, such as site visits or documentation review. Among the audits we have thus far reviewed, we found SAIs using questionnaires or surveys as a primary audit method approximately 40 percent of the time.

*Example:* In 2004, the Office of the Auditor General of Botswana issued a performance audit evaluating the Water Utilities Corporation's (WUC) maintenance of the infrastructure used to provide water to urban areas. With relatively limited resources for an audit of this scope, the audit team developed and implemented a questionnaire that was distributed to 100 customers to assess their opinions of WUC performance. The lead auditor on this evaluation told us that many of the most compelling findings about systemic shortcomings in the WUC's maintenance practices resulted from information obtained through questionnaires. To overcome the potential for error in responses, the audit team incorporated site visits as part of the methodology for this audit. The lead auditor further stated that direct observations made during site visits to reservoirs and treatment plants helped the audit achieve a high degree of credibility.

- **Case Studies:** Case studies are effective ways of drawing attention to a problem, and can be a great technique for getting in-depth information and insights into the nature of a problem and its root causes. They generally involve a combination of basic audit tools, including interviews, site visits, and file reviews at, or in regard to, specific locations or events. Case studies can provide convincing evidence that is easily remembered by an audit's readers. However, results from case studies can rarely be generalized to a larger universe. Among the audits we have thus far reviewed, about 50 percent have involved some form of case study approach as part of their methodology.

*Example:* In 2010, the Canadian Office of the Auditor General issued a performance audit evaluating Environment Canada's two programs for monitoring surface fresh water resources. The audit team used case studies to highlight key regional issues of importance (most notably oil sands) that were pertinent to the focus of the audit and had been receiving considerable attention from the media and the government. A member of the audit team told us that these case studies were a cost effective method that allowed the audit team to explore issues in greater depth without incurring significant additional costs, and the auditor believed that including the case studies was key for bringing increased media attention and government interest to this audit.

Although each of these basic audit tools are presented individually, it is important to note that SAIs generally use combinations of these tools together to audit water issues. Using multiple audit tools concurrently has allowed SAIs to conduct more comprehensive audits that evaluate a topic from multiple perspectives, and has also helped auditors overcome the inherent limitations associated with many individual audit tools. For example, in situations where there is a risk that officials may be biased or untruthful in the responses they give during interviews, site visits and documentation reviews can sometimes be used to confirm the validity of the officials' statements.

### **Specialized Audit Tools**

Our audit analysis identified many instances where the types of more specialized tools in Figure 3 can be particularly useful, often as a complement to the more basic tools, in providing greater analytical depth to audits of complicated issues, or by helping to substantiate controversial audit findings. Oftentimes, these tools require more resources and greater technical capabilities or expertise than the basic audit tools, and consequently their use is not always feasible or desirable.

Brief descriptions of two specialized audit tools and their frequency of use in the audits we reviewed are presented below, along with information on different circumstances in which they can be applied and examples of audits that have successfully used them to evaluate water issues. As with our discussion of basic tools, for each specialized tool identified in Figure 3, the final report will define the tool, indicate its frequency of use among the audits examined, and be illustrated with one of the audits we examined.

- **Obtaining Expert Opinion:** Using well-respected experts to provide educated opinions about the effects of different program or policy options, for example, can enhance the credibility of an audit's findings. Obtaining expert opinion is particularly valuable when evaluating emerging or otherwise complex issues (e.g., legal, scientific) for which SAIs often lack in-house expertise. In some instances, such expertise has been obtained individually or by convening an expert panel. Among the water audits we reviewed, nearly 30 percent involved obtaining expert opinion, with less than 5 percent employing an expert panel.

*Example #1:* The Swedish National Audit Office issued an evaluation of the central government's efforts on sustainable fisheries. For this audit, the audit team told us that their work with a well-respected legal expert gave their findings on the government's fisheries policies considerable weight. Because this expert agreed with the audit team's findings, the

report's credibility was unquestioned. The audit team also worked with academic experts in the field of economics to verify the results of the economic analysis they had conducted, which helped to strengthen the validity of the analysis and the support for the audit's findings.

*Example #2:* The United States Government Accountability Office conducted a Web-based "Delphi" survey process involving a panel of 43 nationally recognized experts. The subject of inquiry was how federal funds could best be spent to help ensure the security of the nation's drinking water supplies. The Delphi method is a systematic process for obtaining panelists' views on a question or problem of interest. It generally uses multiple phases of questioning whereby panelists' answers to one round of questioning are used to formulate the next round of questions. The purpose is to seek consensus, if possible, on complex questions from diverse groups. In selecting members for the expert panel, GAO sought individuals who were widely recognized as possessing expertise on one or more key aspects of drinking water security. The approach proved to be highly successful in identifying areas of greatest vulnerability and options for the effective use of federal funds.

- **Focus Groups:** Focus group methods are one type of systematic data collection technique that can be used for an audit. This method may require a trained moderator or facilitator or can be done with facilitator oversight. Most focus groups involve small groups of individuals (generally, about 7 to 12). Members of the group usually meet in person for a specified period of time. (However, in some cases, the Internet is where the "meetings" take place.) Members of the group are selected based on specific characteristics, such as (1) expertise relative to a topic or (2) particular experiences. Findings from these methods typically cannot be reported as representing a larger population, and the results cannot be generalized to that population. We found that among the audits reviewed, between 5 and 10 percent involved focus groups as a key component of an audit methodology.

*Example:* In 2005, the National Audit Office of Estonia issued an evaluation of the exploitation of peat resources. The audit team used focus groups of industry specialists, local stakeholders, and state officials. The focus group discussed scientific findings, administrative burdens (issuing permits), and the impact of possible changes in government tax policies on the activity of peat extraction and the environment. The audit team told us that the focus groups were the most useful method in generating practical recommendations. For example, the focus groups helped initiate discussion among potentially affected parties—who had not previously met together—to discuss the often conflicting interests of protection of wetlands and exploitation of peat resources. Focus groups helped show that the issue of peat exploitation had been neglected by the Ministry of Environment, and they helped generate public support for the recommendations that the National Audit Office made to the Ministry.

**Design Matrix Template**

| Objectives / Researchable Question(s)  | Audit Criteria, Key Information Required, Source(s) of Information   | Scope and Methodology   | Challenges Encountered in Conducting the Audit or Reporting its Findings  | Audit Results and Key Findings   |
|--|--|---|---|--|
| <p><b>What questions was the audit team trying to answer?</b></p> <p>We will present the audit’s primary objectives and identify the specific questions that the audit team answered in order to address the objectives.</p> | <p><b>What information did the audit team need to obtain to address the evaluation questions? Where did they get it?</b></p> <p>We will identify:</p> <ul style="list-style-type: none"> <li>▪ The criteria used to evaluate the condition of the issue;</li> <li>▪ The primary sources of information obtained to conduct the audit; and</li> <li>▪ The types of documents and other information reviewed by the audit team.</li> </ul> | <p><b>How did the audit team answer each evaluation question?</b></p> <p>We will describe:</p> <ul style="list-style-type: none"> <li>▪ The strategies the audit team used to collect the information and data needed to conduct the audit, focusing on the audit tools presented in Figure 3;</li> <li>▪ The scope of each strategy, including the types of locations visited, survey sample sizes, etc.; and</li> <li>▪ The techniques used to analyze the data and information collected by the audit team.</li> </ul> | <p><b>What challenges, if any, did the audit team encounter?</b></p> <p>We will describe any challenges the audit team experienced in trying to obtain information, implement the audit methodology, or report the audit’s findings. Potential challenges include, but are not limited to:</p> <ul style="list-style-type: none"> <li>▪ Questionable data quality and/or reliability.</li> <li>▪ Inability to access data or other information required to conduct the audit;</li> <li>▪ Security classification restrictions; and</li> <li>▪ Inability to generalize or extrapolate findings to the universe.</li> </ul> | <p><b>What were the audit’s key results and findings?</b></p> <p>We will present information on:</p> <ul style="list-style-type: none"> <li>▪ Noteworthy findings and other key results corresponding with each audit objective; and</li> <li>▪ Recommendations, if any, the SAI made to the audited entity as a result of the audit.</li> </ul> |