



Preface

AFROSAI-E has declared performance audit as a strategic imperative and the audit of environmental issues is an important focus area in the region. This document titled, *“Performance audit of government’s response to environmental problems, examples of audit areas and topics”* aims to increase the capacity of SAIs to focus on environmental issues while carrying out performance audits. This guideline highlights issues for the performance auditor to consider, prior and during an audit and should assist performance auditors to identify key environmental problems and to understand that government has a role to fulfill to mitigate environmental problems. The document also contains references to the INTOSAI’s WGEA rich material that can be used to inspire and guide environmental audits in the region, as well as references to audit reports already carried out by SAIs in the AFROSAI-E region.

This particular guide is the fourth document in a series of guides that were developed by AFROSAI-E to encourage and provide guidance to SAIs on environmental audit issues:

- First document: Environmental Audit Manual, A practical approach for first-time auditors to conduct environmental audits within AFROSAI-E, November 2007,
- Second document: Consolidated guidance on conducting audits with environmental focus within AFROSAI-E, November 2008
- Third document: Consolidated guidance on regularity audits with environmental focus: Updated guidance for AFROSAI-E region, 2009. Risks per government entities, risk identification, risk assessment and various examples of working papers

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We hope that you will find this guide useful.

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Contents

1	Introduction	3
2.1	Auditing public sector response to environmental problems	4
2.2	Planning the performance audit of environmental areas.....	5
3	Performance auditing in different environmental areas	8
3.1	Water	8
3.2	Forestry.....	11
3.3	Waste.....	13
3.4	Fisheries	17
3.5	Energy	20
3.6	Mining	22
3.7	Biodiversity	25
4.	Conclusion.....	28



1 Introduction

Environmental problems constitute one of the key challenges on the African continent in the 21st century.¹ Focus is gradually shifting to environmental issues. This is mainly the result of the development of new technologies, which has generated an increase in solid mineral mining, oil exploration, an increase in the number of plants and factories, and the overall upsurge in the application of manufacturing tools. The quality and richness of terrestrial, freshwater, and marine environments have been polluted and subsequently declined. It is therefore safe to say that new developments in industry and manufacturing are the root causes of environmental degradation over the past three decades. This has been exacerbated by rapid population growth, urbanization, energy consumption, overgrazing, over-cultivation of lands, and industrial advancements engendered by globalization.

Environmental problems in Africa are therefore partly anthropogenic or human-induced which is the result of the effect of chemical and human waste on all forms of ecological and human life. But natural causes cannot be overlooked and consist of for example earthquakes, erosion, deforestation, desertification and water shortages.

The socio-economic impact of environmental deterioration on Africa continues to pose a major problem to development, stability, and daily lifestyles. Other dire consequences of environmental degradation include:

- Depletion of farming lands and natural habitats for aquatic and land animals
- Decline in biological diversity
- Aquatic pollution, adversely affecting the livelihood of fishing communities and destroying fish and other water creatures
- Land pollution, adversely affecting the livelihood of farming communities
- General health problems caused by aquatic and atmospheric pollution
- Famine
- Desertification
- Endangering animals like Ethiopian Wolves, Ethiopian lions, and Gelada Baboons.

We can all take measures to slow down and reverse some of the damage. In all countries, the government also takes a responsibility to prevent and mitigate environmental problems. In the same way as other governments operations, government activities and programmes aiming at preventing or mitigating environmental problems can be subject to audit of the Supreme Audit Institution (SAI). Issues of true and fair accounts and annual reports, compliance with regulations and achievement of economy and efficiency and effectiveness are equally important in governments' environmental activities and programmes. The SAI does not audit environmental problems as such, but how governments respond to them. INTOSAI² already identified this responsibility and in its Strategic Plan of 2005-2010, INTOSAI made it an ambition under Goal 1 to ensure that INTOSAI can provide an up-to-date framework of professional standards that is relevant to the needs of its members. The

¹ **Addressing Environmental Problems in Africa**, Published by The Africa Society - March 2008:
<http://www.africasummit.org/publications/Environment.pdf>

² International Organization of Supreme Audit Institutions



International Standards of Supreme Audit Institutions (ISSAI) include the following specific guidelines on Environmental audit³:

- ISSAI 5110: Guidance on Conducting Audits of Activities with an Environmental perspective
- ISSAI 5120: Environmental Audit and Regularity Auditing
- ISSAI 5130: Sustainable Development: The Role of SAI's
- ISSAI 5140: How SAI's may Co-Operate on the Audit of International Environmental accords

INTOSAI has also issued several other guidance documents on environmental areas⁴, i.e. water, forestry, fisheries, biodiversity, mining, waste and energy.

One purpose of this guide is to provide an overview of environmental problems and governments' response to such problems. The guide also provides examples of how SAIs in the AFROSAI-E region can use performance audits to address problems with economy, efficiency and effectiveness in government activities and programmes aiming at preventing and mitigating environmental problems. This overview will make it easier for SAIs to identify relevant environmental audit areas or topics for performance audits in respective country. The guide also provide links to guidance material from INTOSAI WGEA and environmental audit reports from the AFROSAI-E region – materials that can used to guide the design and implementation of environmental performance audits.

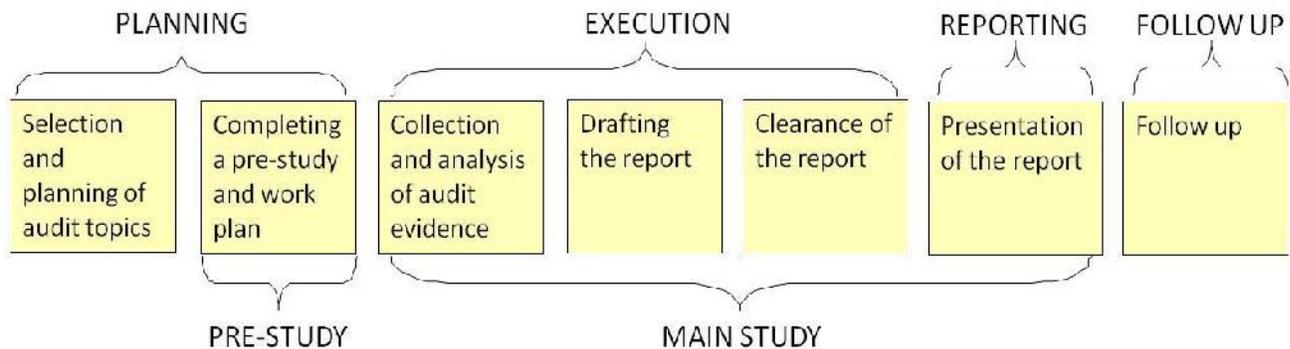
2.1 Auditing public sector response to environmental problems

SAIs do not audit environmental problems as such; they audit the government's or public sector's response to such problems. Therefore, once a SAI has understood the main biological resources in the country and the threats to those resources, it needs to understand what the government is doing to mitigate or prevent problems related to these resources (what programs exist and which policy tools are used) and who is responsible. SAIs should have an understanding during the planning, execution and reporting phases of an audit of the importance of environmental problems, the governments' responsibilities to respond and how performance audits can be used to address problems in government's response.

³ ISSAI Website: www.issai.org

⁴ INTOSAI Working Group of Environmental Audit (WGEA) Website: <http://www.environmental-auditing.org/>

Figure 1: The performance audit process⁵



This document focuses on the planning stage of the performance audit process, in particular the selection and planning of audit topics.

2.2 Planning the performance audit of environmental areas

The planning stage of performance auditing includes a pre-study and development of a work plan. Planning of environmental performance audits follows the same general process as other performance audits. The planning process is here structured in four-steps recommended by INTOSAI WGEA⁶, incorporating several key questions that are posed to the auditor. These steps are consistent with the planning process recommended in AFROSAI-E performance audit template manual - the first three steps are discussed in the pre-study memorandum, based on the information collected in the pre-study, while the fourth (the audit design) is developed as part of the work plan.

- **Step 1: Identify the main environmental problems in the chosen area (water, energy etc.)**
 - What are the overall trends in the area and projections for the problems (emissions etc.)?
 - What are the main reasons for the main environmental problems in the area?

⁵ AFROSAI-E Performance Audit Manual Template 2010

⁶ INTOSAI WGEA website: <http://www.environmental-auditing.org>



- **Step 2: Map the government's response to the environmental problems in the selected area**
 - What are the international commitments made in the area (if any) and how have they been brought forward to national policy and organisations?
 - What are the national targets in area?
 - Which are the relevant responsible public bodies, and what are their roles and responsibilities?
 - What are the key policy instruments for addressing the problems?

- **Step 3: Choose audit problems and priorities⁷**
 - Are targets and objectives being achieved? (Effectiveness risk analysis)
 - Are there risks related to the use of policy instruments? (Effectiveness risk analysis)
 - Is the government doing things in the right way? (Efficiency risk analysis)
 - Are the financial resources misstated? (Efficiency risk analysis)
 - Does the government focus on keeping the costs low? (Economy risk analysis)
 - What should be the overall audit objectives?
 - How do alternative audit problems meet the criteria mandate, materiality, risk, auditability and potential for change?

- **Step 4: Design the audit**
 - What scope for the audit is appropriate?
 - What audit questions shall be investigated, addressing issues expected to cause the audit problem?
 - What methods for data collection shall be used?
 - What skills and budget is needed?
 - When shall different activities be carried out?

Ideas for the selection of audit problems related to environmental issues are dealt with separately under each environmental area in Section 3.

When scoping the audit the same dimensions as in all performance audits are relevant, namely

- What is the audit object, i.e. the activities, programmes or processes that will be audited?
- Who is the auditee, i.e. the ministry/entity responsible for the audit object? Is there more than one entity that will be scrutinized?
- Are there limits on the time frame to be covered, e.g. a specific year or period of time?
- Are there geographical limits concerning the area to be covered e.g. to be concluded on, is the geographical coverage the whole country or one or more regions?

⁷ The term "risk analysis" is used by some SAIs while other SAIs more refer to problems related to economy, efficiency and effectiveness and discrepancies between actual and expected performance. AFROSAI-E performance audit template manual encompasses these differences in terminology.



In performance audits of environmental issues there are different entities that can be chosen for the audit:

- Whole of government, for example auditing problems with achieving government objectives for preventing deforestation;
- Entities responsible for public response to environmental problems:
 - Entities with environmental protection as a main responsibility, for example the Ministry of Environment, Wild Life and Biodiversity;
 - Activities within a group of public entities or parastatals being responsible for preventing/mitigating (or affecting) an environmental problem, for example problems with clean water supply;
 - Public entities with other main responsibilities than environment protection but influencing (possibly causing) environmental problems, for example a state owned company that generates, transmits and distributes electricity to households, the industry and other users – having a negative impact on environmental resources; and
- A specific environmental programme or project, i.e. a programme to improve the systems for collection of solid waste in the main cities or a project aiming at sustainable fishery in Lake Victoria.

The roles of government, or public sector, entities in different environmental areas are discussed in Section 3. Performance audits focus on an audit problem and causes to it that are within the control of the audited entities. It may also be important to take external factors into account to understand under what conditions the auditee operates, in order to appropriately assess performance. The main purpose of performance audit is to improve the economy, efficiency and effectiveness with which existing resources are used. That means that problems that are mainly caused by a shortage of resources are usually not suitable for performance audit.

One aspect to consider is how to limit the audit in terms of who is audited. Often environmental problems are influenced by many actors, different public actors as well as actors in the private sector. The more actors that are involved, and the more unclear the lines of responsibility are, the more complicated will the audit be. In particular SAIs with limited experience of performance audit of environmental issues may initially consider selecting specific audit problems with a clear main responsibility for one or a few entities.

In general, INTOSAI WGEA guidance documents include sections dealing with assessment criteria and methods for data collection. Sometimes audit design matrixes are provided. This can be used by SAIs as examples of potential methodology for data gathering and analysis. SAI's can be inspired by these examples for generating ideas for an appropriate audit design for the selected audit problem in the actual national context.



3 Performance auditing in different environmental areas

3.1 Water

Environmental problems related to water

- ❖ The situation in the world concerning the quality and availability of water is worrying and in some instances even alarming. The availability of safe drinking water is a crucial prerequisite for life of all people in the world. Although issues differ between regions, all regions and all countries have specific problems to address relating to freshwater resources and marine environment. The main issues are:
 - lack of access to fresh water and improved sanitation,
 - water pollution from agricultural and industrial activities,
 - desertification, and
 - loss of biodiversity.

Africa

- ❖ In Africa water scarcity and desertification is a major stress. Water resources are unevenly distributed throughout the continent. At least 13 countries, particularly the sub-Saharan, suffer from water stress or scarcity. Sanitation is underdeveloped. Poor water supply and sanitation lead to high rates of water-related diseases. Poor water quality also leads to reduced agricultural production. Of the total water use, a large percentage is for agriculture. The available groundwater resources are not well managed; water is extracted more rapidly than it is replenished. Oil spills and the emptying of ballast on the high sea by ships are affecting the coastal and marine environment of Africa.

Who to audit - The role and responsibilities of government (and other public bodies)

- ❖ Many governments have some kind of water policy to address the specific national water issues. Many public bodies are players in this field. The water management instruments used by those players provide good starting points for auditing by SAIs. The traditional approach of SAIs can help to improve the quality of water management: public money should be spent according to the rules and should be used efficiently and effectively. Within countries many different players can have a key role in managing water and be subject to performance audits, see the box below.

Central government	Usually a policy responsibility and overall responsibility for ensuring that water supply and sanitation services are safeguarded and that a state-wide system of water management is in place
Lower levels of government (states, provinces, counties, municipalities)	Usually a role to implement the policy and managing it at the executive level; sometimes a policy can be a decentralised policy for parts of the water issues.
Other public sector organizations	Usually a role in implementing the policy and management structure (water boards, committees for water services, water authorities, intermediary parties etc.) Monitoring policy implementation and compliance with standards that were set by policy makers, different players can be active like enforcements agencies, inspectorates, specialised monitoring, and research institutes.
Non-public actors	Sometimes private companies or parastatals are involved in providing clean water

- ❖ A limitation to the role of SAIs is that not all SAIs will be able to audit bodies outside the central-government sphere. This depends on the provisions in an individual SAI's mandate.

What to audit

- ❖ Performance audits can be related to water in different respects, namely to
 - Water quality
 - Rivers and lakes
 - Flooding
 - Drinking water and sanitation
 - Nature and biodiversity
 - Marine environment
- ❖ Performance audits can in general address problems related to the economy, efficiency and effectiveness of organisations involved in different sorts of water management, and causes for such problems within the control of the audit entities. More specifically performance audits can deal with the following water policy instruments:
 - General water policy
 - Water pricing
 - Water legislation
 - Inspection and enforcement
 - Fees and fines
 - Investments in infrastructure



- Scientific research
 - Providing information to the public (right to information, affecting awareness)
 - Monitoring and evaluation
- ❖ The types of performance audits carried out by SAIs vary, and address:
- Environmental policies
 - Implementation of environmental programs
 - Impacts or effects of existing national environmental programs
 - Impacts or effects of proposed national environmental programs
 - Environmental effects of non-environmental programs
 - Compliance with national environmental laws and regulations by government departments, ministries and/or other bodies
 - Compliance by the government with international obligations
 - Government environmental management systems

Audits in the AFROSI-E region on water

- ❖ The *SAI of South Africa* published an interim report on freshwater resources and water services in 2000. It is a unique audit because Chapter 18 of Agenda 21, the part of the international agreement dating from 1992 on the protection of the quality and supply of freshwater resources, was the starting point. The audit was limited to fresh water for domestic use. Findings of a financial, compliance, and performance audit nature were reported. The availability of policy information on the government level was a main aspect of the audit. It was recommended that the department set out detailed timescales and priorities for addressing the backlog in water services provision. Source: ISBN 0-621-30302-X
- ❖ The *SAI of South Africa* published a performance audit of the Department of Water Affairs focused on the provision of sanitation services. The audit also addressed management issues, capacity and monitoring, funding, procurement and environmental impact assessment. The audit found problems in all these areas and that the provision of sanitary services had not progressed as planned. Source: ISBN 978-0-621-37605-0
- ❖ In 2010 the National Audit Office (NAO) of Tanzania published a report on A Performance Audit of the Management of Prevention and Mitigation of Floods at Central, Regional and Local Levels of the Government of Tanzania. This performance audit focused on floods as an issue of Disaster Prevention and Mitigation and used the Babati floods as a case study. The ministry (PMO) has confirmed that similar problems with floods exist in other areas. This report is available at the NAO of Tanzania website: <http://www.nao.go.tz/files/FLOODS%20MANAGEMENT%20AT%20BABATI.pdf>

INTOSAI reference materials

- ❖ IN 2004 INTOSAI WGEA issued *Auditing Water Issues*, which summarizes the collective experience of SAIs. The paper provide auditors with a useful overview of international experience in the area of water management audits, and can be used in planning of performance audits. The paper is available at INTOSAI WGEA Website <http://www.environmental auditing.org/Home/WGEAPublications/StudiesGuidelines/tabid/128/Default.aspx>

3.2 Forestry

Environmental problems related to Forestry

- ❖ **Biodiversity and Ecosystem Loss:** Human activities are the main cause of biodiversity loss, for example change in land use and transformation caused by forestry become threats to biodiversity and as a consequence, there is a decline in distribution, size, and genetic diversity of species.
- ❖ **Decreased carbon storage:** As a consequence of photosynthetic activity, forests absorb the ambient carbon in the air, store that carbon inside the trees, and release oxygen back to the air. Unsustainable forest management would significantly reduce the number of trees. This would cause decrease the amount of carbon dioxide (CO₂) converted into into oxygen (O₂). Finally, this would influence the temperature on the earth's surface.
- ❖ **Reduced water quality:** Reduced water quality encompasses aspects like flood protection, erosion control, preventing seawater intrusion, and maintaining soil fertility.

Africa

- ❖ Urbanization in Africa places strain on infrastructure and other services and there is a growing and urgent need for integrated approaches to environmental planning and management. In the absence of alternative livelihood opportunities and strategic management of the environment, rapid population growth and urbanization has resulted in environmental degradation and resource depletion. Between 1990 and 2000, Africa lost 52 million hectares of forests. It is estimated that 60 percent of the tropical forest areas cleared in Africa as a whole between 1990 and 2000 were converted to permanent agricultural smallholdings. However, migration to urban areas is not inevitably destructive, nor does it necessarily lead to the formation or growth of dangerous and unhealthy slum areas. It is important to recognize the valuable role urbanization can play in stimulating the economy. The challenge lies in reversing the current pattern, and enhancing the efficiency of and the value derived from natural resource use.



Who to audit – The Role and responsibilities of government (and other public bodies)

- ❖ Sustainable forest management is complex. It involves a wide of range of disciplines and ideologies. This complexity and diversity of perspectives has major implications for those parties with an interest in the quality of forest management and the roles they play. Some of these parties include:

National/federal governments/ministries

In many countries, the future of State-owned industries is likely to be determined by government policies to do with public enterprises. It is probable that the role of federal or national governments will be increasingly one of regulating and establishing frameworks and procedures, including policies. This role is to ensure that all parties can make sustainable use of forests.

Provincial governments

Provincial governments have a very strong interest in ensuring forests are well managed. Forests are integrated to many provincial economy, agriculture, natural resource development, and conservation strategies. The role of provincial governments will continue to evolve as more central governments devolve responsibility for implementing national or federal policies and regulations down to provincial governments.

Local governments

In many countries, local authorities are responsible for providing services in their areas (e.g., for economic and infrastructure development). National/federal government will need to work with primary local authorities to ensure forestry programmes fit into local development plans. Even now, local governments in most developing countries have significant input into forest management; they are at the 'front line' of government in ensuring the implementation of policies and regulations.

What to audit

- ❖ What to audit are divided into three main parts: policy and legislation; forest management for multiple uses; and socio-economic, financial, and environmental aspects. Note: different countries will focus on different issues, because each country faces a unique situation.

Policy and legislation: The success, or otherwise, of sustainable forest management, depends on having an appropriate framework of policies and legislation at national and regional levels.



Forest management for multiple uses: Forests earmarked for timber production are able to fulfill a number of important objectives and forest functions, such as environmental protection and, to a varying extent, species and ecosystem conservation. These multiple uses should be safeguarded by applying sound management practices that maintain the potential of the forest to yield its full range of benefits to society.

Socio-economic, financial and cultural aspects: A well-managed forest is a self-renewing resource producing a host of economic and social benefits. If sustainably managed, a forest has the potential to make an important contribution to the overall sustainable development of the country. Sustainable timber production depends on an equitable distribution of incentives, costs and benefits, associated with forest management, between the principal participants, namely the forest authority, forest owners, concessionaires, and local communities. The success of forest management for sustained timber production depends to a considerable degree on its compatibility with the interests of local population. The subtopics for this topic are relations with local populations and economics, incentives, and taxation.

Audits in the AFROSAI-E region on forestry

No published performance audits on Forestry, in the AFROSAI-E region, could be found.

INTOSAI reference materials

- ❖ In 2010 INTOSAI WGEA issued the Publication: Auditing Forests: Guidance for Supreme Audit Institutions. This guidance focuses on the forestry sector and covers a range of management and public tools used by government. It describes what forests are, why they are important, what the threats to forests are, and what action governments are taking. It furthermore describes a suggested approach for choosing and designing forests audit, and practical guidance, information and case studies related to audits on forests that could be used in the planning of performance audits.

This paper is available at the INTOSAI WGEA Website: <http://www.environmental-auditing.org/Home/WGEAPublications/StudiesGuidelines/tabid/128/Default.aspx>

3.3 Waste

Environmental problems related to waste

- ❖ Most countries recognise that environmentally sound waste management is an issue of major concern. For both developing and developed countries, waste management is an important factor in safeguarding human health and environmental protection.
- ❖ Unsatisfactory handling of waste can lead to the contamination of soil, surface water, groundwater and air. Some examples are:



- Soil can be contaminated with toxic components,
- Leachate from waste can pollute surface water and groundwater
- ❖ Uncontrolled burning of waste produces toxic and carcinogenic gases
- ❖ Leaks of radioactive substances can contaminate the air and soil
- ❖ Furthermore, insufficient waste handling and emissions can have negative impacts on public health, exemplified by:
 - The transmission of diseases and infections by rodents, vector insects, etc.
 - Birth defects caused by exposure to polluted drinking water
 - Respiratory problems caused by waste sorting, uncontrolled burning of waste, etc.
 - Odour, littering, unsightliness, noise, etc.
- ❖ Sanitation workers and people who come into direct contact with waste can also be directly affected through skin contact. Cuts and bruises allow harmful substances to enter the blood stream, and these substances can also enter the body through the digestion system if a worker's personal hygiene is unsatisfactory.

Africa

- ❖ Uncontrolled dumping of toxic wastes in Africa has been traced back to the early 1970s, when reports of clandestine deals between African countries and companies in the United States and Europe began surfacing. Rumors of toxic waste sites in different African countries (predominantly in West Africa) were soon substantiated by evidence such as leaking barrels and aerial photographs of a constructed dumping site (see <http://www1.american.edu/TED/oauwaste.htm>).
- ❖ The high growth of industries in developed countries has been accompanied by an equally high increase in the production of by-products which are often toxic and hazardous to land, air, water and all living beings, if not treated and disposed of as required under the guidelines of environmental safety regulations, which attempt to ensure the least negative impact on the environment. In 1947, the worldwide generation of waste was estimated at 5 million metric tons, (See Basel Case). By 1988, the total amount of waste production had risen to 300 million metric ton (See <http://www1.american.edu/TED/oauwaste.htm>)
- ❖ Because industrial by-products contain many chemicals and substances that cannot be recycled nor disposed of very easily, one of the biggest challenges for the major industrialized countries has become the disposal of waste materials, as more and more industrialized countries fill up their landfills, and the price of processing the waste materials continues to increase.

Who to audit – The Role and responsibilities of government (and other public bodies)

- ❖ Authorities at the national, regional and local levels, the waste generators and other actors that may pose a risk through their handling of waste are involved. The organisational structure for waste management may vary considerably among different countries, but most of the systems have certain functions that need to be fulfilled. It is necessary to map out the appropriate authorities to identify the relevant entities that should be audited. The responsible government bodies and the nature of the accountability relationships between the different actors should be identified. Most countries have a legislative body responsible for formulating environmental policies and enacting laws. International agreements provide directions for the national legislative work. Many countries have an authority responsible for controlling pollution and for inspecting and monitoring the environment and the activities that have an impact on the environment. If the country has an agency like this, it is necessary to map out the role it plays in the waste management system. Depending on the type of waste, the authorities that administer or regulate the waste may be at the regional or provincial level or at the local or municipal level.

What to audit

- ❖ All countries experience waste-related problems. These problems require policies and practical solutions. A lack of policy in an area may lead to inadequate regulations, which can, in turn, result in random practices that may be harmful or even dangerous. The solution is a complete management system. In connection with the establishment of management systems for waste, it is important to take account of the fact that the different kinds of waste can require different systems. Following the categorization in Agenda 21, radioactive waste, hazardous waste and non-hazardous waste are often managed differently. This has direct implications for how a SAI can audit the waste management system, because different levels of authority may be responsible for the management or regulation of the different types of waste. Laws regulating radioactive waste are usually determined at the national level. Hazardous waste is also most often regulated at the national level, whereas non-hazardous waste is regulated at the regional or local levels in many countries.
 - *Radioactive waste management systems:* Most countries have legislation for radioactive and nuclear waste at the national or federal level. The legislative body thus governs the management of radioactive and nuclear waste and provides agencies with regulatory authority. The agencies that manage radioactive waste are usually at the national level, making them natural targets for scrutiny by SAIs. Radioactive waste is usually divided into two categories: low-level waste and high-level waste, where the latter has a much longer life expectancy. High-level waste consists in the main of spent nuclear fuel. Low-level waste consists of residues from past industrial processes, contaminated material created by power plants or institutions, medical waste, and waste from uranium-mining processes.



- *Hazardous and solid waste management systems:* Hazardous and solid waste is usually regulated at the national level, but in some countries a regional or provincial authority may be in charge. The national legislation may provide for more detailed regulations and activities at the regional or local level, such as inspection and monitoring.

Audits in the AFROSAI-E region on waste

- ❖ In 2010 the SAI of Uganda published a report titled Value for Money Audit Report on Solid Waste Management. This report covers the scope of the audit, objectives, criteria used and audit findings. The report is available at AFROSAI-E Website: http://www.performanceaudit.afrosai-e.org.za/sites/performanceaudit.afrosai-e.org.za/files/1273677523SOLID_WASTE.pdf
- ❖ In 2009 the SAI of Zambia published a Medical Waste Report. This report covers the scope of the audit, objectives, criteria used and audit findings. This report is available at the AFROSAI-E Website: <http://www.performanceaudit.afrosai-e.org.za/sites/performanceaudit.afrosai-e.org.za/files/Zambia.pdf>
- ❖ In 2009, the National Audit Office of Tanzania published a Performance Audit on the Management of Solid waste in Big Cities and Regions in Tanzania. The National Audit office has audited six different Local Government authorities on the way they manage solid waste in their respective councils. The report contains audit objectives, audit findings, conclusions and recommendations that directly concern the Central Government and Local Government Authorities, the Ministry of Health and Social Welfare, the Directorate of Environment, National Environmental Management Council and Tanzania Bureau of Standards. The said Central and Local Government Authorities have been given the opportunity to scrutinise the factual content of and comment on the draft report. The NAO of Tanzania intends to carry out a follow-up at an appropriate time regarding actions taken by the auditee's in relation to the recommendations of this report. This audit report is available at the NAO of Tanzania website: <http://www.nao.go.tz>

INTOSAI reference materials

- ❖ In 2001 INTOSAI WGEA issued the publication: Towards Auditing Waste Management. This paper gives an overview of waste management issues and provides supreme audit institutions (SAIs) with the information they need to conduct audits in this area. This paper is available on the WGEA Web site: <http://www.environmental-auditing.org/Home/WGEAPublications/StudiesGuidelines/tabid/128/Default.aspx>

3.4 Fisheries

Environmental problems related to Fisheries

- ❖ **Habitat:** Illegal, unreported and unregulated fishing is fishing which does not comply with national, regional or global fisheries conservation and management requirements. It can occur within areas of national jurisdiction, within areas controlled by regional fisheries management organizations, or on the high seas. Illegal fishing takes place where fishers operate in violation of the laws of a fishery, either within areas of national jurisdiction, the regional fisheries management organizations or the high seas. Unreported fishing is fishing that has been unreported or misreported to the relevant national authority or regional organization, in contravention of applicable laws and regulations. Unregulated fishing refers to fishing by vessels without nationality, or vessels flying the flag of a country not party to the regional fisheries management organization governing that fishing area or species. In some developing countries, dynamite and poisons are used to harvest fish. These practices can have considerable negative effects on fish habitats, such as coral reefs, and can represent a health and safety risk.
- ❖ **Other fishing practices can affect fish habitats:** The habitats of many fish have been affected by fishing activities. Trawlers fishing for ground fish such as cod, pollock, and haddock drag steel weights and rollers, as well as nets, behind their boats, devastating huge areas of the sea floor. Bottom trawling is now being recognized as an important risk to fish habitat, especially as it is generally conducted in areas that contain productive fisheries resources. There are many studies from around the world that document the long-term impacts of bottom trawling, including the destruction of deep sea corals.
- ❖ **Fishing down the food web:** Scientists have recently begun to observe that fishers have systematically over-exploited larger, highly valued predatory fish, leading them to shift their harvesting effort towards less valued species lower in the food chain. Scientists have called this “fishing down the food web” and believe that it points to a future where less valued species, such as jellyfish, will dominate marine ecosystems.
- ❖ **Non-selective fishing equipment:** Some fishing equipment can be highly destructive for species that are not being targeted. Traditionally, bottom trawling, drift nets, and surface long-line fishing technologies have been the most destructive. This equipment has had adverse impacts on fish stocks, turtles, seabirds, and marine mammals, such as dolphins. The by-catch and discard problems associated with this equipment have had an effect in terms of loss of human food, and significant effects on entire ecosystems. By-catch is also an economic cost to fishers because of wasted time and effort. There have been international efforts to eliminate or limit the impacts of these types of equipment. As well, the fishing industry itself has developed technology to reduce the negative impact. For example, many fishers now employ technology to divert non-targeted species away from bottom trawling equipment.



- ❖ **Effect of improvements in fishing technology:** Fishers now hunt fish using technology such as satellites, acoustic fish-finders, and modern, efficient nets. Long gone are the days of simple line-and-hook fisheries.
- ❖ **Limited knowledge of aquatic ecosystems:** The international community has recognized that fisheries operate in large, complex, and interconnected ecosystems, which are subject to natural fluctuations and, in some cases, affected by long-term trends resulting from human activity. The FAO believes that the functioning of marine ecosystems is only partially understood and that there is a need for a greater understanding of the effects of human activities, including fishing, and the potential reversibility of these effects. While the FAO has been gathering statistics on fisheries since the 1950s, with a few exceptions, the information available on the fisheries themselves is incomplete.
- ❖ **Combined effect:** Each of these problems would be bad enough on its own, but all appear to be linked, usually synergistically. Whereas misfortunes that occur singly might not prove fatal, those that come in combination often prove overwhelming.

Africa

- ❖ The fisheries and aquaculture sectors are central to the survival of millions in Africa.
- ❖ Experts at the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN), said the fisheries resource, like any other natural resource, ought to be thoroughly studied and preserved for posterity, and also because of its central place in Africa's food survival and its economic importance.
- ❖ African fish stocks in both marine and freshwater sources are declining.
- ❖ Per capita fish supplies against increasing demands are dropping, and the increase in illegal marine fisheries by foreign ships is on the increase, threatening the livelihoods of millions in Africa.
- ❖ Almost 200 million people in Africa are dependent on fish for food security.
- ❖ Nearly 10 million African families are involved in small-scale fisheries and fish for their livelihood.
- ❖ About 15 percent of the continent's workforce is directly or indirectly employed in the fishing sector.
- ❖ Namibia is "by far" the main exporter of fish products in the SADC region in terms of volume; it accounts for 48 percent, followed by South Africa with 26 percent.
- ❖ Despite continued efforts by the Ministry of Fisheries and Marine Resources' national fish consumption drives, fish consumption in Namibia remains very low, and is estimated at only 10 percent of the total catches made annually.
- ❖ This is unlike other countries like Mozambique, Seychelles, Mauritius and Angola, where the domestic markets take up a relatively large share of fish production.
- ❖ In recent years, Tanzania has also developed its export business based on the Nile perch fisheries on Lake Victoria. This consists mainly of fresh and frozen Nile perch fillets that fetch a relatively high price. Fresh and frozen fish is still by far the most common product form in the region.



- ❖ Fresh and iced hake fillets are mostly produced in Namibia and South Africa, which are generally exported.
- ❖ Canning of particularly tuna is also important in especially Seychelles, Mauritius and Madagascar. Small pelagics (pilchards) in Namibia and South Africa are also canned.

Who to audit – The Role and responsibilities of government (and other public bodies)

Governments play a crucial role in protecting fisheries, and they manage fish stocks using a variety of methods. These include regulatory instruments, such as assigning fishing rights under a permit, determining fishing quotas for each permit, setting minimum size limits, placing restrictions on the type of equipment that may be used, having closed seasons, having closed areas such as marine reserves, requiring independent observers to be onboard fishing vessels to monitor fishing practices, and restricting the effort (for example, limiting the number of fishermen on a squid jigging boat, controlled access to the resource and so on). Governments can also use economic instruments such as subsidies, incentives, taxes, or grants, and participatory approaches – under which the fishing industry is involved in managing the fisheries resource, for example, through trade able quota systems.

What to audit

- ❖ International governance, national legislation, planning fisheries, monitoring and surveillance and enforcement and sanctions are examples of actions which governments could take to manage fisheries.

Audits in the AFROSAI-E region on fisheries

- ❖ The SAI of Botswana published a report on the Audit on freshwater fisheries in 2005. The Report of the Auditor-General on Management of fisheries by Fisheries Division Department of Wildlife and National Parks shows information about the audit objectives, scope of the audit, audit findings and recommendations. Reference: Republic of Botswana: Performance audit report no 1. 2005 and the report is available at: www.environmental-auditing.org
- ❖ The SAI of South Africa published a performance audit report of the Handling of Confiscated Abalone at the Department of Environmental Affairs and Tourism. This report refers to the scope of the audit, criteria used and the findings and is available at <http://www.performanceaudit.afrosai-e.org.za/reports/handling-confiscated-abalone>



INTOSAI reference materials

- ❖ In 2010 INTOSAI WGEA issued the publication: Auditing Sustainable Fisheries Management: Guidance for Supreme Audit Institutions. The main objectives of this document are to increase knowledge about sustainable fisheries management and to encourage more audits in this area. The document should help SAIs to audit various aspects of fisheries resource management and to assess whether their governments are managing fisheries resources sustainably. This guide also focuses on the role of governments in managing fisheries resources, including commercial, subsistence, indigenous and recreational fishing activities, and the related impacts on the environment. The guide furthermore sets out a four step process for choosing and designing audits of fisheries. *This paper is available at the INTOSAI WGEA Website: <http://www.environmental-auditing.org/Home/WGEAPublications/StudiesGuidelines/tabid/128/Default.aspx>*

3.5 Energy

Environmental problems related to Energy

- ❖ Environmental damages, i.e. emissions and waste
- ❖ Nature and complexity of the national energy policy or of individual programmes/projects/operations
- ❖ non-existence of energy policies/programmes
- ❖ diversity, discrepancy, discontinuity, and dubiousness of the national energy policy objectives
- ❖ non-existence or non-use of appropriate performance indicators
- ❖ inadequate provisions for securing the required funds;
- ❖ complex organizational structure of the relevant responsible agencies or departments and equivocal distribution of responsibilities;
- ❖ Non-existence and insufficient quality of internal control system.

Africa

- ❖ Energy consumption in sub-Saharan Africa varies dramatically and dominates fuel consumption. The use of wood for fuel is predominant in both rural and urban locations and accounts for approximately 70 percent of total energy use, which ultimately causes another problem, such as deforestation.
- ❖ Renewable energy technologies can play a major role in providing clean and improved energy services to the bulk of the population in Africa. In spite of the benefits that renewable energy can offer to countries in the region, the level of dissemination is still low.



- ❖ At the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002, a target of 10% was proposed for the supply of energy from renewables. Due to the limited access to data and information, most African governments were unable to assess the viability of this target.

Who to audit – The Role and responsibilities of government (and other public bodies)

- ❖ Some of these parties include:

National/federal governments/ministries

In many countries, the future of State-owned industries is likely to be determined by government policies to deal with energy. It is probable that the role of federal or national governments will be increasingly one of regulating and establishing frameworks and procedures, including policies. This role is to ensure that all parties can make sustainable use of energy.

Local governments

In many countries, local authorities are responsible for providing services in their areas (e.g., for economic and infrastructure development). National/federal government will need to work with primary local authorities to ensure energy programmes fit into local development plans. Even now, local governments in most developing countries have significant input into energy management; they are at the 'front line' of government in ensuring the implementation of policies and regulations.

What to audit

- ❖ Sources of audit criteria and/or information can be, for instance:
 - international Acts;
 - the national energy policy and any documents relating to the evaluation of its progress;
 - any documentation on the programmes/projects/operations involved;
 - the auditees' organization rules – defining the tasks and obligations of the auditees' relevant departments or units;
 - the auditee's internal regulations;
 - Documentation relating to public procurement; and
 - accounting.

Audits in the AFROSAI-E region on energy

No published performance audits on Energy could be found in the AFROSAI-E region.

INTOSAI reference materials

- ❖ In 2010 INTOSAI WGEA issued the publication: Auditing Sustainable Energy: Guidance for Supreme Audit Institutions. The Guidance has been written to
 - provide useful background information on energy issues;
 - be of assistance to auditors preparing audits in the area of sustainable energy;
 - provide examples of how audit criteria and audit approach should be determined.

Several case studies illustrate audits of sustainable energy carried out by Supreme Audit Institutions from around the world. *This paper is available at the INTOSAI WGEA Website:*

<http://www.environmental-auditing.org/Home/WGEAPublications/StudiesGuidelines/tabid/128/Default.aspx>

3.6 Mining

Environmental problems related to Mining

- ❖ Environmental problems differ from one type of mineral to another.
- ❖ However, there are some common environmental impacts e.g. loss of habitat, air or reduction of biodiversity, pollution impacts, potential water problems/pollutants, depletion of natural resources, damage to historic and cultural resources, possible soil contaminants, occupational health impacts, land degradation. It could also include:
 - exploration – drilling and exploration excavations,
 - project development – construction of roads and buildings, erection of treatment plants, overburden stripping and placing,
 - mine operation – heap-leaching of tailing dumps, bio-leaching of surface heaps or deposits and solution mining of buried deposits,
 - Beneficiation – on-site processing may include combination to reduce particle size, or flotation using selected chemicals, and mine closure –incompatible landscape features and contamination of soil or water.
- ❖ Gold and diamond mining have slightly different environmental impacts. The environmental and social challenges that the gold industry faces include the use of cyanide in the production process, and increasing environmental and social regulation.
- ❖ In diamond mining, the environmental impacts depend on the mining method applied. The environmental impact of diamond mining is similar to those existing in open-pit mines. The problem stems from waste disposal, leaching, and ground water pollution.



Africa

- ❖ Minerals are among the most valuable exports of Africa, and about 24 (45%) of the 53 African countries rely on the industry as the largest exports from their countries, thus earning these countries foreign exchange for various socio-economic activities. Mining industry provides revenues, jobs, school and health facilities, and stimulates development of vital socio-economic infrastructure such as electricity, roads, railways and telecommunications.
- ❖ With only about 7 (13%) of the African countries carrying out some form of value addition to the minerals, the continent is at present a producer of primary mineral products which she exports to industrialized countries. Meanwhile, most pollution occurs at primary level in the minerals value chain. About 98% of resource flows in the form of excavation residues occur in production countries. This means that Africa retains the environmental burden which also reduces her already little earnings from minerals.

Who to audit – The Role and responsibilities of government (and other public bodies)

- ❖ In general, governments play an important role in protecting the environment in many ways. They “mainstream” environmental matters into the economy, i.e. by integrating environmental issues in the development planning process. Essentially, the government makes the environment feature in decision making, and in the formulation, implementation and evaluation of policies, strategies, programmes and projects. Governments have a variety of legal powers and tools that they can use to address environmental problems and activities. Legal powers include legislation (acts of parliament or congress), regulations, permits, license bylaws, and ordinances.

What to audit

- ❖ Environmental laws and regulations have the primary goal of ensuring the protection of communities’ ecological and social values. They provide a stable framework within which investment and operational decisions can be made. A SAI or an auditor can use them as a source of criteria during their audit planning.

- ❖ Environmental regulation alone is unlikely to solve environmental problems, especially in countries with endemic production inefficiency. The environmental approach of state-owned enterprises can reflect inefficient operating regimes, excess capacity, breakdowns and shutdowns, and poor management procedures that often contribute to worsening pollution. At best, environmental regulation comprises one element of a public policy for environmental management of the mining sector. It has therefore been argued that, in addition to environmental regulation, public policy to promote technical change and foster economic efficiency is most likely to contribute to sustained and competitive improvement in the long-term environmental management of non-renewable resources. This is true, because environmental degradation is greatest in operations working with obsolete technology, limited capital, and poor human resource management. It is also relevant for small-scale mining operations.
- ❖ Matters covered by environmental regulation may include:
 - environmental impact assessment or other environmental planning,
 - nature conservation, national parks, protection of flora and fauna, endangered species,
 - cultural heritage, indigenous cultures, landscape protection, and scientific sites,
 - water quality protection,
 - clean air laws to limit air emissions and human exposure,
 - control of soil contamination and land protection from weeds and pests, and
 - noise, waste disposal and chemicals.
- ❖ Mining legislation may include regulatory provisions relating to
 - safety of structures and operations, limiting exposure to chemical hazards,
 - wastewater retention and treatment, management of contaminated runoff,
 - soil erosion control and re-vegetation during and after operation, and
 - solid waste disposal; and restoration of sites and disposal of equipment.
- ❖ Another important policy instrument that helps to balance the imperatives of economic development and environmental conservation is the Environmental Assessment (EA). EA'S are observed at two levels; the Strategic Environmental Impact Assessment (SEA) and the Environmental Impact Assessment (EIA). '
- ❖ Of the matters generally covered by environmental regulation, the major issues for mining companies are emissions (effluent and air emission standards); habitat and wildlife protection; and rehabilitation and mine safety, including tailings dams.



Audits in the AFROSAI-E region on mining

- ❖ In 2009 the SAI of South Africa published a report on a performance audit of the rehabilitation of abandoned mines at the Department of Minerals and Energy. This report covers the scope of the audit, the objectives, the criteria used, audit findings. This report is available at the AFROSAI-E Website: <http://www.performanceaudit.afrosai-e.org.za/reports/rehabilitation-abandoned-mines>

INTOSAI reference materials

- ❖ In 2010 INTOSAI WGEA issued the publication: Auditing Mining: Guidance for Supreme Audit Institutions. It describes:
 - what mining means, why it is important, what are the threats caused by mining activities, and
 - what actions can be taken by governments,
 - a suggested process for choosing and designing audits of mining and minerals, and
 - practical guidance, information, and case studies related to audits on mining and minerals.
 - *This paper is available at the INTOSAI WGEA Website:* <http://www.environmental-auditing.org/Home/WGEAPublications/StudiesGuidelines/tabid/128/Default.aspx>

3.7 Biodiversity

Environmental problems related to Biodiversity

- ❖ The Convention on Biological Diversity recognizes five major threats to biodiversity:
 - habitat change: loss and fragmentation;
 - invasive alien species (bio-invasion);
 - overexploitation;
 - pollution and nutrient loading; and
 - climate change and global warming.
- ❖ Other threats include biotechnology, agricultural methods, desertification and illegal trade of species. Human activities are the main cause of biodiversity loss. Habitat fragmentation, caused by urbanization and agriculture and the overexploitation of resources, leads to depletion of species. Because these activities are regulated by government, Supreme Audit Institutions (SAIs) can play a major role in auditing government's actions.



Africa

- ❖ Throughout the continent, biological resources are fundamental to human wellbeing, agriculture, livestock, logging, and fisheries, for example, account for most subsistence survival, employment, export earnings, and economic output in much of Africa.
- ❖ Africa's enormous dependence on biological resources brings with it a particular vulnerability. In the event of declining productivity due to environmental degradation, few alternative development paths are readily available and financial resources for carrying out environmental restoration are limited.
- ❖ The ecosystems that provide critical biological resources are diverse at many levels including genetic variability, species richness, and overall ecosystem characteristics. Important ecological functions may depend to differing degrees on this biodiversity.
- ❖ Environmental degradation that leads to the destruction of these ecosystems must therefore be viewed as a serious threat to Africa's future. Africa's ecosystems are coming under increasing pressure, and it is evident that ways must be found to raise production and incomes and, at the same time, learn how to better manage the biological resource base.
- ❖ Africa is, and will continue to be, dependent on its biological resources for food, shelter, and income. The maintenance of healthy, productive, and diverse ecosystems will allow Africa to meet the challenges of the next decades. In Africa, about two-thirds of the land that could support habitats for wild plants and animals is now used for other purposes (MacKinnon and MacKinnon 1986). Nevertheless, Africa still contains a wealth of biodiversity. Whereas in certain parts of the world it may be too late to stem the loss of much of the biodiversity that formerly existed, in most of Africa the opportunity still exists for proactive intervention. To the extent that biodiversity represents an important international as well as national and local resource, Africa's competitive advantage is enhanced not only by the fact that its environment is among the world's richest biologically but also by the fact that it has not yet sacrificed its endowment of these resources.

Who to audit – The Role and responsibilities of government (and other public bodies)

- ❖ Governments play a crucial role in protecting biodiversity. SAI's does not audit the environment. They audit government. Therefore, once a SAI has understood the main biological resources in the country and the threats to those resources, it needs to understand what the government is doing to mitigate or prevent them (what programs exist and which policy tools are used) and who is responsible.



What to audit

- ❖ Governments can and do take action to protect and conserve biological resources. They establish national parks and other protected areas; they regulate hunting, fishing, and exploitation of resources (for example, forests); and they control pollution and land-use. They can and do use a variety of public policy tools to authorize, finance, and implement these actions. Public policy tools include international agreements, laws, programs, and public education.

Audits in the AFROSAI-E region on biodiversity

- ❖ In 2008 the SAI of Botswana published a Report on Management of Wildland Fires by the Department of Forestry and Range Resources. This report covers the scope of the audit, objective, criteria used and the audit findings. This report is available at http://www.performanceaudit.afrosai-e.org.za/sites/performanceaudit.afrosai-e.org.za/files/Management_of_Wildland_Fires_2008_s.pdf
- ❖ In 2008 The SAI of Lesotho published a report on the Management of Soil Erosion. This report covers the scope of the audit and the audit findings. This report is available at <http://www.performanceaudit.afrosai-e.org.za/reports/management-soil-erosion>

INTOSAI reference materials

- ❖ In 2005 the INTOSAI WGEA issued the paper, *Auditing Biodiversity: Guidance for Supreme Audit Institutions*. It is an indispensable resource for audit practitioners, describing
 - what biodiversity means, why it is important, what threatens it, and
 - what action governments are taking; a suggested process for choosing and designing audits of biodiversity; and
 - practical guidance, information, and case studies related to audits of biodiversity.

This paper is available at the INTOSAI WGEA Website: <http://www.environmental-auditing.org/Home/WGEAPublications/StudiesGuidelines/tabid/128/Default.aspx>



4. Conclusion

In order to address environmental issues in a structured manner, government should ideally design and document key elements of its environmental management system. This may embrace the following aspects, amongst others:

- Identifying applicable legislative and regulatory requirements.
- Establishing and maintaining policies and procedures to provide reasonable assurance that the entity complies with those requirements.
- Evaluating and monitoring the entity's compliance with external requirements, environmental policies and procedures.
- Specifying reports that satisfy legal, regulatory or other requirements.

SAI's does not audit the environment. They audit government. Therefore, once a SAI has understood the main biological resources in the country and the threats to those resources, it needs to understand what the government is doing to mitigate or prevent them (what programs exist and which policy tools are used) and who is responsible. SAIs should have an understanding of the importance of environmental problems, the governments' responsibilities to respond and how performance audits can be used to address problems in government's response.

References to the INTOSAI's WGEA rich material that can be used to inspire and guide environmental audits in the region were covered, as well as references to audit reports already carried out by SAIs in the AFROSAI-E region.

The aforementioned informative documentation should help performance auditors to identify key environmental problems and to understand that government has a role to fulfill to mitigate the problems.