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AUDITS OF GLOBAL AND REGIONAL ENVIRONMENTAL ISSUES

Auditing Climate Change — The Canadian Experience (Canada)

Theme: Audits of Global and Regional Environmental Issues

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Introduction and Background

Canadians have indicated that they are more aware of and worried about climate change than ever. Fuelled by such events as Russia's ratification of the Kyoto Protocol and its subsequent entry into force, Al Gore's film *An Inconvenient Truth*, and the most recent scientific findings from the Inter-Governmental Panel on Climate Change, climate change has vaulted to the number one environmental concern of Canadians, and indeed of many people in the world. It is now one of the hottest political topics in Canada.

It is also the subject of our most recent set of environmental audits. In 2005, we took the unprecedented step of devoting the entire September 2006 Report of the Commissioner of Environment and Sustainable Development (CESD) to the topic of climate change. As we describe in this article, it was a large and challenging undertaking—five separate audits led by five separate teams and reported in five separate chapters—and it has already had a significant impact on the political discourse in Canada.

As we describe in our 2006 Report, the climate change stakes are high for Canadians. We suffer from the consequences and we are a source of the problem. The impacts of climate change are already being felt from coast to coast to coast and in many sectors of the economy. They are expected to worsen and could include the spread of pests and diseases, drought in the prairies, melting permafrost in the North, rising sea levels on the coasts, and more days of extreme heat and smog in large urban centres. Further, hundreds of Canadian communities depend on natural resource sectors that are sensitive to climate change, such as agriculture, fisheries, and forestry. And as an energy-producing country, the problem goes to the heart of our economy and wealth.

For these reasons and more, climate change is also a critical area of government expenditure and programming for us to audit. The federal government plays a crucial role in addressing climate change on the home and international fronts. Its efforts span numerous federal departments and agencies and cover dozens of programs designed to understand, mitigate, and adapt to climate change. The government has spent hundreds of millions of dollars to combat it already and has promised to spend billions more. Its actions matter, and its successes and failures have consequences.

Audit Planning and Methodology

It was in fact the third time we audited the subject of climate change. Canada's Commissioner of the Environment and Sustainable Development audited and reported on the federal government's response to climate change first in 1998 and again in 2001. Yet as time passed, the government's progress in addressing our findings and recommendations was slow and incomplete, and it was becoming increasingly clear that Canada was not living up to its international or domestic commitments.

The 2006 Report was by far our largest effort to date on this topic. Overall, we examined a broad range of programs (from mitigation to adaptation, in specific sectors, individual

departments, and government-wide) against our expectations in areas of governance, accountability, expenditure and results management, reporting, and more (Exhibit 1). To set the stage for the issues to be discussed, the 2006 Report included a section called **Climate Change—An Overview** to explain climate change terminology and Canada's international and domestic commitments. We provided a high-level summary of our findings in the **Commissioner's Perspective** chapter of the Report.

Exhibit 1 – An Overview of the 2006 Report

The Commissioner's Perspective-2006

- High-level summary of findings
- Key areas for government attention and future audit focus
- Climate Change Overview (a backgrounder)

Chapter 1: Managing the Federal Approach to Climate Change

- Government-wide governance and accountability for climate change initiatives
- Monitoring systems that track spending and support reporting
- Targets, policy tools, and programs for emission reductions in the transportation and large industrial emitters sectors, including the domestic system to trade greenhouse gas emissions

Chapter 2: Adapting to the Impacts of Climate Change

- Federal progress toward putting in place an adaptation strategy
- Specific adaptation programs in six departments (with responsibilities for sectors or regions likely to be affected by climate change)
- Development and provision of information in three areas: research on impacts and adaptation, national climate monitoring, and regional climate modelling

Chapter 3: Reducing Greenhouse Gases Emitted During Energy Production and Consumption

- Governance and results achieved in three specific mitigation programs that each received \$100 million or more in federal funding
- A broad look at other emission reduction efforts in the oil and gas sector

Chapter 4: Sustainable Development Strategies

- The annual report to Parliament on the progress departments have made in meeting their sustainable development strategy commitments—specifically, the progress of 21 departments and agencies in implementing 39 commitments from their strategies, including those addressing climate change

Chapter 5: Environmental Petitions

- The annual report to Parliament on the environmental petitions process as required by the *Auditor General Act*, and new petitions received between 1 July 2005 and 30 June 2006
- An audit of the federal government's response to a petition concerning the purchase of green power

This paper concentrates on two chapters of this report that are considered relevant to other SAIs—Chapter 1, Managing the Federal Approach to Climate Change and Chapter 2, Adapting to the Impacts of Climate Change.

Audit Objectives and Criteria

While each chapter addressed audit objectives and criteria unique to the program area being examined, we also coordinated efforts across the audit teams and pursued common criteria and lines of enquiry. At the highest level, we set out to answer three basic questions:

- Is Canada on track to meet its obligations to reduce emissions?
- Is Canada ready to adapt to the impact of climate change?
- Is the government organized and managing well?

Chapter 1: Managing the Federal Approach to Climate Change

Responding to climate change is a horizontal issue—that is, one whose management cuts across multiple departments, mandates, and jurisdictions. No single department, agency, or government has all the levers, resources, and expertise to manage this issue adequately. Therefore, effective governance and accountability are required to ensure that key players work together in a coherent manner, coordinating their efforts to avoid duplication; and that Parliament and the public are able to fully scrutinize the costs and the results of those efforts.

Given this requirement, the audit objectives for this chapter were to determine

- the extent to which the federal government has put in place a suitable management framework for the climate change initiative;
- whether the federal government is able to assess its major climate change spending in order to report reliably and fairly on the costs involved in the climate change initiative;
- if strategies for reducing greenhouse gas emissions for transportation and large industrial emitters are based on sound data and analysis; and
- if the federal government is prepared to implement an effective domestic system for trading greenhouse gas emissions.

For our criteria, we expected that the government would have

- developed and implemented a regime for managing and coordinating the federal climate change initiative, and that the Privy Council Office and the Treasury Board of Canada Secretariat would play appropriate roles in managing this horizontal initiative;
- developed and implemented a framework for monitoring and reporting climate change expenditures;
- conducted adequate analysis of Canada's overall target for reducing greenhouse gas emissions, its targets for reducing sectoral emissions, and selected policy tools; and
- conducted adequate analyses, identified main steps, developed an action plan, and implemented required actions for Canada's proposed domestic system for trading emissions.

Because climate change is a broad issue that cuts across departments and agencies, the federal management audit focused on three central agencies (Finance Canada, the Privy Council Office, and the Treasury Board of Canada Secretariat), Environment Canada, and Natural Resources Canada as the departments with the largest responsibilities as well as Foreign Affairs and International Trade Canada, the Canadian International Development Agency, and Transport Canada.

Chapter 2: Adapting to the Impacts of Climate Change

Some effects of climate change are inevitable. Science and research are the foundation for understanding changes in climatic systems and their impact, and for understanding where we are vulnerable and what we must do to adapt (Exhibits 2 and 3). The federal government has made commitments and statements recognizing the need to work on adaptation to climate change.

Accordingly, the audit objectives for this chapter were to determine

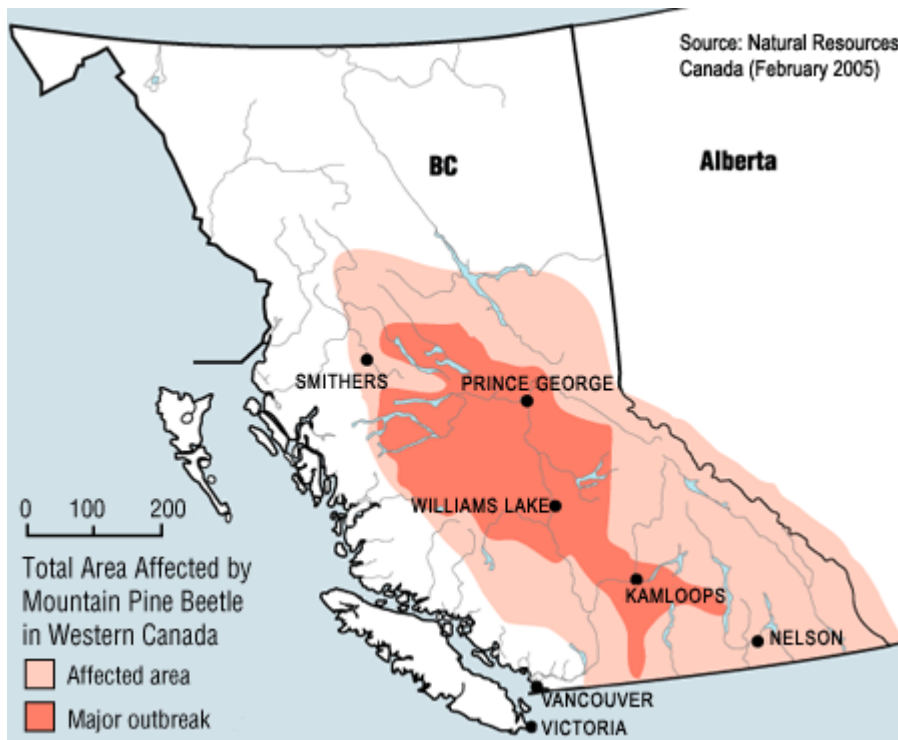
- whether the federal government, in co-operation with other levels of government and key stakeholders,
 - has set priorities based on the identified risks to Canadians posed by climate change and developed a climate change adaptation strategy and action plans to manage the risks; and
 - is implementing the climate change adaptation strategy and action plans, and is assessing, on a regular basis, the progress it has made in implementing adaptation measures; and
- whether the federal government has organized itself to obtain, analyze, and disseminate sufficient and appropriate information to help identify the potential impacts on and risks to Canadians posed by climate change.

Exhibit 2 – Changes in ground surface due to melting permafrost can affect the stability of structures, such as this railway track



Development of northern natural resources grows more difficult as temperatures rise and permafrost melts.

Exhibit 3 – Spread of the mountain pine beetle



The mountain pine beetle is devastating lodgepole pine forests in the British Columbia interior. Warmer winters have allowed populations to spread, altering wildlife habitats, reducing biodiversity, and threatening the livelihoods of communities.

For our criteria, we expected that the federal government would have

- analyzed and prioritized the risks identified and designed cost-effective risk prevention, reduction, or avoidance control measures;
- developed national and, where appropriate, regional programs containing measures to facilitate adequate adaptation to climate change;
- clarified and documented respective roles and responsibilities of federal and provincial governments and other organizations involved in adaptation; and
- promoted and cooperated in scientific, technological, technical, socio-economic, and other research.

This audit focused on the work of Public Safety and Emergency Preparedness Canada, Health Canada, and Agriculture and Agri-Food Canada, three departments responsible for areas likely to be affected by climate change. It also looked at whether Indian and Northern Affairs Canada was addressing the implications of climate change in the North. Also examined was the work of Environment Canada and Natural Resources Canada in climate modelling, collecting and analyzing climate observations, and conducting research on the impacts of climate change and means of adapting to them.

Methodology

Audit methodologies were essentially the standard methods that our Office uses for all performance audits and included interviews with departmental officials and other stakeholders as well as review of documentation. For our work on emissions trading, we looked at the US trading system to control sulphur dioxide emissions to determine the features that make it work effectively. We also reviewed the UK domestic system for trading greenhouse gas emissions and the European Union system, which involves 25 countries.

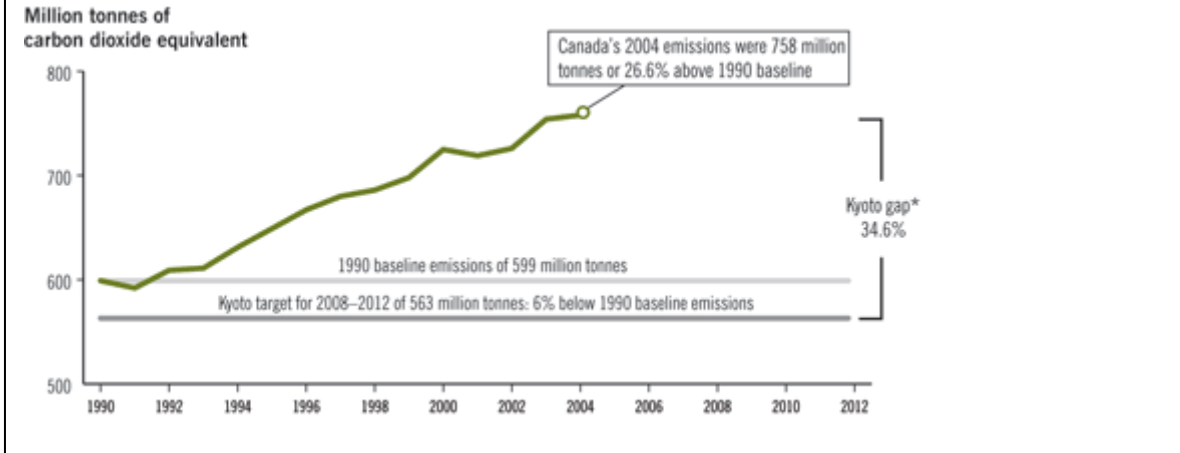
Findings and Recommendations

High Level—The Commissioner’s Perspective

As noted previously, our high-level findings were reported in the Commissioner’s Perspective chapter. Detailed audit findings and recommendations were reported in the individual chapters. Overall, the Report was highly critical of government efforts and blunt in its assessment of the government’s performance. We found that the answer to the three questions central to our work (listed under Audit Objectives and Criteria) was “no.”

- **Canada is not on track to meet its obligations to reduce emissions.** Under the Kyoto Protocol, Canada agreed to reduce its emission levels from 2008–12 to 6 percent below those in 1990. The government’s own 2004 data revealed that our greenhouse gas emissions were almost 27 percent above 1990 levels and were rising, not declining (Exhibit 4). To many, this is not news. Indeed, it has been widely reported by the government itself.
- **Canada is not ready—nor adequately preparing—to adapt to the effects of climate change.** The level of attention paid by the government to adaptation pales in comparison with the attention paid to reducing emissions. The federal government has no overall adaptation plan, and key elements of an effective approach have still to be put in place.
- **The federal government’s efforts are neither well organized nor well managed.** Our audits identified weaknesses in the government-wide system of accountability for climate change. Coordinating committees and mechanisms that once existed have been phased out and have not been replaced. A lack of central ownership, clearly defined departmental responsibilities, integrated strategies, and ongoing evaluation systems all point to problems in the government’s management of the climate change initiative.

Exhibit 4 – The gap between Canada's greenhouse gas emissions and its Kyoto target is growing



As we said in the Report, our message was one for the past, present, and future governments. Less widely reported than our findings were our ideas for improving federal management of climate change—an auditor doesn't criticize the past without offering solutions for the future. Individual chapters in the 2006 Report included a series of specific and detailed recommendations to the federal government, intended to address deficiencies identified in our audits.

While our audit work was still under way, the newly elected government publicly declared that it wanted to significantly improve the poor track record to date. In the Commissioner's Perspective, we noted the need for immediate and long-lasting action on many fronts and highlighted five areas that we believed were crucial for governments. They are also areas where our Office will focus its future audit effort.

- First and most important is **leadership**. We called for bold, decisive top-down leadership from the highest levels of government, Parliament, and the public service. Further, we stressed that once direction is set, sustained efforts are needed through the long journey of dealing with climate change.
- The second crucial area is the need to **integrate climate change and energy**, recognizing that the two issues were unavoidably linked. We pressed the government to reconcile the imperative to reduce greenhouse gas emissions with expected growth in production and consequently in emissions in the oil and gas sector. Noting also that there was an absence of overall direction for energy development in Canada, we encouraged the government to define how and to what extent it would support energy conservation, efficiency, and alternative sources of energy.
- For the third area, we appealed to the government to **develop a believable, clear, and realistic plan** to deal with greenhouse gas emissions nation-wide—to significantly slow the rate of growth in emissions, bring them to a peak, and reduce them to the level needed for Canada's share in stabilizing atmospheric concentration of greenhouse gas emissions. Long-term goals are needed to provide direction and certainty for capital investments that last decades, with short-term targets to set the required pace of action.

- The fourth area we highlighted was **adaptation**, an area we consider fundamental to protecting the economic and social well-being of Canadians. We called upon the government to “push ahead” with adaptation, another part of Canada’s commitments made in 1992 and 1997. We reported that adaptation had been a neglected afterthought in the government’s climate change efforts to date.
- The fifth area we identified was the need for improved **systems for governance and accountability**. Although we believe good planning is important, so is taking action and achieving results. To this end, we suggested that the government pay more attention to establishing clearer roles and responsibilities for the departments involved and coordination mechanisms among them, to tracking expenditures and performance against targets, and to reporting this information to Parliament.

Specific—Chapter 1: Managing the Federal Approach to Climate Change

We found that the government had yet to create an effective governance structure for managing its climate change activities. This was despite various studies that have pointed to the need for governance mechanisms and despite internal commitments made since 2003 to put in place a renewed governance structure for climate change. Furthermore, there was no government-wide consolidated monitoring and reporting of spending and performance information on climate change activities.

We also found that measures to reduce greenhouse gas emissions in the transportation and industry sectors, which together account for about 78 percent of Canada’s greenhouse gas emissions, were not expected to bring emissions below 1990 levels; they may only slow the rate at which greenhouse gas emissions in these sectors continue to grow. And progress to date has been slow on the proposed systems for reducing greenhouse gas emissions from large industrial emitters and for trading emissions.

We recommended that Environment Canada, in collaboration with the Privy Council Office and the Treasury Board of Canada Secretariat, ensure the development and implementation of effective governance and accountability for the climate change issue within the federal government, including defining key roles and responsibilities, and establishing appropriate mechanisms for decision-making, interdepartmental cooperation, monitoring, and reporting.

We further recommended that Environment Canada ensure that emissions reductions achieved by the large industrial emitters system and by Canada’s emissions trading system are real, measurable, and verifiable.

Specific—Chapter 2: Adapting to the Impacts of Climate Change

We found that the level of attention paid to adaptation pales in comparison with the attention paid to reducing emissions, despite the fact that, in the 1992 United Nations Framework Convention on Climate Change, the government committed to work on both fronts. The federal government had no overall adaptation plan, and key elements of an effective approach had still to be put in place. Little work had been done to assess how adaptation will affect federal policies and programs. Work on a national adaptation framework (in partnership with the provinces), a federal adaptation strategy, and a climate change science plan for Canada began in earnest, made some progress, and then stalled.

We recommended that Environment Canada and the Privy Council Office identify the responsibilities and accountabilities of the federal departments and agencies that are to be involved in a federal adaptation effort. Those departments and agencies should then clarify how the Government of Canada will manage adaptation to a changing climate, including identifying the extent to which the federal government intends to work with other levels of

government and stakeholders, and what it will contribute, and developing and implementing a federal adaptation strategy to address federal priorities.

We further recommended that, working with other federal departments and agencies producing or using information needed for adaptation efforts and with other levels of government and stakeholders, Environment Canada and Natural Resources Canada identify and fill gaps in the needed information, including results of impacts and adaptation research and results from climate science.

Impacts and Results

By good luck as much as good planning, the timing of our report could not have been better, coming in the fall of 2006 during a surge in parliamentary and public interest in climate change. In the weeks and months that followed, our audit findings were widely reported, with media coverage—more than 500 references in print and broadcast media to date—reaching four times our most-cited previous report. Moreover, representatives from industry, business, and environmental communities have used, and are still using, our report's findings in their ongoing discussions with the federal government.

And perhaps most gratifying, parliamentarians took great interest in our report, with three separate hearings to date, and citations from the report continue to be regular features of debates and Question Period in the House of Commons.

The audited organizations accepted all of our recommendations—at least in principle, but their responses generally made no firm commitments to action within specific time frames. The responses indicated that the Government of Canada was preparing a Made-In-Canada environmental agenda and that the recommendations of the Commissioner would be considered in developing this agenda.

In the last several months, the pressure for the federal government to tackle climate change has mounted steadily and is a current subject of debate in Parliament. The political pressures are such that the opposition has proposed an Act to ensure that Canada meets its global climate change obligations under the Kyoto Protocol. It would require the Government of Canada, in addition to meeting its Kyoto commitments, to prepare an annual climate change plan, and require the Commissioner to analyze progress on implementing those plans at least every two years. Although the outcome of these debates is unknown, the need for meaningful action to reduce greenhouse gases is receiving a lot of attention.

Challenges and Lessons Learned

How best to address climate change is a very politically sensitive subject. In Canada, there are tricky jurisdictional issues because, although the federal government signs international agreements such as the Kyoto Protocol, the provincial governments have jurisdiction over natural resources including oil, natural gas and coal, power generation, building codes, transportation, and municipal governments.

Even within the federal government, managing issues such as climate change that cut across departmental mandates is a long-standing managerial and governance challenge. Managing a horizontal initiative requires finding ways to ensure that the goals of the initiative are achieved while respecting the vertical lines of accountability. Our report noted that the ever-shifting responsibilities between federal departments and ministers, turnover of key personnel, and changes from plan to plan caused delays and hampered progress. Because responsibilities of key departments were not always clear, and changed over time, many of our recommendations were addressed to central agencies, such as the Treasury Board of Canada Secretariat and the Privy Council Office. Although central agencies do not accept any

responsibility for delivery of federal government programs, we believe they have a responsibility to put in place the structures and resources required for interdepartmental processes for a government-wide initiative.

Our audit came at a tricky time politically speaking. On 29 November 2005, while the audit was under way, the Liberal minority government of Canada was dissolved and an election called. On 24 January 2006, the Conservative Party captured a fragile minority victory, ending the Liberal's 12 years in power. In effect, the audit started with one government in power and ended with another. While this did not affect our findings, it did make the crafting of our recommendations all the more challenging.

In order to maintain the independence and credibility of the audit function, the Commissioner always needs to be very careful to avoid commenting on matters of government policy. For this reason, we needed to be extra diligent that our work was non-partisan and fact-based, and dealt with how the government implements its policy choices. Climate change is here to stay, and our message was one to past, current, and future governments of Canada.

For a topic as broad as climate change, scoping issues to a manageable level was essential. For example, in the adaptation to climate change audit, we did not include any activities related to Canada's support to developing countries, to internal "greening of government" initiatives, or impacts related to foreign policy, tourism, or international agreements. External experts were consulted early in the audit process to help us identify the key issues that should be audited.

Presenting several chapters on climate change in the same report was a good way to raise awareness on this issue. There was a wide range and depth of issues covered. That said, coordinating the work between the audit teams was key to avoid overlaps between chapters and to have a coherent report. It was also important to coordinate our interactions with the departments in order to avoid "audit fatigue" and mixed-messages.

We have learned that effectively communicating audit results in the environmental area requires that we set the context appropriately. To an extent, our audits serve an educating role for parliamentarians. The **Climate Change Overview** helped us to clarify the climate change context in an objective way. We also made extensive use of "vignettes" and "case studies" to help communicate our findings and to explain the impacts of climate change in all areas of Canada. These vignettes were used by the media in covering our chapters.

Finally, the fact that key mechanisms, such as the large industrial emitters system and the emissions trading system, were not yet implemented and it was not clear when they would be operational was also challenging. In effect, we were auditing a work in progress. Work on adaptation solutions was also still in the very early stages. In these cases, we focused on the conditions necessary for future success (for example, the design of the programs) rather than on results.

Conclusion

Climate change is here to stay. As environmental auditors, we believe we have done our job so far and we plan to do our job for a long time to come. Yet as of this writing, the response to our report is still an unfinished story. While the government accepted our recommendations in principle, we are still awaiting the detailed responses. Release of the government's new climate change plan is uncertain but is said to be imminent. Without it, Parliament's ability to hold the government to account is weakened while Canadians wait to see how their government intends to keep its commitments.

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Coordinated Audit on the Basel Convention (Czech Republic)

Theme: Audits of Global and Regional Environmental Issues

Author: Supreme Audit Office of Czech Republic

The Czech Republic and the Slovak Republic share a part of the state border. Both countries experience similar issues related to transboundary movements of hazardous wastes and their disposal, at present mainly illegal import of wastes from neighbouring countries. The Supreme Audit Office, Czech Republic (SAO, CR) and the Supreme Audit Office of the Slovak Republic (SAO SR) agreed to carry out coordinated audits in order to learn about the performance of international obligations in the management of hazardous wastes, operation and scope of exchange of information among the signatories to the Basel Convention, a system of financing of measures aimed at improving the environment, and the level of international cooperation. The audits were performed in accordance with intentions of the work plan of the EUROSAL Working Group on Environmental Auditing for 2002–2005.

Subject of Coordinated Audits

Both audit institutions carried out audits within their powers aimed at the management of hazardous wastes and the implementation of a system of financing of measures for their disposal. The audits resulted in an evaluation of cooperation in the field of transboundary transport and disposal of wastes.

Objectives of Coordinated Audits

The main objective was to assess implementation of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. Besides, the management of state funds purposefully allocated for the disposal of hazardous wastes was also audited.

Audited Period

The years 2003 and 2004 formed a joint audited period. Besides, SAO, CR also audited the year 2002. In case of identified factual inconsistencies, both audit institutions also audited preceding and following periods.

Starting points governing international cooperation on the waste management

Cooperation between the Czech and Slovak Republic in the field of management of wastes follows in particular:

the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal that was signed on 22/3/1989 (Basel Convention). The Convention became valid for the Czech and Slovak Federal Republic on 5/5/1992. The Czech Republic (CR) and Slovak Republic (SR), being successor states of the Czech and Slovak Federal Republic, have been bound by the Basel Convention with effect since 1/1/1993. In the Czech Republic the Convention was published in the Collection of Laws under No. 100/1994 and in the Slovak Republic in the Collection of Laws under No. 132/2000. The Basel Convention was implemented in the CR and SR by the Waste Act.

- The Basel Convention obliges the parties to the Convention to minimize the occurrence of hazardous wastes with regard to their amount and potential risk. The Basel Convention aims in particular at minimizing transboundary movements of

hazardous wastes and other wastes that are governed by the Convention in accordance with procedures of environmentally sound management of these wastes.

- An amendment to the Basel Convention was adopted at a conference of the parties to the Convention in 1995. The amendment prohibits the export of hazardous wastes from member states of the Organization for Economic Cooperation and Development (OECD) outside these states. The Czech and Slovak Republics also ratified this amendment.
- Drawing on the conclusions of the 1st conference of the parties to the Convention in 1995, a Regional Centre of the Basel Convention (RCBC) was established in Bratislava for training and technology transfers in Central and Eastern Europe. A total of 17 countries of the region were in the powers of RCBC, namely: Albania, Bosnia and Herzegovina, Bulgaria, the CR, Croatia, Estonia, Hungary, Lithuania, Latvia, Macedonia, Moldavia, Poland, Serbia and Montenegro, Romania, Slovenia, Slovakia and Ukraine. The CR is a member of an advisory body of the Centre. RCBC held 12 workshops aimed at various issues of the management of hazardous wastes and their transboundary movements. The last workshop was held in Průhonice from 15 to 17 March 2004 and its main topic was strengthening of cooperation on the basis of international conventions, aimed at the issue of chemical substances and hazardous wastes.
- Rules set forth in the Basel Convention are implemented in transboundary transport of wastes both in the CR and SR. Before the accession to the EU the import, export and transit movements of wastes in both countries followed, besides national legislation, OECD Council Decision C(92)39FINAL on the Control of Transfrontier Movements of Wastes Destined for Recovery Operations. Since the accession to the EU (in May 2004) the CR and SR have been fully bound by Council Regulation (EEC) No. 259/93 on the supervision and control of shipments of waste within, into and out of the European Community (EEC Council Regulation), by which the EU implemented the Basel Convention.
- The Ministry of Environment of the CR (MoE CR) and the Ministry of Environment of the SR (MoE SR) act as competent authorities of the Basel Convention (the state administration bodies designated by a party to the Convention) for transboundary transport of wastes, i.e. transboundary import, export and transit.
- In the CR the role of a focal point of the Basel Convention performs the MoE CR and in the SR it is the Slovak Environmental Agency (SEA). The focal point provides information about the state of waste management to pertinent units of the European Commission and bodies of international conventions and reports in the field of waste management in the required scope and intervals.
- Joint audits of the CR and SR and neighbouring countries are organized within the European IMPEL network (Accession Countries Network for the Implementation and Enforcement of Environmental Law) in transboundary transport of wastes, aimed at helping to disclose its illegal transport. Exchange of information on matters of illegal transboundary transport has been initiated. This initiative may be illustrated by a meeting of waste management inspectors held in Bratislava in March 2006.

Objectives and principles of waste management in both countries

Principles of waste management are similar in both countries, which came from historic grounds when both countries had originally the same legislation and set conditions, as well as

the same date of accession to the EU and transposition of EU law related to it. Prevention of the occurrence and reduction of wastes generation, their maximum recovery and minimization of negative impacts on human health and the environment serve as a strategic aim in waste management.

Objectives and principles of waste management of the Czech Republic were published in Government Decree No. 197/2003 Coll., which makes provision with respect to a Waste Management Plan of the Czech Republic. The main objectives set forth in the mandatory part of the Waste Management Plan of the Czech Republic in the field of hazardous wastes concerns for instance a reduction in its generation by 20% by 2010 in comparison to the year 2000. Act No. 185/2001 Coll., which makes provision with respect to wastes, as amended by some other legal regulations (Waste Act) and related regulations set forth rules for the prevention of generation of wastes and for their management as well as rights and duties of persons active in waste management and powers of public administration bodies.

The main objectives of waste management of the Slovak Republic were set forth in the Waste Management Programme of the Slovak Republic (WMP SR) by the year 2005, which was adopted by the Slovak government on 27 February 2002. WMP SR was prepared in relation to Act No. 223/2001, as amended, which makes provision with respect to wastes (Waste Act), which was in accordance with the transposition of EU legal regulations taking place at that time and which contained a description of the up-to-date state of waste management, its management strategy, binding and informative parts and a budget.

Results of Audits carried out by SAO SR and SAO, CR

1. Compliance with the Basel Convention in the Field of Transboundary Transport of Wastes

Rules set forth in the Basel Convention are applied in transboundary transport of wastes both in the CR and SR.

Pursuant to the provision of Article 9 (5) of the Basel Convention, each party to the Convention shall introduce its own national (domestic) legislation to prevent and punish illegal traffic. The parties shall cooperate with a view to achieving objects of this Article.

Pursuant to Article 13 of the Basel Convention, all Parties to the Basel Convention shall transmit through the Secretariat a report on the previous calendar year before the end of each calendar year. Both the CR and SR have difficulties obtaining information related to specific management of wastes in other countries that are Parties to the Convention, both countries get information mainly through direct negotiations with competent authorities of the other countries. Comprehensive information for all countries may be obtained from the Secretariat of the Basel Convention only after its comprehensive processing and evaluation. This means that the information is available after a considerable lapse of time.

MoE CR and MoE SR act as the pertinent administrative authorities for transboundary transport of wastes in the field of the import of wastes. Communication is influenced by the fact that in some Parties to the Basel Convention the pertinent administrative authority for transboundary transport of wastes is not a single authority.

If illegal transport of wastes was ascertained, for which a foreign exporter was responsible, the ministries (MoEs) negotiated with pertinent competent authorities of the country of origin of wastes about their return. If a domestic wastes importer (Czech or Slovak) was responsible, the relevant ministries imposed on it the duty to dispose of wastes in its own country. In cases when direct responsibility was not ascertained, MoEs acted as a competent authority to

negotiate with a foreign authority on how to dispose of the waste. This took place for instance in the case of illegal import of wastes into the CR in 2005.

The feedback including a flow of up-to-date information and operative cooperation with the Secretariat of the Basel Convention is not sufficient for the existing needs of the Parties to the Convention.

Following facts were established from the audit performed by SAO, CR:

The CR did not submit a report for 2004 pursuant to Article 13 of the Basel Convention before the audit was completed.

Notifications of planned transboundary transport of wastes (import, export, transit) were submitted by the individual notifiers to MoE CR, which subsequently issued a decision on its consent, disagreement or objections.

The number of applications and issued consents to the import of wastes is descending, but the number of applications and issued consents to the export and transit of wastes is rising.

Following facts were established from the audit performed by SAO SR:

Notifications of planned transboundary transport of wastes were submitted by the individual notifiers to MoE SR, which subsequently issued a decision on its consent, disagreement or objections.

In relation to the coming into force of the Council Regulation (EEC), the permitting duty of MoE SR changed in May 2004, which was reflected in a significant drop in the number of issued decisions.

MoE SR permitted the export of wastes only in those cases when facilities for the management of the pertinent waste did not exist in the SR or when it was not possible to ensure safe management of the relevant waste. In 2004 a total of 11 consents were issued in the volume of 3,969 tonnes for the export of wastes for their recovery. Nine cases in the volume of 3,589 tonnes involved hazardous wastes and two cases other wastes. Shortcomings in compliance with set conditions for the export of wastes were established in two cases when companies failed to meet one of the set conditions, namely they failed to notify MoE SR of the actual amount of exported hazardous wastes.

1.1. Audit of Transboundary Transport of Wastes

The import of wastes into the CR and SR for disposal is prohibited and it is subject to exceptions. No wastes designated for disposal were legally imported in the audited period.

Pursuant to valid legislation, the CEI and SEI are not entitled to inspect products. In practice, however, there are numerous entities that declare waste as a product. Subsequently, it cannot be inspected, as CEI and SEI may only inspect the management of wastes by legal entities and individuals authorized to do business.

Since the accession of the CR and SR to the EU, transport of wastes into a country may be permitted for the purpose of their recovery by a procedure and under terms and conditions set forth in the Council Regulation (EEC), which are implemented in the Waste Act. The import of wastes is regulated through a distinction between recovery and incineration as one type of disposal.

Imported wastes have to be recovered by a Czech or a Slovak importer under terms and conditions stipulated by the relevant waste legislation. For transboundary transport of wastes from EU Member States into waste incinerating plants in the CR or SR it is therefore crucial to

determine whether incineration of wastes in waste incinerating plants represents their disposal or whether incineration of wastes may be regarded as recovery.

In the CR a customs body¹ decides on the stopping, stoppage or discontinuation of transport of wastes. When in doubt whether conditions for discontinuation of transport were met, customs bodies request expert assistance of CEI. If a control body establishes that waste is transported although it has not been declared, it files a motion with a regional authority, which is the only body to decide the contentious case whether it is waste. CEI may therefore open administrative proceedings to impose a fine in such cases only upon a decision of the regional authority.

In the audited period MoE CR received four notifications of planned transboundary transport of wastes into waste incinerating plants, of which in three cases it issued a decision on an objection and in one case transport was dismissed (by a decision of the Minister of Environment). In the latter case the notifier filed an appeal against the decision, but the Minister of Environment dismissed it. The notifier subsequently filed a petition to review the administrative decision. Before SAO completed its audit, court proceedings had not been closed yet. The court decision upon which an interpretation of “disposal of wastes” and “recovery of wastes” may be applied will be crucial for the import of wastes into the CR for recovery.

In the SR customs bodies in their capacity as state administration bodies do not have powers in waste management and control of transboundary transport of wastes. SEI does not have sufficient capacities to conduct inspections directly at border crossings. Hence, a rising number of illegal transport of wastes occurs in the SR.

In conjunction with the performance of tasks ensuing from the Basel Convention, SEI performed four inspections of transboundary transport of wastes in 2004, of which one inspection involved an importer and three inspections exporters of wastes. One fine was imposed on grounds of breach of the Waste Act.

The import of wastes into the CR and SR for disposal is prohibited and it is subject to exceptions. Due to ambiguous legislation there are numerous entities that declare waste as a product. With the current state of legislation these entities cannot be controlled.

1.2. Financial Guarantees and Bonds pursuant to the Waste Act

In the CR MoE CR determines the amount of financial guarantees and in the SR the amount of a bond upon examining costs of transboundary transport and disposal or recovery of wastes (in the SR the amount stands at one and a half multiple of these costs).

In the SR the notifier of transport deposits the security deposit with a bank at least three days before transport takes place by tying the money to MoE SR for an indefinite period of time. In one case MoE SR failed to comply with the set procedure in accepting the security deposit, as it accepted a confirmation presented by the notifier of transport of tying the security deposit until a specific date, which was not in accordance with the statutory text of the Waste Act, i.e. that the money shall be tied for an indefinite period of time.

¹ Customs bodies serve as a control body in charge of control of wastes in the course of their transport. Customs bodies use mobile groups entitled to stop vehicles, control documents and load and in the case of illegal transport of wastes may order discontinuation of transport and stoppage of the vehicle.

In the CR a customs authority may, besides financial guarantees deposited by a notifier, impose a bond in an amount ranging between CZK 10,000 and CZK 50,000 if regulations pertaining to the transport of wastes have been breached.

In the first three months of 2005 customs authorities imposed seven bonds for illegal transport of wastes. However, there was no valid legislation governing further management of deposited bonds and that is why CEI did not open administrative proceedings to impose a fine in these cases. Deposited bonds were eventually returned to transporters including interest despite the fact that transboundary waste got into the CR by illegal transport or at variance with a permit.

Penalization of illegal transport of wastes across the CR through bonds is ineffective due to insufficient legal regulations.

2. Payment for Depositing Wastes into Landfills

In the CR a waste producer is bound to pay charges for depositing wastes into landfills; the charges should serve as a financial instrument for reducing the generation of wastes (in particular hazardous ones) and promote their recovery. When hazardous wastes are deposited into a landfill, the charge contains two components, a basic component for the actual deposition of wastes and a risk component. A landfill operator collects the charge from waste producers when wastes are deposited into the landfill. The basic component of the charge forms an income of a municipality in whose land registry the landfill is located. The risk component is an income of SEF CR. Pursuant to the Waste Act the risk component of the charge is not paid to SEF CR if the waste is used for technical safeguarding of a landfill (TSoL).

Pursuant to the Waste Act the amount of the risk component of the charge for the years 2002, 2003, and 2004 was at CZK 2,000/tonne and was increased to CZK 2,500/tonne for the period of 2005 to 2006.

Between 2002 and 2004 the total income of SEF CR from the risk component of charges for depositing hazardous wastes into landfills and from fines for breaching obligations stipulated by the Waste Act was CZK 378,432,000.

Comprehensive records prepared and maintained by MoE CR serve as a source of information about the amount of charged wastes deposited into landfills. The amount of reported deposited hazardous wastes according to the comprehensive records is influenced by the total amount of hazardous wastes reported as technological material for technical safeguarding of a landfill, for which the charge is not collected. According to the comprehensive records, the amount of hazardous wastes used for technical safeguarding of a landfill between 2002 and 2004 was 474,000 tonnes, i.e. 46% of the total amount of hazardous wastes accepted into landfills. Operators of landfills of hazardous wastes used shortcomings in legislation, which did not set forth a maximum amount of technological material for safeguarding a landfill. In some cases operators reported over 90% of deposited waste as technical safeguarding of a landfill.

In order to improve this situation, MoE stipulated in 2005 that the amount of technological material for technical safeguarding of a landfill may be a maximum of 25% of the volume of all wastes deposited in a landfill each calendar year. Before the audit was completed the legislative amendment was not reflected yet in approved operating guidelines of audited operators of hazardous wastes landfills.

The reported amount of hazardous wastes is influenced also by the fact that records about the risk component of charges maintained by landfill operators are imprecise.

The total amount of collected risk charges should be equal to the total amount of hazardous wastes deposited in landfills according to comprehensive records multiplied by the amount of the risk charge for depositing the wastes into the landfill. However, this is actually not the case and the volume of money paid to SEF CR between 2002 and 2004 is lower by over CZK 748,285,000, i.e. by more than 68%.

The system of collection and payment of charges for depositing hazardous wastes into landfills is complicated, not transparent and not very effective.

If a landfill operator has not paid the collected charge to a municipality or SEF CR within the set time limit, the regional authority that issued consent to the operation of the landfill imposes a duty to pay the charge by means of a decision upon a motion of the charge beneficiary, and time calculates the relevant fine at the same. Charges and fines are recovered by tax offices having jurisdiction with respect to the land registry where the landfill is located.

SEF CR does not have the right to check the payment of charges. CEI, municipal and regional authorities are entitled to this. However, municipal authorities do not have a sufficient financial incentive to check the payment of the risk component of the charge, as it is not their income unlike a fine from an unpaid charge, which forms their income.

Municipal and regional authorities having jurisdiction with respect to place did not either check the payment of charges at all or did so only to a minimum extent. CEI conducts only random checks of the payment of charges by landfill operators.

Landfill operators do not send reports on charges to the final beneficiary SEF CR; hence SEF CR does not file motions with regional authorities to issue a decision to pay the charge and therefore charges cannot be subsequently recovered.

In the SR charges for the deposition of wastes are paid by payers to landfill operators within the meaning of an Act on charges for deposition of wastes. Landfills of wastes represent the necessary facilities for the management of wastes. Deposition of wastes into landfills represents approximately 48% of the disposal of all wastes. At the end of 2004 a total of 165 landfills were operated in the SR, of which 13 were designated for the deposition of hazardous wastes.

Within the meaning of the Act, income from charges for the deposition of wastes into landfills forms an income of the municipality in whose land registry the landfill is located. Income of the Environmental Fund comprises only revenues from fines for late payment of charges for depositing wastes into a landfill.

SAO SR did not conduct an audit of landfill operators, as it did not have powers to do so pursuant to the SAO SR Act. It used only information provided by SEI, which performed a total of 27 inspections of landfill operators. They were focused on whether landfill operators met obligations ensuing mainly from the Waste Act and the Act on charges for deposition of wastes. In one case shortcomings were ascertained related to the payment of a charge for the deposition of wastes to a municipality.

3. Fines for Breach of Obligations in Waste Management

In the CR CEI imposes fines for breaching obligations set forth in the Waste Act on legal entities and individuals authorized to do business and may determine measures and time limits for remedy through a separate decision at the same time. SEF CR receives 50% of the revenues from fines and the municipality in whose land registry legal regulations were breached receives the remaining 50%. If CEI imposes a fine on a municipality, the beneficiary of the whole fine is SEF CR.

CEI imposed fines for breaching individual provisions of the Waste Act at the lowest limit of the penalty range. The upper limits set forth in the Waste Act range between CZK 300,000 and CZK 10,000,000 (since May 2006 up to CZK 50,000,000).

The average amount of a fine imposed by CEI was only CZK 37,000. In appellate proceedings MoE CR even decreased the final amounts of fines. After an appeal was filed, the average amount of imposed fine was reduced from CZK 37,000 to CZK 34,000, i.e. a fine near the lowest level of the penalty range. According to a statement made by MoE CR the most common reasons for reducing fines was the fact that when determining the amount of fine, the first tier body had drawn on unreliably determined state of affairs and the appellate body thus found the fine unreasonably high.

Between 2002 and 2004 CEI imposed 1,910 fines pursuant to the Waste Act in the total amount of CZK 70,722,000. In this period a total of CZK 43,952,000 was credited to the CEI account. An audit of selected tax offices showed that the success rate of recovering fines was 64%.

Considering the relatively high number of cases when the Waste Act was breached and the low number of imposed fines, it is clear that the imposition of fines was not sufficiently effective as a penal instrument.

Vague legal regulations in the field of waste management and inaccurate definitions of terms often lead to frequent legislative amendments, leading to low effectiveness and high complexity of this legislation.

In the SR pertinent state administration bodies in charge of waste management impose fines pursuant to the Waste Act on legal entities and individuals authorized to do business according to gravity of the breach either up to SK 200,000, SK 500,000 or SK 5,000,000.

In 2003 state administration bodies in charge of waste management imposed fines for breaching obligations stipulated by the Act in the total amount of SK 6,129,000 and in 2004 in the amount of SK 7,899,000. Of this SEI imposed fines in the amount of 6,193,000 in 2004. In 2003 SEI imposed 18 fines for a breach of regulations pertaining to the management of hazardous wastes in the amount of SK 945,000; the highest imposed fine was SK 155,000. In 2004 SEI imposed 66 fines in the total amount of SK 2,162,000; the highest imposed fine was SK 130,000.

4. Financing Waste Management from State Funds

Between 2002 and 2004 the total expenditures for measures in waste management in the CR were CZK 1,453,458,000. Of this approximately 96% came from the funds of SEF CR and approximately 4% from the state budget.

Projects were funded from SEF CR as a part of programmes supporting restoration of old landfills, recovery and disposal of wastes and preparation of concepts related to the management of wastes.

Investment funds from the state budget were used to build an expert centre called the "Waste Management Centre". Non-investment funds from the state budget were used to prepare studies, reports and implementation programmes in conjunction with the Waste Management Plan of the Czech Republic and implementation of EC legislation.

In the SR subsidies from the state budget in the amount of SK 159,380,000 were provided for tackling issues of waste management and environmental load in 2003, of which SK 4,700,000 were allocated for hazardous wastes. In 2004 the amount was SK 85,131,000, of which only SK 2,000,000 were designated for hazardous wastes.

On 31 December 2002 the State Environmental Fund of the Slovak Republic was abolished. On 1 January 2005 an Environmental Fund was established, which provides funds through subsidies for tackling issues of hazardous wastes among others. In 2005 the Environmental Fund provided subsidies for waste management in the total amount of SK 75,400,000, of which SK 1,500,000 were earmarked for hazardous wastes.

Joint conclusions and recommendations

After customs controls were abolished at border crossings due to the accession to the EU, illegal import of wastes from neighbouring countries increased both in the SR and CR. In this context, intra-state controls of transboundary transport of wastes became crucially important. However, this situation was not sufficiently reflected in valid legislation in a flexible manner.

Pertinent state administration bodies (Slovak Environmental Inspectorate, Czech Environmental Inspectorate and customs bodies) lack sufficient powers to effectively prevent illegal transport of wastes.

With regard to the existing low effectiveness of fines, which are in practice imposed at the lowest level of the penalty range, there is a need to increase not only the upper limit, but also the lowest limit of fines.

Measures taken in waste management resulted neither in a decrease in the generation of hazardous wastes nor in an increase of their recovery and hence the amount of hazardous waste disposed of has not been reduced.

Vague legal regulations on waste management, which allow ambiguous interpretation, their frequent amendments, complexity and belatedness result in their low effectiveness.

Audits

The Joint Final Report on Coordinated Audits of the State Funds Management and Performance of International Obligations in Hazardous Wastes Treatment (Basel Convention) (2007)

State Funds Management and Performance of International Obligations in Hazardous Wastes Treatment (Basel Convention) No. 1266/05 (2006)

State Funds Earmarked for the Management of Dangerous Wastes No. 05/28 (2006)

Compliance in Preventing and Mitigating Forest & Land Fires (Indonesia)

Theme: Audits of Global and Regional Environmental Issues

Author: The Audit Board of The Republic of Indonesia (BPK-RI)

Outline

- Introduction
- Extend of the problem
- Audit Results
- Conclusions, lessons learnt and Recommendations

Executives

- Routine problem
- Local disaster becomes international disaster (ie 1997/1998 and 2005/2006)
- Mostly land-clearing
- Lack of commitment from area management
- Low of law enforcement
- Poor calculation of economic and ecology
- Losses
- 3rd largest tropical forest in the world
- 120,35 mil ha or 63% of Indonesia main land
- Value of investment US\$ 25,50 billion and with 1.385.150 people
- Share in national non tax revenue Rp 3,900 billion (2005 – 2006)
- Economic contribution for 48,8 million people who lived around forest
- Yearly average (within 2000 – 2005) 1,871 million ha forest in Indonesia (2 % of 88,495 mil ha remained) has been damaged
- Damaged of forest and land fires in 2005 approaches Rp 1,273 billion (for West Kalimantan and Riau province)

INTRODUCTION

Audit Objectives

- Assessing compliance of government agencies in charge of prevention and mitigation of forest and land fires

- Assessing compliance of government agencies in charge of mitigating impact of forest and land fires on the environment and social welfare

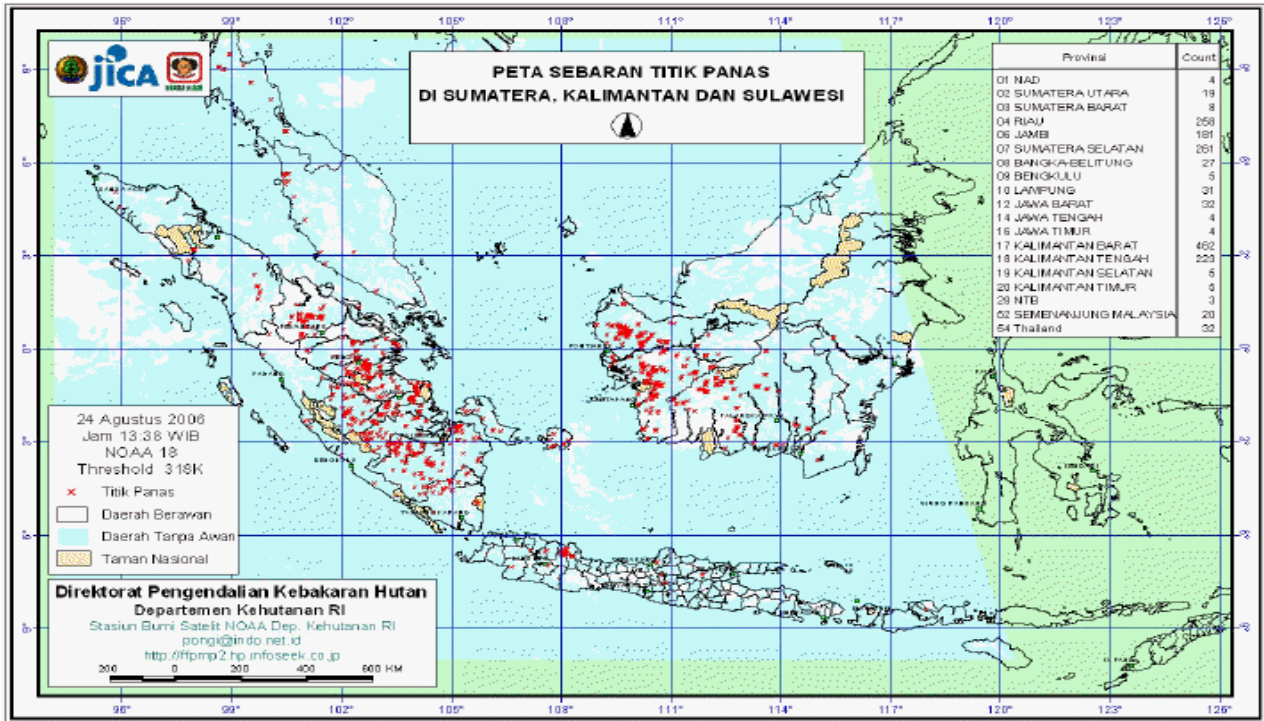
Audit Scope

- Forest Fires in 2005–2006
- Regulations and policies of:
 - Ministry of Forestry (MoF), State Ministry for Environmental Protection (MoE), Ministry of Agriculture (MoA), the Agency for National Disaster Management (ANDM)
 - Provincial governments and district governments in charge of prevention and mitigation of forest fires and environmental protection

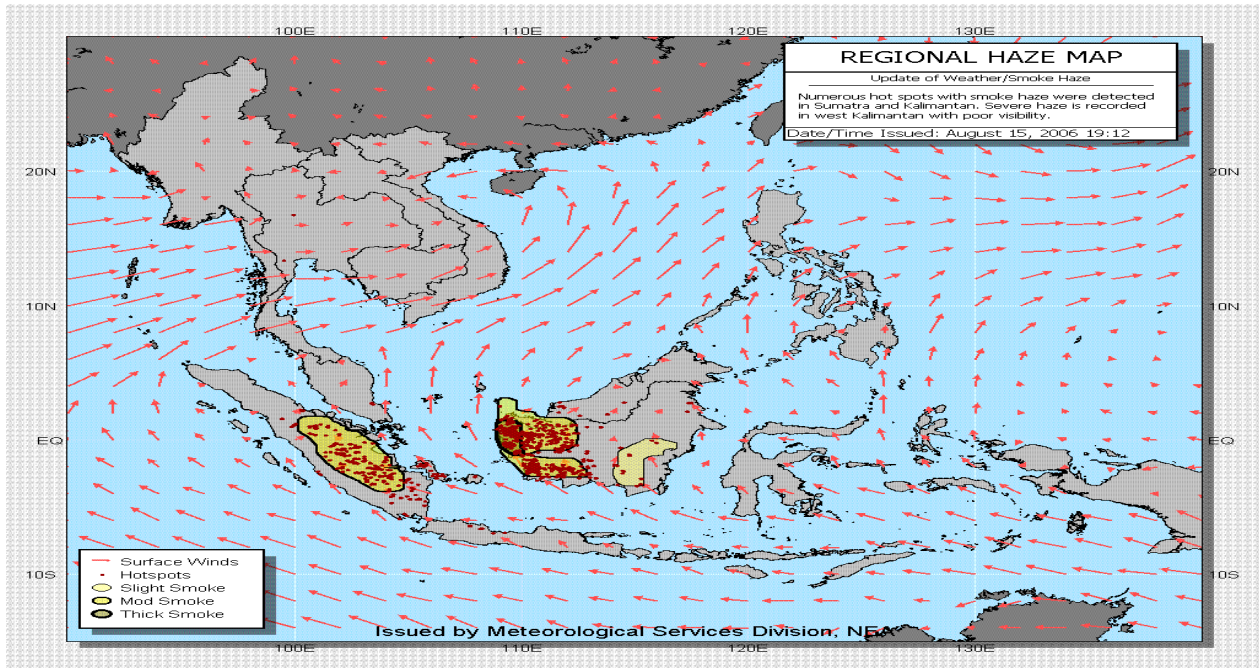
Audit Scope-Sampling Provinces

No	Province	Total Hotspot 2003 and 2004	2003	2004	2005	2006
1	Central Kalimantan	24,020	7,341	16,679	3,147	40,897
2	West Kalimantan	14,723	4,860	9,863	3,022	29,266
3	Riau	12,700	5,380	7,320	22,630	35,426
4	South Sumatra	12,363	3,367	8,996	1,182	21,734
5	East Kalimantan	4,552	1,752	2,800	N / A	N / A
6	South Kalimantan	4,133	1,588	2,545	756	6,459
7	Jambi	3,819	1,678	2,141	1,208	6,948

EXTEND OF THE PROBLEM
Large Area of Fires



Spread of Haze



Forest Fires in Large Company's and Community Land

Forest Function	2004 (ha)	2005 (ha)	2006 Sept (ha)
Productive Forests	886.00	82.00	1,244.10
National Park	1,261.59	595.05	1,285.75
Protected Forest	20.43	4,002.12	315.00
Special protected P	1,080.45	651.80	383.70
Ecotourism Park	33.52	4.50	350.50
Research Forests	9.00	0.00	2.00
Great Forest Park	47.00	0.00	30.00
Hunting Park	0.00	0.00	162.50
City forests	6.00	85.00	-
Community Forests	0.00	82.00	-
Total Forests	3,343.99	5,502.47	3,773.55

Land types	2006 Sept (Ha)
Community Land	5,265.57
PTP (State Own Companies)	22.00
Community plantation	349.00
National private plantation	1,393.00
Total Land	7,029.57

Source:
Ministry of Forestry 2006

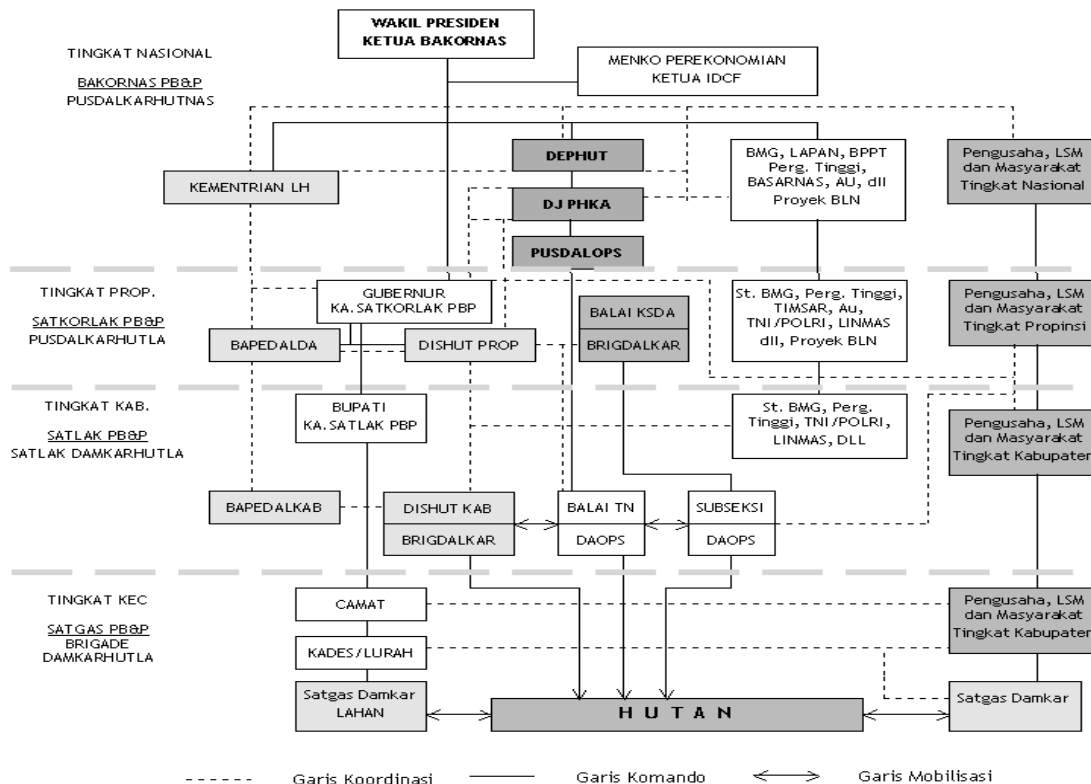
Impact of Climate Change

No	Province	Total forest loss (ha)	Loss in 1997 (ha)	Loss in 1998 (ha)
1	East Kalimantan	530,215.78	21,483.78	508,732.00
2	South Sumatra	34,318.88	34,299.88	19.00
3	West Irian	30,143.00	30,143.00	0.00
4	West Kalimantan	26,590.36	26,590.36	0.00
5	South Kalimantan	25,987.86	25,961.02	26.84
6	Lampung	21,311.17	21,311.17	0.00
7	Maluku	14,324.03	12,561.07	1,762.96
8	Central Kalimantan	12,722.24	12,632.24	90.00
9	West Java	11,735.02	11,735.02	0.00
10	Central Java	11,110.80	11,110.80	0.00

AUDIT RESULTS

Government Organizations: Everybody involved but not effective

Gambar 6. Kedudukan Brigdalkarhut dalam Sistem Pengendalian Kebakaran Lahan dan Hutan Nasional



What did governments do? Summary: No Compliance

No	Control	Audit Findings	Riau	Jambi	Central Kalimantan
1	PUSDALKARHUTLA	Coordination	Yes	50%	50%
	Satlakdalkarhutla	Early warning system	No	No	No
	Satkorlak PB	Fire surveylance	No	No	No
	Satlak PB	Fire fighters	No	No	No
		Equipment	No	No	No
		Funding	No	No	No
		Reporting system	No	No	No
2	Forestry Service Unit	Early warning system	No	No	No
	Provincial	Fire surveillance	No	No	Site Visit
	District	Fire fighters	Yes	Yes	Yes/No
		Equipment	50%	50%	50%/No
		Funding	27%	Yes	Small
		Reporting system	No	No	No
3	Agriculture Service Unit	Equipment	No	No	
		Funding	No	Small	V small
4	Companies	Proper licensing	No	No	No
		Proper facilities and equip	No	No	No
		Periodic reports			No
		Proper supervision	No	No	No
5	Law enforcement	Successful legal cases	No	No	No
6	Monitoring Environmental impact	Measuring impacts and loss	No	No	No
		Public announcement	No	No	No
		Rehabilitation	No	No	No

What did governments do? Not enough personnel

No	Province	National	Local	Total Personnel	Forest Area (million ha)	Person/Ha
1	Riau	240	15	255	3,906,333.00	15,318.95
2	Riau Island	30	60	90	0	
3	Jambi	210	20	230	2,179,440.00	9,475.83
4	South Sumatra	240	0	240	4,399,837.00	18,332.65
5	West Kalimantan	240	16	256	8,990,875.00	35,120.61
6	Central Kalimantan	210	45	255	10,735,935.00	42,101.71
7	South Kalimantan	120	0	120	1,839,475.30	15,328.96

In general, no adequate budget for controlling fires

No.	Province	Revenues from Forests (Rp billion)		Fire Budget (Rp billion)			
		2005	2006	2005	%	2006	%
1	Jambi	51.12	13.45	No	-	0.23	1,6
2	Riau	179.30	78.22	3.20	1.7	4.51	5,7
3	West Kalimantan	50.33	77.32	1.75	3.4	2.99	3,8
4	Central Kalimantan	337.07	114.57	0.77	No	1.97	
5	East Kalimantan	465.89	143.66	1.18	0.25	No	-
6	South Kalimantan	11.77	3.30	0.58	4.9	0.35	10,6
7	South Sumatra	4.03	2.66	0.76	18.8	1.66	62,3
	Total	1,099.51	289.52	8.25	0.75	11.22	4,04

Cause of the Problem

- Dry weather
- Insufficient and inconsistent policy
- Negligence of private companies
- Conflict of interest between bureaucracy and private companies

- Poor coordination among government agencies
- Ineffective law enforcement

Conclusions

- Government activities to prevent and stop fires as well as mitigating its impacts to the environment in general were not complied with regulations and policies
- Internal control for preventing and stopping fires in forest and land is almost non existence
- Risk management for assuring compliance with regulations and policies does not exist

Lessons learnt

- Forest and land fires are not only the responsibility of the central government
- The government need to establish an integrated forest and land fire management especially for preventing fires
- Improving effectiveness of law enforcement

Recommendations

- Improve control environment by:
 - Developing centers for controlling fires (one in Kalimantan and one in Sumatra)
 - Funded by governments, private companies, and donors
 - Managed by professionals
 - Provide authorities for stopping fires, bringing the offenders to law enforcement agencies, and raising funds from conservation and climate change /global warming funds as well as carbon markets
- Improve risk management:
 - Coordinate fire audit by government internal auditing agencies at the National, Provincial, and District/City Levels
 - Develop a new approach for enforcing law to companies

Environmental Auditing and the Hellenic Court of Audit (Greece)

Theme: Audits of Global and Regional Environmental Issues

Author: Theologia Gnardelli, Hellenic Court of Audit

I. The Elegktiko Synedrio – general information

According to the Constitution, the Elegktiko Synedrio (Hellenic Court of Audit) is part of the Greek judicial system. The main features are:

- **Appointment of the Court:** The Court's senior appointments—the President and the eight Vice Presidents—are made by the *Cabinet* on the advice of the Minister of Justice. Appointments are on the basis of merit and seniority and are from within the office.
- **Budget:** The Court's budget is prepared by the Court according to directives of the Ministry of Finance. It is submitted to this ministry through the Ministry of Justice. The Ministry of Finance submits the final form of the budget to Parliament for approval.
- **Skills of staff:** Staff are usually trained economists, lawyers or accountants who have passed examinations covering public law, accounting and economics. Senior staff are lawyers and economists.
- **Audit jurisdiction:** The Court has responsibility for: a priori audit of payment orders for government and public corporation expenditure; verification of the public accounts of state and public bodies and local authorities; auditing and deciding on the liability of public agents for losses and damage to the state through fraud and mismanagement; carrying out a legality examination of public works/supplies/services contracts made by the state public entities or local enterprises, whenever the cost exceeds a certain amount; reporting to the Chamber of Deputies on the State's Annual Financial Statement and Balance Sheet; monitoring state revenues; dealing with matters relating to pension legislation; and giving an opinion when called upon by a minister to do so. Performance audits are not currently carried out.
- **Access:** The Court has complete access to all accounting books and supporting documentation as well as staff in central and local government for the purposes of its work. It usually avoids performing on-the-spot verification unless there is strong suspicion of irregular management, with the exception of local government bodies and public entities. Refusal to co-operate with the Court is a disciplinary matter.
- **Reporting:** The Court reports to the Chamber of Deputies in two ways. The first is an annual report of findings, setting out the results of the Court's operations, its observations and suggestions for improvements to systems and the law. The second report is the annual Declaration, giving the Court's view on the Annual Financial Statement and the Balance Sheet of the state. The Chamber does not usually devote much time to the reports and there are no procedures for a detailed oral hearing on the reports. However, under the Constitution the Chamber is obliged to take the Declaration into consideration in giving its discharge to the state budget.
- **Key legislation:** The activities of the Court are mainly governed by two Presidential Decrees: 774/1980, which covers the rights of the Court and consolidates previous laws, and 1225/1981, which outlines Court procedures. More detailed audit procedures

and rulings are promulgated in the decisions of the Plenum of the Court, its supreme authority.

II. The role of the Hellenic Court of Audit in environmental auditing

The Hellenic Court of Audit does not carry out performance audit.

Nevertheless, by verifying the financial activity of the Public Administration, in general, either a priori or a posteriori, it actually interferes in every activity of various bodies (State, local administration agencies, other legal entities, subject to its competence by special laws) that implies a financial result, i.e. revenues or expenses.

It has also the possibility, through the corresponding financial activities (receipts or payments), to examine directly the financial action itself and indirectly (incidentally) every other relevant administrative act, supporting or affecting it in any way, so as to find out whether they are in accordance (among others) with the provisions for the nature protection, or the each time existing environmental conditions.

Due to the fact that almost every administrative act produces generally a financial result, as defined above, subject to the verification of the Hellenic Court of Audit, it is evident that the Court's interference in the environmental activities is broad and can be important.

Within the frame of the co-financed by the E.U. and the Greek State operational programme "Environment", the Elegktiko Synedrio has already performed: an audit related to water protection, having as objective the "monitoring of swimming waters' quality" and an audit on the former lake Karla rehabilitation, focused on the "Karla water reservoirs and related works" (of a total amount of 110.000.000 euros) and the "Technical consultant for the lake Karla rehabilitation" (of a total amount of 1.555.000 euros). Another environmental audit that has been conducted is that concerning the implementation of the MARPOL convention in Greece and particularly its provisions for "preventing and dealing with pollution from ships at sea and in the ports".

III. The Marpol audit: Preventing and dealing with marine pollution

i. Background

Anthropogenic marine pollution constitutes a major risk to the seas, such as the Mediterranean. Greece, a country which is surrounded by sea and has many islands, became sensitive to this issue long ago and has been strongly fighting against marine pollution.

There are two international conventions that govern this area: the International Convention for the Prevention of pollution from Ships (MARPOL) and the International Convention on Oil Preparedness, Response and Co-operation (OPRC).¹ The MARPOL's objective is to eliminate pollution of the sea by oil, chemical and other harmful substances that might be discharged during the course of a ship's operations. The OPRC convention was instigated as a consequence of the Exxon Valdez disaster in 1989, and includes co-operation between signatories in dealing with pollution incidents.

The National Audit Office (NAO) of the United Kingdom and the Netherlands Court of Audit (Algemene Rekenkamer) decided to join effort in preparing an environmental audit on marine pollution that could be conducted by both of their audit institutions as well as other audit institutions in co-operation. The Netherlands Court of Audit, sub-co-ordinator of the EUROSAI Working Group on Environmental Auditing for the Western European sub-region, has extended the invitation to SAIs outside its own subregion with a letter dated from July 2000.

¹ The MARPOL convention has been ratified by Law 1269/1982 (State Gazette 89 A') and the OPRC one by Law 2252/1994 (State Gazette 192 A')

After considering the matter carefully, the NAO and the Netherlands Court of Audit came to the conclusion that conducting an audit of “Preventing and dealing with pollution from ships” would make the most suitable and interesting subject for the audit, because of its substantial environmental and economic interest in many countries and the fact that preventing and dealing with pollution from ships has been regulated in international agreements like MARPOL, that has been ratified by a great many countries all over the world; this provided with a common starting point for the audit.

During several meetings, the MARPOL group discussed as many aspects of the co-ordinated audit—both its contents and organisational matters—as it could:

- a. Scope of the audit:** the co-ordinated audit was basically a performance audit. For some of the audit institutions participating in the audit (such as the Hellenic one) it was either impossible or not customary to address the issue of government performance without first addressing the issue of government expenses. For this reason, it was agreed that all audit institutions would answer the following questions in their audit: a) How much central government money is involved in preventing and dealing with pollution from ships at sea and in ports? and b) What is the legal basis for these expenditures? Individually audit institutions could decide to add a third question to their audit: c) Are the expenditures made for preventing and dealing with pollution from ships justified? The topics that would be covered by the co-ordinated audit were the following: a) Policy and co-operation between national authorities, b) Government measures to prevent pollution from ships, c) Government measures to deal with pollution from ships and d) Tracing, prosecuting and punishing offences.
- b. Audit criteria:** All participating audit institutions agreed that in order for the audit to contain an element of comparison, they should use the same audit criteria. Some of the audit criteria were inspired by international agreements (the MARPOL 73/78 Convention and the OPRC Convention), others could be qualified as common sense criteria. Although international agreements have inspired the audit criteria, this co-ordinated audit was not a compliance audit. The objective of the audit was to assess how each of the countries involved measures up to international 'best practice', not whether or not each country has fulfilled its obligations under international law. All audit institutions should communicate the list of audit criteria to their own governments. The formulation of audit criteria was discussed during the MARPOL group's meetings. The general impression of the group was that these criteria seemed reasonable as a description of best practice.
- c. Products:** The co-ordinated audit would result in four categories of products:
 - national reports, describing and assessing the situation in each of the countries involved in the audit.
 - a joint report describing best practice in all countries involved, co-authored by all participating audit institutions.
 - a joint report describing how other audit institutions could copy out audit, if they would want to examine how their country's performance in preventing and dealing with pollution from ships measures up against the performance of other countries.
 - a joint report evaluating the audit—and co-operation process itself, with suggestions for other audit institutions that would want to conduct a co-ordinated environmental audit.

ii. **Audit conducted by the Elegktiko Synedrio**

The Hellenic Court of Audit, as member of the International Organisation of Supreme Audit Institutions (INT.O.S.A.I.) as well as of the regional one, that is the European Organisation of Supreme Audit Institutions (EUR.O.S.A.I.), according to Article 248(3) of the EC Treaty (following the Amsterdam Treaty enumeration) and its obligation of co-operation with the sister Audit Institutions and especially the European ones, has accepted the invitation addressed by the Algemene Rekenkamer to participate in this co-ordinated audit based around an international environmental accord as part of the work of the INTOSAI Working Group on Environmental Auditing, having as a subject the topic of preventing and dealing with pollution from ships.

In order to fulfil this commitment, the President of the Court pursuant to Article 135 of Presidential Decree 1225/1981 'on execution of the provisions concerning the Court of Audit' assigned four judges (two second rank and two first rank judges), to carry out the audit and be in touch with all the services competent for or involved in the question of preventing and dealing with pollution from ships, as well as, if necessary, with the European Union's services and the sister Audit Institutions.

From April 2001—December 2002, the Elegktiko Synedrio (Hellenic Court of Audit) conducted the audit into pollution by sea ships so as to be able to answer the following questions:

- Is Greek policy to prevent pollution by sea ships effective?
- Is Greek policy to combat pollution by sea ships effective?
- How can any ineffective action in the prevention and combating of pollution by sea ships be explained?
- What improvements can be made?

The Elegktiko Synedrio restricted its audit to the steps taken by the Greek central government, that is the Ministry of Mercantile Marine and the one for the Environment, Physical Planning and Public Works, although ship-owners and port authorities play a key role in tackling pollution by sea-going vessels. Both Ministries and especially the one of Mercantile Marine obliged, for which the Elegktiko Synedrio expresses its thanks. They were willing to help the audit team with its work.

The audit began with a questionnaire addressed to both Ministries, based on the conclusions of the MARPOL audit group of SAIs' representatives during several meetings in the Hague and London. In this questionnaire, four categories of audit criteria were recognised:

- i. Criteria for policy and co-operation between national authorities,
- ii. Criteria for government measures to prevent pollution from ships (surveys, inspections, handing in of wastes)
- iii. Criteria for government measures to deal with pollution from ships (contingency plans and organisations, detection of pollution from ships, cleaning up of pollution from ships),
- iv. Criteria for tracing, prosecuting and punishing offences.

After reception and elaboration of the answers on the aforementioned questionnaire, the audit team visited (on 25 November and 2 December 2002) in the Ministry of Mercantile Marine: firstly the Marine Environment Protection Division (the main responsible service for marine pollution prevention and the combating of marine pollution incidents, established in 1972) and secondly the Branch for Merchant Ships' Surveys, responsible for planning and carrying out surveys and inspections on merchant ships.

The main objective of the audit was to describe the 'best practice' in preventing and dealing with pollution from ships, drawing from the real life experiences of our country.

iii. Report structure

In its report (finalized in March 2003) the Hellenic Court of Audit presents the preventive policy on the issue of marine pollution from ships (part II of the report). Firstly, this concerns the conducting environmental surveys and inspections of ships. The Elegktiko Synedrio assessed whether the involved services, more particularly the Merchant Ships' Inspection Section, adequately implemented checks of ships under the Hellenic flag and ships sailing under foreign flags.

The report then looks into the actions taken against marine pollution, evaluates whether the contingency plan is applied for detection of spillage incidents, whether countermeasures are effective, whether the control policy is evaluated and amended if necessary. The audit has also covered the aspects of investigation and prosecution of those responsible for marine pollution (availability of manpower and resources, administrative and criminal enforcement, legislation and enforcement results).

iv. Audit findings—conclusions

There is clearly a good level of knowledge of all the relevant legislation shown by all the involved authorities in the prevention of pollution from ships. Both the MARPOL and the OPRC Conventions are well-understood and adequately enforced. Success lies with detailed Circulars explaining in full all relevant legislation; this assumption should not, however, undermine the role of the devoted and well informed officers of the Coast Guard Agency and personnel of the Ministry of Mercantile Marine. Thus, the following ought to be taken simply as recommendations of making a few points stronger.

Environmentally sensitive areas and especially those supporting rare species ought to be taken into consideration while planning so that stricter controls apply; this should happen by enforcing the existing legal framework of environmental protection in a more comprehensive way, i.e. by embodying regulations for wildlife preservation into the N.C.P.. Of course, environmentally sensitive areas ought to be clearly defined depending on a scale of pollution risk using as criteria development and pollution-carrying activities in the area, frequency of accidents as well as the nature of the ecosystem under protection.

Another important issue is public awareness; the public, as the main user of sea water either for recreation or making a living out of it should be informed of the rights and wrongs in dumping and polluting. Practices of vessels are not always legal, but the public remain usually unaware of this; the same applies as to which authority should be contacted and what are generally the legal means of action against possible or actual forms of pollution.

The involvement of a single agency, that is the Coast Guard Agency, in pollution prevention entails certainly the advantage of co-ordinated action, but carries with it the risk of inefficiency once personnel numbers are low. It is imperative that personnel numbers of the Coast Guard Agency involved in prevention of pollution from ships raise considerably taking into account Greece's vast coastline, the huge number of islands and the use of the Aegean Sea as intermediate route by a large amount of vessels.

Experience acquired while researching and combating marine pollution caused by oil and other harmful substances points out the necessity to realise our responsibility to protect the sensitivities of the ecosystem. We also need to study the characteristics of our national reality searching continuously for the golden rule between the socio-economic growth and environmental values, as they both support human well-being that should constitute the hard core of our modern political philosophy. Keeping in mind the protection of the marine environment, the creation of the right

political environment and, mainly, the direct and effective abatement of marine pollution, each progressive political movement may aim at the recognition of the *individual* and *collective right* to the environment that would include its judicial protection. The sensitivity of the Greek State, as far as the treatment of a suitable institutional and legislative framework is considered, has already shown positive results. Nevertheless, there is still work to be done. And continuous vigilance.

Marine Resources Protection / Protección de los Recursos Marinos (Mexico)

Theme: Audits of Global and Regional Environmental Issues

Author: Dr. Fidel Roberto Rivera Lugo, Superior Audit Office of Mexico

Spanish version follows

The Superior Audit Office of Mexico prepared the (116) audit “Marine Resource Protection” fulfilled to The Secretary of Marine-Mexico’s Navy on the Public Account 2005.

The Political Constitution of Mexico establishes that the State must guarantee the dominion of the natural resources, as well as to plan, to manage, to coordinate and to guide the national economic activities, and take care of self preservation of the resources and the environment.

Objectives

The objectives of the audit were to make a performance review of the activities on prevention and control of pollution in the sea, to watch over and to protect the marine environment, its connection with the goals; its impact in the restitution and the prevention of the marine ecosystems; the implementation processes; the budget resources for this proposals; and the perception of the citizenship.

The audit evaluated the actions fulfilled by The Secretary of Marine—Mexico’s Navy in the year 2005, in prevention and control of the pollution in the sea, as to watch over and protect the marine environment, as well as to check the expenses registered.

There is an environmental damage at the coasts, consequences of urban and industrial wastes, such as hydrocarbures, the immoderate fisheries and the manglar fells.

Data estimates that 65% of residual water is pumped at the sea without treatment. Annually, between .1% and .2% of the oil hydrocarbon world production (3 million tones) pumped into the sea; 45% of the marine pollution proceeds from urban and industrial waste. In 2001, 30% of the manglar’s forest was destroyed or changed to other uses.

Antecedent

In 1939 The National Marine Department was founded. Since then it participates in several international treaties.

The principal legal instruments and programs related with the marine environment are these.

These dispositions show that Mexico’s Navy has the responsibility in prevention and control of the marine pollution, and the vigilance and protection of marine environment, to contribute its preservation, together with other government agencies.

Main findings

Prevention

The National Contingency Plan for Combat and Control by Hydrocarbon Spilling and Another Harmful Substances in the Sea (PNC), has been implemented since 1981 consequence of Ixtoc incident in 1979. Diverse federal public offices and local governments are involved in the operations of PNC.

In 2005, the inspected entity fulfilled 6 shams in both coasts, and one together with the USA.

It also, organized 261 meetings with agent federal public offices and local governments to prepare actions in case of regional and local incidents. However, it wasn't possible to review these actions, because they didn't program meetings to fulfill each navy command.

The Secretary of Marine operates the Ecological Protection at Coast States Permanent Program with the objective to establish prevention measures to avoid marine pollution. However, it hasn't disposed of a program, which can measure its efficiency.

In summary, this agency doesn't design parameters and missing information to measure the impact of its actions in the prevention of the marine pollution. These indicators determined a review at the operative process only.

Control

In 2005, The Secretary of Marine fulfilled 3,539 operations of control and manage solid and liquid wastes in harbors, beaches, navigation channels and marine arrangements, as well as 13 operations of gathering hydrocarbon wasting. The Mexico' Navy interceded in these operations to pick up 1,342,649 liters and 30,435 tons of wastes in the sea, meaning an average annual increase of 7.5% and 52%, respectively. (lo

As well as gathering 170,940 liters and 117.9 tons of hydrocarbon wastes in the sea, meaning an average annual increase of 34.4% and 72.4%, respectively.

However, agency audit doesn't have statistical information and parameters.

Opportunity to authorize dumping petitions.

The Secretary of Marine authorized 42 dumping petitions of 43 applications presented. The audit can't prove if the dumping was made in the previous date because The Secretary of Marine didn't have recordings.

Vigilance

The Secretary of Marine fulfilled 15,358 voyages and trips. Its indicators measure the operation processes only.

In 2005, Mexico's Navy detected 21 possible transgressors of environmental norms and wrote up the corresponding documents.

Reports of water coast quality

The reports of water coast quality determine causes, origin and levels of marine water pollution; these reports measure the pshyco-chemical and bacteriology analysis, but not heavy metals. In 2005 The Secretary of Marine prepared 315 reports distributed in 50 ports, harbors, beaches and navigation channels that make residual water discharged in both oceans.

The Superior Audit Office prepared a valid sample with the reports of 15 places (30 per cent). Its results show in this slide.

Nevertheless, The Secretary of Marine didn't carry out a co-ordination appropriate with other public offices for implementing actions and repair affected areas.

Protection

In 2000 Mexico registered 488,154 hectares of manglar's forest, this is, 65% less than in 1970 (1,500,000 hectares); the inspected entity implemented this program with the prevention and restoring objective marine ecosystem. With the auditory works it observed that in 2005 the naval commands made the diagnosis and determination the main actions to

maintain the marine ecosystems; but not defined goals and indicators, neither programming its activities.

Dictamen

In opinion of the Superior Audit Office of Mexico the Secretary of Marine doesn't have a program of prevention, control, vigilance and protection of the marine environment, as well as indicators and information of how to measure its impact or evaluate the contribution to restore and preserve the marine ecosystems. Its lack of registers to account the budget resources for this purposes; as well as the opinion polls orientated to citizenships.

Emited actions

The Superior Audit Office of Mexico issued 25 observations that generated 29 actions aimed to:

11 to contribute the establishment of review performance system.

4 to stimulate the implementation of better practices in the government.

12 to propitiate the efficiency and efficacy in the public actions.

2 to strengthen the control mechanisms in the public management.

Protección de los Recursos Marinos (Mexico)

Se presentan los principales resultados de la auditoría núm. 116 “Protección de los Recursos Marinos”, practicada por la Auditoría Superior de la Federación (ASF) de México a la Secretaría de Marina (SEMAR), de la Cuenta Pública 2005

.La Constitución Política de los Estados Unidos Mexicanos señala la obligación del Estado de garantizar el dominio directo de los recursos naturales de la plataforma continental y los zócalos submarinos, así como planear, conducir, coordinar y orientar la actividad económica nacional de manera integral y sustentable, que fortalezca la Soberanía de la Nación, cuidando la conservación de los recursos productivos y el medio ambiente.

Objetivos

Los objetivos de la auditoría fueron realizar una evaluación al desempeño de las acciones realizadas para prevenir y controlar la contaminación marítima, y vigilar y proteger el medio ambiente marino, su vinculación con las metas de mediano y corto plazos; su impacto en la restauración y prevención de los ecosistemas marinos; los procesos implementados para su ejecución; la aplicación de los recursos presupuestarios destinados a estas acciones; y la percepción de la ciudadanía en el cumplimiento de las mismas.

La revisión comprendió el análisis de las acciones realizadas por la Secretaría de Marina-Armada de México para prevenir y controlar la contaminación marítima, y vigilar y proteger el medio ambiente marino, así como verificar los registros presupuestarios, reportados en la Cuenta Pública de 2005.

Existe un deterioro en los ambientes costeros generado por la contaminación de las aguas urbanas e industriales, derrames de petróleo, la extracción pesquera no selectiva y la tala de los bosques de manglar que han sido reconvertidos a otros usos o se encuentran degradados.

Se calcula que el 65% de las descargas de aguas urbanas residuales son vertidas al mar sin previo tratamiento. Anualmente entre el 0.1% y el 0.2% de la producción mundial de petróleo, (3 millones de toneladas), es vertido al mar; 45.0% de la contaminación del mar por hidrocarburos procede de tierra, en forma de desperdicios domésticos e industriales. Según datos de 2001, un 30.0% de los bosques de manglar de México han sido reconvertidos a otros usos o se encuentran degradados.

Antecedentes

El 1939 se creó el Departamento de Marina Nacional. Desde entonces, como Secretaría de Marina-Armada de México participa en diversos convenios y tratados internacionales.

Diversas disposiciones legales y programas conforman la actuación de la Secretaría de Marina en lo referente a la protección de los recursos marinos.

Estas disposiciones indican que la Armada de México tiene la responsabilidad para prevenir y controlar la contaminación marítima, así como vigilar y proteger el medio marino, para contribuir a la preservación, junto con otras oficinas públicas.

Principales Resultados

Prevención

El Plan Nacional de Contingencia para Combatir y Controlar Derrames de Hidrocarburos y Otras Sustancias Nocivas en el Mar (PNC), fue implementado desde 1981 como consecuencia del incidente del Ixtoc en 1979. Diversas oficinas públicas y gobiernos locales participan en la ejecución del PNC.

En 2005, la entidad fiscalizada, practicó seis simulacros del PNC en ambas costas del territorio nacional, de los que uno se ejecutó conjuntamente con Estados Unidos de Norteamérica.

También, llevó a cabo 261 reuniones con representantes de las oficinas públicas federales y los gobiernos locales para preparar acciones en caso de incidentes contaminantes. Sin embargo, no fue posible evaluar estas acciones, en virtud de que no se programaron dichas reuniones para ser cumplidas por cada mando naval.

La Secretaría de Marina opera el Programa Permanente de Protección Ecológica de los Estados Costeros con el objetivo de establecer medidas preventivas para evitar y controlar la contaminación del mar. Sin embargo, no ha dispuesto de un programa con el cual pueda medir su eficiencia.

En resumen, esta dependencia del Gobierno Federal no definió parámetros y careció de información para medir el impacto de sus acciones en la prevención de la contaminación marítima. Sus indicadores están referidos solamente a evaluar sus procesos operativos (gestión).

Control

En 2005, la Secretaría de Marina realizó 3,539 operaciones de control y disposición de desechos sólidos y líquidos en puertos, playas, canales de navegación e instalaciones propias; así como 13 operaciones de recolección de derrames de hidrocarburos. La Armada de México intervino en estas operaciones recolectando 1,342,649 litros y 30,435 toneladas de desechos en el mar, lo que significó un crecimiento promedio anual de 7.5% y 52.0% respectivamente; asimismo, recolectó 170,940 litros y 117.9 toneladas de desechos de hidrocarburos, cifras que significaron un crecimiento promedio anual de 34.4% y 72.4%, respectivamente.

No obstante, la entidad fiscalizada careció de información estadística y de parámetros que permitieran medir el impacto de sus acciones.

Oportunidad en la autorización de las solicitudes de vertimiento de desechos al mar

La Secretaría de Marina autorizó 42 de las 43 solicitudes de vertimientos presentadas por empresas particulares y públicas. Cabe señalar que la ASF no logró constatar si los vertimientos autorizados se realizaron en la fecha prevista por los solicitantes, ya que se carece de registros en esta materia.

Vigilancia

La Secretaría de Marina realizó 15,358 recorridos de vigilancia en las costas mexicanas; sin embargo, sus indicadores están referidos a evaluar solamente sus procesos operativos.

En 2005 la SEMAR detectó 21 posibles infractores de la normativa ambiental del medio marino, a los que conforme al procedimiento establecido les levantó el acta correspondiente.

Informes de la calidad del agua costera

Los informes de calidad del agua tienen por objeto determinar las causas, origen y niveles de contaminación de las aguas marinas; estos reportes establecen parámetros físico-químicos y bacteriológicos que miden aguas marinas, pero no incluyen el análisis de metales pesados.

En 2005, la SEMAR elaboró 315 informes distribuidos en 50 lugares tales como: puertos de altura y de cabotaje, playas y canales de navegación, con descargas de aguas residuales al mar del Océano Pacífico y Golfo de México.

La Auditoría Superior de la Federación preparó una muestra con los informes de calidad del agua de 15 lugares, (30 por ciento). Sus resultados se muestran en la siguiente lámina:

De los 50 lugares donde se aplicaron los estudios, se detectaron niveles de contaminación de coliformes fecales en 7 zonas costeras de fueron superiores a los límites máximos autorizados (200.0). Respecto de los datos de los Sólidos Suspendidos Totales en 6 zonas costeras también se registraron niveles de contaminación superiores a los límites máximos autorizados (30.0).

No obstante la utilidad que representan estos informes, la Secretaría de Marina no tiene una adecuada coordinación con las autoridades competentes para remediar las áreas contaminadas.

Protección

En 2000 México registró 488,154 hectáreas de selvas de manglar, esto es, 65.1% menos que la existente en 1970 (1,500,000 hectáreas). La entidad inspeccionada implementó este programa con el objetivo de prevenir y restaurar los ecosistemas marinos. Con los trabajos de auditoría se observó que en 2005 los mandos navales registraron acciones de diagnóstico y de determinaron las acciones para el mantenimiento de los ecosistemas marinos; pero no definió metas e indicadores, tampoco se programaron las fechas de estas actividades.

Dictamen

En opinión de la Auditoría Superior de la Federación la Secretaría de Marina no cuenta con un programa de prevención, control, vigilancia y protección del medio ambiente marino, así como indicadores e información de cómo medir el impacto de sus acciones o evaluar su contribución para restaurar y preservar los ecosistemas marinos. La falta de registros para contables de los recursos presupuestarios destinados a estos propósitos; así como las encuestas de opinión de los ciudadanos sobre las acciones que realiza el ente fiscalizado.

Acciones Emitidas

La Auditoría Superior de la Federación emitió 25 observaciones que generaron 29 acciones estada dirigidas:

- 11 para contribuir al establecimiento de sistemas de evaluación del desempeño.
- 4 para promover la implantación de mejores prácticas gubernamentales.
- 12 para propiciar la eficiencia y eficacia de la acción pública.
- 2 para fortalecer los mecanismos de fiscalización en la gestión pública.

A Performance Audit on Biodiversity — Some Lessons Learned (Norway)

Theme: Audits of Global and Regional Environmental Issues

Author: Office of the Auditor General of Norway

The Office of the Auditor General of Norway's investigation of the authorities' efforts to survey and monitor biological diversity and to manage protected areas¹

Background and audit planning

The Norwegian Ministry of Environment has stated that maintaining the biological diversity is one of the biggest environmental challenges. Norway ratified the UN Convention on Biological Diversity (CBD) in 1993, and under article 6 Norway was obliged to develop a national strategy for the conservation and sustainable use of its biological diversity. The main elements in the Norwegian strategy were to establish a new knowledge-based management system for biological diversity, and a strengthened management of protected areas. A national surveying and monitoring program was to constitute the cornerstone in the new knowledge-based management system.

The objective of the investigation of the Office of the Auditor General (OAG) has been to assess the authorities' efforts to survey and monitor biological diversity and to manage protected areas. This has been done by evaluating:

- How far government administration has progressed in its efforts to survey and monitor biodiversity within the knowledge-based management system
- The extent to which state-owned protected areas are managed in line with the conservation objectives

The investigation primarily deals with the measures that five different ministries have implemented from 1997 to 2006. More specifically, we audited how the ministries contributed to the national surveying and monitoring programme. The protected areas were investigated by reviewing the management of national parks, landscape conservation areas, and nature reserves.

The main criteria used in the audit were

- The CBD, article 7 (Identification and monitoring) and 8 (In-situ preservation)
- The national strategies for conservation and sustainable use of biological diversity
- Reports to the Norwegian Parliament related to biodiversity and sustainable development, including Parliamentary Committee recommendations

Methodology

The audit was conducted using traditional methodological tools such as document analysis and interviews. In addition, other tools were a web-based questionnaire, appointment of an expert panel, field inspections with specialists, and an expert study.

¹ Audit report in full (in English): http://www.riksrevisjonen.no/NR/rdonlyres/FFBB1A9B-6063-42E8-9574-5BE9755123E4/0/Eng_Doc_3_12_2005_2006.pdf

The OAG made use of a *web-based questionnaire* targeted at the county governors concerning the management of state-owned protected areas. The questionnaire survey was implemented in two stages: stage 1 identified threatened and non-threatened protected areas, while stage 2 constituted a follow-up of the threatened areas. In stage 2 the county governors received a form for each area reported threatened in stage 1. The county governors were then asked to identify the factors that threatened the areas, the consequences of the threats, and the measures that were necessary to preserve conservation value. The survey gained 100 in the response rate.

An *expert panel* was appointed to give assistance in the quality assurance of the audit criteria and facts section and to give advice during the progress of the project. A key criterion for selecting panel members was professional authority in the respective disciplines. Priority was also given to those who had experience from and insight into government administration, but who were not participating in working groups in the programmes that were audited. The panel consisted of specialists from the Department of Public Law at the University of Oslo, the Museum of Science at the Norwegian University of Science and Technology, the Department of Marine Biology at the University of Bergen, the Department for Ecology and Natural Resource Management at the University of Life Sciences, and the Norwegian Institute for Nature Research.

To acquire a greater understanding of the relevant challenges, seven protected areas were *inspected*. The expert panel helped us select the protected areas and to find additional specialists with good knowledge of these areas. The basis for the selection of the areas was that they should serve to illustrate common challenges that the environmental authorities meet in their practical management of such areas. On commission from the OAG, the specialists prepared a site report from each area after inspections had been made. The content of these reports was used as input to the case studies presented in the OAGs report.

The OAG asked the Norwegian Institute for Water Research to *calculate the costs* of conducting marine surveys that would satisfy international and national requirements. The purpose of this calculation was to provide a figure of what such surveying may cost, as the ministries involved did not seem to have a clear notion of what the expenses might be.

Findings

The findings are structured according to the findings related to

- the national surveying and monitoring programme
- the protected areas

The national programme as the cornerstone of the knowledge-based management system

Sufficient specification of goals in the knowledge-based management system?

The investigation showed that during the five years that had passed since the new management system was proposed, the key elements in the system and the types of initiatives and activities had not been specified. In addition, the scope of the initiatives/activities had not yet been defined. Consequently it was difficult to determine whether or when the system had been completely established.

Was the National Programme the cornerstone in the knowledge-based management system?

The National Programme for Surveying and Monitoring Biological Diversity was to constitute the cornerstone of the knowledge-based management system. However, the investigation showed that the ministries participating in the national programme had different perceptions of what the programme contributed to. For instance, the Ministry of Petroleum and Energy expressed that it thought it would achieve better results by assigning priority to its own projects. It has therefore hardly allocated any resources to the programme. In addition, the efforts of the remaining four ministries' to identify important areas for biodiversity have to a large extent been carried out under the auspices of the sectors rather than as part of the national programme.

Based on the fact that the involved ministries viewed their sectoral initiatives as the primary efforts in the field, the OAG raised the question as to whether the national programme could be referred to as the cornerstone of the knowledge-based management system.

Sufficient decision-making basis for the inter-ministerial committee?

According to its mandate, major tasks for the inter-ministerial committee in the national programme were to:

- identify ongoing surveying and monitoring activities,
- define significant gaps in these activities,
- suggest expansions and changes to existing activities and, if appropriate,
- supplement the programme with new measures.

The committee was also intended to suggest priority activities/initiatives to ensure that they would form a cohesive national programme. In order to provide a decision-making basis for the inter-ministerial committee, working groups were set up within the various thematic areas.

The mandate for the working groups was comprehensive and several of the members in the groups said that they had too little time to conduct the assignment. As they saw it, the actual need for measures and financing within surveying and monitoring had not been exhaustively disclosed in the working groups' reports or in any other document.

The Ministry of Agriculture and Food seemed to support the view that the working groups were given short deadlines. It maintained that a common feature of the reports seemed to be that the working groups' proposed measures were based upon previous plans. The ministry also pointed out that the quality assurance of the groups' suggestions varied, and that some reports were not final and formally approved as the groups' assessments of the listing. The Ministry of Education and Research, the Ministry of Fisheries and Coastal Affairs and the Ministry of Petroleum and Energy also emphasised the importance of not regarding the working groups' suggestions for measures as the final answer.

However, as far as the OAG can see, the inter-ministerial committee has not had other proposals drawn up to support its priorities. Since the ministries in question have not regarded the suggestions of the working groups as anything other than input of varying importance, the OAG questioned whether the inter-ministerial committee has had an adequate decision-making basis for its proposal for prioritised activities/programmes for a cohesive national programme.

Sufficient cost estimates of the programme?

According to the inter-ministerial committee, the costs of the national programme were estimated at NOK 25 million annually in the period 2004–2007. However, the Ministry of the Environment informed the OAG that this represented an amount that the ministries had reached together and was based on the funds they thought it would be realistic to provide.

The working groups for coastal and marine areas and for the coordination of data have made a reliable cost assessment of the measures their proposed measures. However, there were no corresponding cost estimates for the measures that were suggested within the thematic areas forests, cultural landscape, freshwater, and endangered species and habitat types. Since cost-estimates neither had been made for the overall objective of the national programme nor for the specific measures that were proposed within the thematic areas above, the OAG raised questions about the planning of the programme.

Additional needs for surveying and monitoring activities?

The investigation also showed that the surveying efforts in the national programme often represented minimum solutions such as systematising existing material and making it available. Little or no new surveying has been carried out. Nonetheless, both specialists and government administration agreed that new surveying is necessary, and that much remains to be done. On commission from the OAG, the Norwegian Institute for Water Research has made an estimate of the costs of surveying biodiversity in marine areas. The study indicates that NOK 120 million is required in order to build up knowledge status in the coastal areas, NOK 80 million of which is visualised as surveying at the species level.

The investigation did not conclude that the national programme showed low goal achievement. However, the OAG questioned whether the national programme had become the cornerstone as envisaged to the Parliament. In the light of inadequate financial investment for the implementation of the programme, the investigation showed that Norway was still facing great challenges in the field of biodiversity. The Parliament has stated several times that Norway must have high ambitions for its national environment policy. The OAG questioned whether the measures implemented through the national programme have sufficed to fulfil these ambitions.

Management of state-owned protected areas

As of 1 January 2006, about 12.5 per cent of Norway's mainland area was protected in accordance with the Nature Conservation Act. However, the government itself reported to the Parliament in 2005 that the goal of protecting a representative selection of Norwegian nature had not been achieved. In addition, it stated that the largest part of the protected areas covered unproductive zones that contained relatively few species.

The OAG's investigation showed that the proportion of protected areas that are threatened has increased. According to the Directorate for Nature Management, 18 per cent of these areas were threatened in 1995. As of March 2006, as many as 30 per cent of the protected areas was reported as threatened, mainly by introduced species, discontinued maintenance, traffic, pollution and other factors. According to the county governors, the status was unknown for another seven per cent of the protected areas. The Ministry of the Environment has stated that it has assigned priority to the protection of new areas and that management and maintenance of the areas will be given priority at a later point in time. The OAG remarked that when the need for maintenance measures is not covered, the conservation value may deteriorate.

The investigation also showed that few measures have been implemented in the threatened areas. In 42 per cent of the threatened areas, no measures had been initiated to counteract the threat factors. There was an unfulfilled need for such measures in 82 per cent of the 579 threatened areas. This indicated that the environmental authorities have not managed the protected areas in a manner that safeguards the conservation value or in accordance with the working objectives and performance indicators prescribed by the Ministry of the Environment itself.

Deficiencies in management and maintenance plans?

The investigation also revealed a need to draw up new management and maintenance plans, and to improve the quality of the existing ones. In addition, case studies showed that management plans in many cases only to a small extent were goal-oriented or targeted at the needs for maintenance measures. The OAG therefore questioned whether the established practice for drawing up and assuring the quality of management plans for nature reserves and smaller landscape preservation areas was adequate.

Sufficient attention to introduced species?

The Ministry of the Environment has formulated a working objective to counteract the spread of introduced species that can harm or delimit the function of the ecosystems. The working objective has been repeated annually in the subsequent years. The investigation has showed that introduced species constituted a considerable threat to conservation objectives and conservation value in 34 per cent of the protected areas reported as threatened. Introduced species were also acknowledged as a substantial problem in 1995. The OAG questioned whether the ministry had paid sufficient attention to ensuring the availability of financial resources to implement measures to ensure goal achievement in this area.

Deficiencies in the enforcement of regulations against environmental crime?

Both the general civil penal code and the Nature Conservation Act contain provisions concerning environmental crime. In addition, the Directorate for Nature Management's own handbook has detailed comments to clarify that a breach of the conservation regulations is an offence subject to public prosecution and must be reported to the police. This applies regardless of whether the responsible party is a private individual, an organisation, a municipality or a government body. Although contraventions of the conservation regulations have occurred in 55 per cent of the 579 threatened protected areas, they have been reported in only 18 per cent of these areas.

The county governors have stated that there is an increased need to report contraventions. However, in a meeting with the environmental authorities it also emerged that some county governor offices have neglected to report contraventions – partly because they did not regard it as the task of government administration to report private individuals. Thus, since reporting as a policy instrument was regarded differently across various units of government administration, the OAG questioned whether the policy instrument is being applied as intended.

Need for more goal-oriented measures to conserve biotopes?

Threat factors in protected areas pose challenges for the Government with regard to meeting the Parliament's goal of safeguarding an equally large diversity of species in Norwegian nature in the future as today's. There are also challenges to face in connection with the conservation of biotopes, which according to The Standing Committee on Energy and the Environment in the Parliament is a key prerequisite for maintaining biological diversity and safeguarding sustainable development. The OAG's investigation showed that the county governors saw the need for measures in 82 per cent of the 579 threatened areas. Furthermore, the threat factors had led to a loss/decline in species in 75 per cent of these areas and a loss of biotopes in 43 per cent. The OAG therefore questioned whether more goal-oriented measures were required to fulfil the decisions and intentions of the Parliament.

Need for new cost estimates?

The investigation revealed that the Ministry of the Environment thought that the Directorate for Nature Management did not have sufficient resources to carry out all its assignments. According to the directorate, the financial situation had gradually become more difficult in relation to performing tasks in protected areas.

With regard to an objective of the environmental authorities to implement the national park plan by establishing 36 new and expanding 14 existing protected areas by 2010, the Ministry of the Environment referred to an estimate that was made in 1992 in which it was estimated that the implementation would cost approximately NOK 100 million. The ministry could not show any recent calculations, for example of the costs of maintaining these areas once they have been established/expanded.

The environmental authorities' objective of safeguarding the preservation of the values of the natural environment in the protected areas is measured through the proportion of protected areas that are satisfactorily maintained. According to the Ministry of the Environment, no cost estimates have been made for this objective apart from a calculation undertaken by the Directorate for Nature Management in 1996. Since this estimate was made, however, the number of protected areas has risen from 1 477 to 1 937, corresponding to an increase from approximately 6 per cent to around 12.5 per cent of Norway's mainland area. According to the county governors, the proportion of threatened protected areas has increased in the same period from 18 to 30 per cent. In the light of the challenges the environmental authorities face, the OAG raised questions as to why no cost estimates have been undertaken since 1996.

Summary of findings

The OAG concluded that so far, the authorities' work in surveying and monitoring biodiversity and the management of protected areas has been characterised by an inadequate ability to convert high environmental ambitions into specific action.

Impact and results

As the audit was conducted, the ministries were sceptical to the results of the audit, and feared it would be too much focused on the lack of resources. However, once published, the Ministry of Environment welcomed the audit, and said it would be helpful. Also, it stated that it would prioritise the protected areas in the time to come. It has started by establishing a working group that will give advice and input on the needs involved in exercising proactive management of protected areas. The working group even contacted the OAG before the report was concluded to be able to draw lessons as early as possible.

Another way the impact may be measured is that within the Ministry of Environment's budget, the share devoted to work related to biological diversity has increased by over 11 percent. Also, the budget for the Ministry of Environment in relation to the other ministries has also increased by 89 mill. NOK.

The results of the increased efforts by the ministries are yet to be seen. The OAG will observe what is being done, in accordance with the request from the Standing Committee on Energy and the Environment of the Norwegian Parliament.

Challenges, barriers and lessons learned

The audit covered a wide range of themes within biological diversity: surveying and monitoring in forests, in cultural landscapes, in freshwater, in marine areas, endangered species and habitat types and the coordination of collected data from monitoring and surveying. The level

of detail in several documents within these subjects was very high, making the topic not easily accessible for the audit team. The expert panel proved helpful in understanding and in quality assuring our products, especially in the early phase of the audit.

However, the use of the experts generated other problems. As Norway is a small country, and the government administration frequently gathers support for policies based on experts' advice, it was not an easy task finding what we had to define as sufficiently impartial/objective experts. The challenge was solved by picking experts that had been used by the government, but not in relation to the topic that was audited.

Another challenge and lesson learned was that auditing 5 ministries at the same time can be costly and time consuming. Up until the very end of the audit, the audit team experienced that the different ministries gave incoherent answers. These problems were solved by frequent contact with the ministries.

During the audit 20-30 interviews were conducted, which to a great extent were performed as exploring interviews. The minutes from the interviews were supposed to be used both to strengthen the audit team's sector competency, and to provide facts for the report. This caused the interviews to be quite extensive and the subsequent writing of the minutes proved time consuming. In the end, the minutes were of limited use in the final report. The lesson learned here was that many of the interviews could have been replaced with written questions.

Audits

Investigation of Authorities' Efforts to Survey and Monitor Biological Diversity and to Manage Protected Areas. No. 3:12 (2005–2006)

http://www.riksrevisjonen.no/NR/rdonlyres/FFBB1A9B-6063-42E8-9574-5BE9755123E4/0/Eng_Doc_3_12_2005_2005.pdf

UK Climate Change Policy—Use of Analysis (United Kingdom)

Theme: Audits of Global and Regional Environmental Issues

Author: National Audit Office of the United Kingdom

The National Audit Office's work on Climate Change

Introduction

1. It is almost universally accepted that climate change is one of the greatest long-term challenges facing the human race. The latest Assessment Report from the Intergovernmental Panel on Climate Change is the most confident yet in concluding that man-made climate change is happening and is set to cause serious impacts in the future. The immediacy and importance of the task has been underlined in a series of international environmental summits, which began in earnest with negotiations for the United Nations Framework Convention on Climate Change (UNFCCC) in the run up to the Rio Earth Summit in 1992. Almost all countries have ratified the UNFCCC treaty, indicating the level of support for its purpose: to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous man-made interference with the climate system. And international efforts to meet the challenge of climate change are ongoing: the Kyoto Protocol is underway, committing those nations involved to legally binding emissions reductions targets; and negotiations on what will happen post-Kyoto are already starting to take place.
2. The impact of climate change, and the costs of dealing with it, has huge financial and other consequences for citizens and taxpayers alike. The UN Intergovernmental Panel (of scientific experts) on Climate Change (UNIPCC) predicts that temperature increases of 1.8 to 4°C (3.2 to 7.2°F) are likely by the end of the century, with temperatures over 1.5 to 2.5°C leading to increased incidence of extreme weather events, shortages in water and food supply, and increased rates of extinction. The Stern Review of the economics of climate change, commissioned by the UK Chancellor of the Exchequer and published November 2006, paints a similar picture of the dire effects of climate change. In comparison, both the UNIPCC and Stern conclude that the costs of taking action to stabilise greenhouse gases at a relatively safe level need not be prohibitive, with estimates of the order of 1 to 3 per cent of global GDP.
3. This paper discusses the work that the UK National Audit Office (NAO) has done and is planning on climate change. In doing so, we will try to set out a framework of thinking which other Supreme Audit Institutions (SAIs) might use in developing their own approach to this important issue.
4. The NAO's work in this area has been aimed at two different audiences within the UK Parliament. On the one hand, the Office has produced conventional value for money (VFM) reports intended for the Committee of Public Accounts (PAC). But in the last few years, the Office has been developing its support for other select committees in the UK Parliament and in particular the Environmental Audit Committee (EAC) which has a cross-departmental remit to examine environmental and sustainability issues.
5. A complete list of the NAO's published work on climate change is at Appendix A. In the rest of this paper, we try to provide a narrative which brings out how our thinking has developed, and the lessons we have learned.

Mapping the territory – making choices

6. Until 2005, the Office's work on climate change was very much dominated by the VFM work we do aimed at PAC. As such, the focus was on major expenditure programmes which would be of interest to members of that Committee. Thus in the few years before that time, we produced reports on renewable energy, emissions trading and domestic energy efficiency. The selection of each of these topics emerged from our standard study selection process in which environmental topics had to compete with other topics for space in the Office's programme of 60 VFM studies each year. Thus the topics were selected using our standard criteria of monetary significance, likely Parliamentary interest, auditability and the potential for significant conclusions.
7. The new relationship with the EAC, which began in earnest in 2004, introduced a new dimension to our work and the potential for work on climate change. The EAC operates in a different way from PAC. PAC's programme is almost exclusively driven by the NAO's work, and the NAO's reports provide all the evidence the Committee needs to question the relevant department or agency. In contrast, the EAC has a more fluid programme of inquiries, some of which are planned well in advance whilst others are ad hoc in response to current events or Committee interests, and the Committee may take evidence from many sources before arriving at its conclusions. EAC is also, as befits a specialist committee, better able to handle complex or technical issues than the generalist PAC.
8. After the general election of May 2005, and the appointment of a new Chairman of EAC, in late 2005 the Committee announced its intention to make climate change its priority for the coming parliamentary term (usually 4 but up to 5 years). But climate change is a very large and complex subject. In discussion with the Committee, therefore, we agreed to map the territory so that they could develop a more strategic approach to their declared objective and, in a more practical sense, help them target their programme of inquiries. The resultant briefing "*Climate change policy: options for scrutiny*" was published in April 2006; the audit team also gave committee members a presentation, followed by a question and answer session, to help them understand the issues and decide on their future work.
9. In the briefing we set out to map climate change policy in the UK, including the key policy instruments employed by government, to help the Committee focus its future work on this important topic. Climate change policy involves two types of policy:
 - Policy on **mitigation** (that is, to reduce climate change) splits into two: scientific debate about whether climate change is happening and whether it is due to man-made emissions of greenhouse gases; and policy debate about the level of emissions reductions needed and how to achieve them. The science is very much the domain of the scientific experts in UNIPCC. Mitigation policy involves a mix of international initiatives (eg Kyoto) and national instruments (eg carbon or energy taxes).
 - Policy on **adaptation** (to the effects of climate change) also splits into two: scientific debate about the likely effects of climate change (such as flooding, effects on agriculture, or patterns of disease), and policy debate about the instruments needed to counteract or respond to these changes. UNIPCC are again the authority on the science, but adaptation policy instruments are usually national rather than international.

In our briefing we focused on those policies designed to mitigate climate change and not those policies for which the principal purpose is to adapt to the effects of climate change. We did so because mitigation is the more pressing concern – emissions reductions are needed straightaway—whereas the effects of climate change and policies to deal with them are for the longer term.

10. The design and production of that briefing also forced us to think about the natural limits to our audit interest in climate change. Most importantly we thought and concluded about the distinction between science and audit. We decided to take as given the majority scientific opinion that climate change is happening, and that it is caused by emissions of greenhouse gases from human activities – we decided it was not our role to review the science of climate change, in a field where others – such as the UNIPCC, have much greater competence. This stance reflected the UK government's and Parliament's stance – whilst there are some sceptics about climate change, they are very much in the minority and they have little influence on the policy debate. Instead, government and parliamentary attention focuses on how to assemble the right mix of policies which will provide a sufficient response to the challenge of climate change.

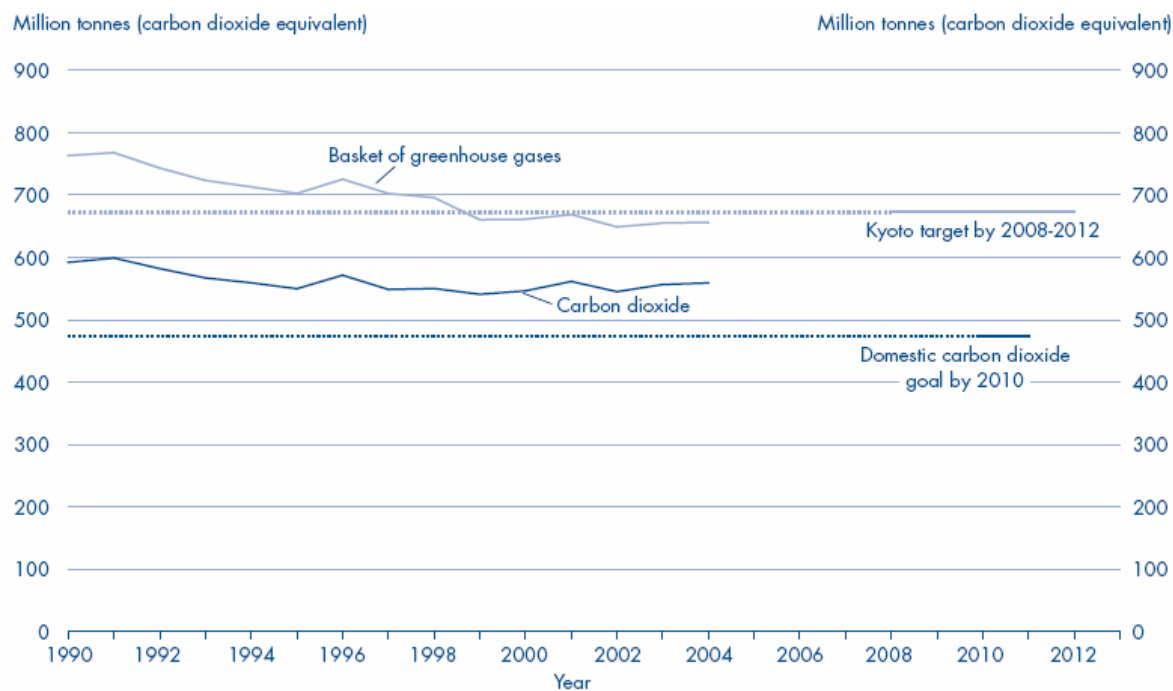
11. The briefing:

- provided some essential background to climate change and current developments (in Part 1),
- set out trends and progress in emissions reductions in Part 2 (Figure 1, taken from the briefing, gives an illustration of the UK position), and
- identified the main policy instruments relating to each sector of economic activity (in Part 3).

In Part 4, the briefing then set out a menu of options for the Committee's future inquiries – in effect slicing up this huge and complex area into bite-sized chunks which could form the basis for a series of self-contained inquiries which would cover most if not all the territory.

- targets, progress and forecasting;
- policy instruments;
- greenhouse gases;
- economic sectors;
- governance and coordination;
- monitoring and reporting; and
- the bigger picture.

FIGURE 1: UK PROGRESS TOWARDS KYOTO AND NATIONAL TARGETS, 1990-2004



Source: Defra

12. In the summary to the briefing, we weighed up the Committee's options and suggested the most fruitful areas for Committee attention – our advice is shown in the box below.

THE NAO'S ADVICE ON ASPECTS MOST DESERVING OF COMMITTEE SCRUTINY

At this stage, however, the Committee may find it helpful to pick up on those aspects of climate change policy where there would appear to be most still left to do:

- The Committee has already launched an inquiry on 'Reducing Carbon Emissions from **Transport**'; this is an ideal opportunity to review policy within a sector responsible for significant greenhouse gas emissions where emissions have been growing.
- Policy focussed on emissions from the **residential or domestic sector** may also be worth scrutiny. Trends, whilst downwards, are weak and there are few current policy instruments which are likely to bring about significant change; at the same time the scope for improvement in domestic energy efficiency is significant, as the Environment Food and Rural Affairs Committee has reported.
- **Agriculture and the service industries** (including retail) are other sectors which are relatively untouched by policy instruments to require or bring about significantly lower emissions. How much scope is there to bring them within efforts to reduce greenhouse gases?
- Another topic for scrutiny would be **how to ensure successful delivery** – why did earlier strategies and policies fall short of expectations and prevent achievement of the UK domestic target for carbon dioxide reductions? How confident can government be that the revised Climate Change Programme and associated policies will be successful? Will government be establishing a trajectory and interim targets to provide an early warning if progress is faltering?
- The Stern Review (expected later in 2006) will focus attention on **longer term thinking**. That review will address the balance between national and international action, the costs and benefits of climate change, and the mix between mitigation and adaptation strategies. At the same time, the UK has a target to reduce carbon dioxide emissions by some

60 per cent by 2050, with significant progress towards this goal by 2020: can this be achieved within the current strategic framework?

▪ The Committee could also focus its attention on the effectiveness and operation of those **key policy instruments** thought to make the greatest impact on emissions reductions, namely:

- the EU Emissions Trading Scheme;
- the Climate Change Levy and Climate Change Agreements;
- the Renewables Obligation;
- vehicle manufacturers' voluntary agreements and Vehicle Excise Duty;
- the Energy Efficiency Commitment;
- the Fuel Duty Escalator; and
- the revised Building Regulations.

13. The point in rehearsing these options for Committee scrutiny is that they also provide a valuable menu or short-list of potential audits, which may help other SAIs think about what work they might do on climate change in the future. The document could also provide a model for sharing internally or with a legislature about how the SAI could focus its activity on climate change.

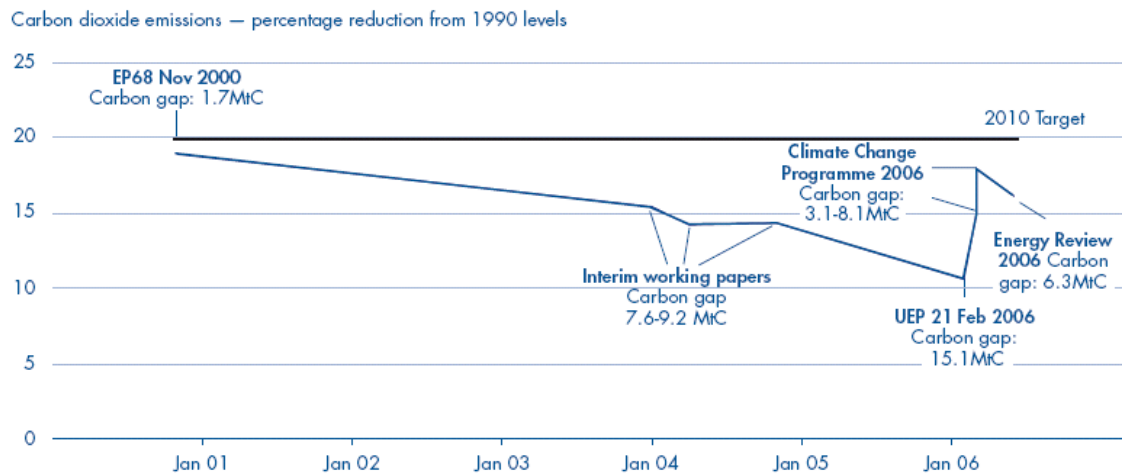
A focus on the analysis behind the UK's 2006 Climate Change Programme

14. Our briefing, and the EAC's interest in it, coincided very closely with the government's publication of its revised Climate Change Programme in March 2006. That document set out the UK's national strategy towards climate change – concentrating on mitigation and emissions reductions but with passing mention of the steps being taken to address climate change adaptation.
15. In the discussion with EAC which followed publication of our briefing, the Committee expressed considerable interest in three aspects of climate change policy:
- the quantitative analysis, on trends and costs, which had informed the UK's revised programme, which we discuss in this section.
 - the effectiveness and choice of the policies which were intended to produce the largest emissions reductions, which we discuss in the next section.
 - the governance of climate change policy – meaning the arrangement, status and work of the various bodies within and outside government helping to design, deliver and monitor climate change policy. We decided that we could not help the Committee in any substantive way in this area.
16. We took forward the Committee's interest in the analytical basis behind the 2006 Programme by carrying out two further pieces of work, one on the reliability of the emissions projections which informed the Programme, which we published in December 2006, and another on the reliability and use of information about cost and cost-effectiveness of climate change policies, which we published in January 2007 (see boxes).

EMISSIONS PROJECTIONS IN THE 2006 CLIMATE CHANGE PROGRAMME REVIEW

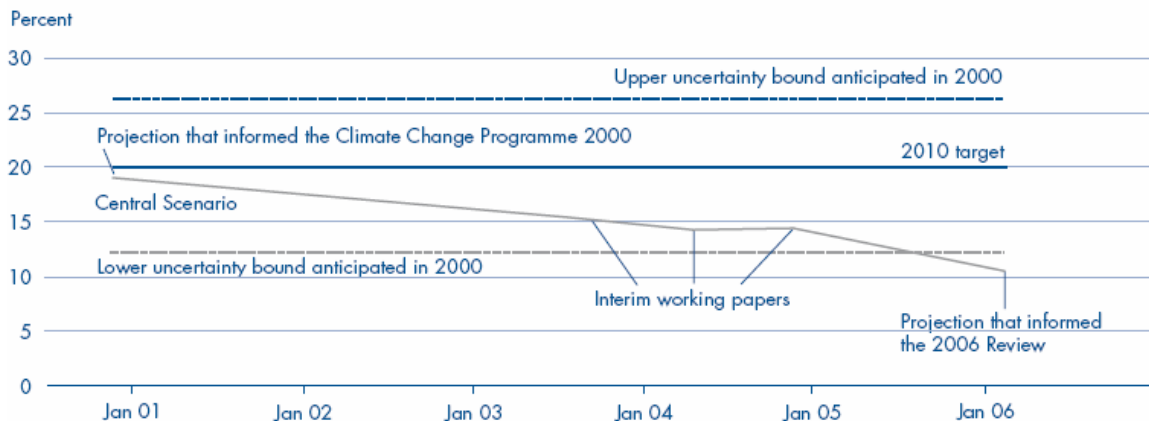
Our review highlights that the projections of UK progress towards its 2010 domestic target, made at the time of the first Climate Change Programme in 2000, have indeed proved optimistic. Figure 2 shows how headline projections have changed since 2000. A degree of change is to be expected. The government recognised that the 2000 estimates were subject to considerable uncertainty. However the extent of change in projections is greater than modelling teams anticipated. Figure 3 demonstrates that the central projection that informed the 2006 Review was outside the range of feasible scenarios anticipated in 2000. On the whole, however, our briefing provides reassurance that government has taken steps to make the 2006 projections more robust than those in 2000, and to ensure the reliability of the modelling process. At the same time, there are potential areas for improvement, particularly in the way the government responds to the considerable inherent uncertainties involved in modelling of this kind.

Figure 2: How the UK government's headline projections have changed since 2000



Source: National Audit Office analysis of data of published DTI papers

Figure 3: The central projection that informed the 2006 Review was outside the range of feasible scenarios anticipated in 2000

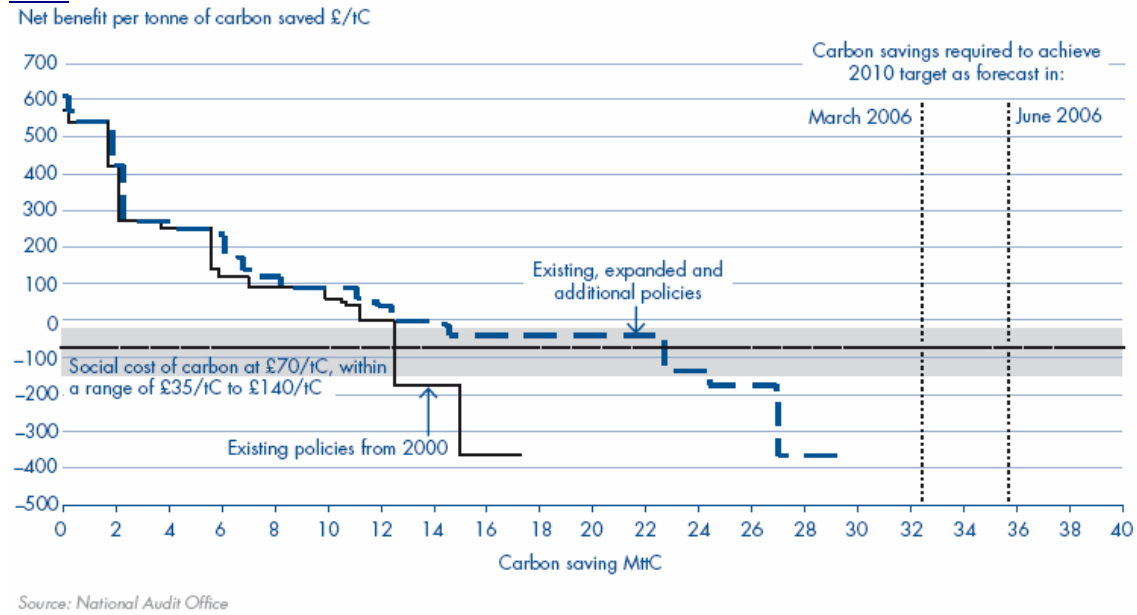


COST-EFFECTIVENESS ANALYSIS IN THE 2006 CLIMATE CHANGE PROGRAMME REVIEW

Our review highlights that the cost-effectiveness analysis performed was an appropriate tool with which to appraise policies. The analysis was carried out on a more consistent basis than that which supported the original climate change programme in 2000; thus policies developed by different government departments could be better compared. Novel quality assurance processes ensured that the results of the analysis were reliable enough to inform policy decision-making. However, not all policies or policy options were covered by the analysis. In particular, we note that most appraisals of new policy ideas were based on assumed single scenarios of policy scale and impact: there was no systematic attention to different scales of policy intervention. This may have denied policy makers the ability to determine the optimal level of intervention for each policy.

Figure 4 below gives an illustration of the analysis we considered as part of this assessment. It shows an 'abatement curve' for the mix of policies at the start and the end of the Climate Change Programme Review. The two lines show policies in the order of their cost-effectiveness, with the most beneficial at the left and the least at the right. It demonstrates that both the start and end position fell short of the reductions needed to meet the UK's 2010 domestic target; and that both start and end positions included policies with a wide range of cost-effectiveness indicators.

Figure 4: Carbon dioxide abatement curves for the 2000 and 2006 programmes, as assessed in 2006



17. These two documents have since formed the basis for an inquiry by the Committee, which was still ongoing at the time of writing this paper.¹

Examining individual policies

18. We mention above the NAO's earlier approach of focusing on individual climate change policies, as part of the Office's mainstream VFM work aimed at PAC. In recent years this has included reports on renewable energy, emissions trading and domestic

¹ See http://www.parliament.uk/parliamentary_committees/environmental_audit_committee/eac_31_01_07.cfm for terms of reference

energy efficiency. Another, on waste and reducing the UK's reliance on landfill, has climate change connections because landfill sites are a major source of methane, a potent greenhouse gas.

19. That VFM programme has continued, and the Office is conducting further studies of this kind. Studies are already underway on the Carbon Trust (a body set up to encourage energy efficiency in businesses), measures to promote sustainable households (including energy efficient homes), and flood defence and management (one of the major impacts of global warming). For the future, the NAO is also planning conventional VFM studies on the Energy Saving Trust (a body set up to encourage domestic energy efficiency), the Decent Homes Initiative for social housing (which includes energy efficiency amongst its objectives), the use of private finance for local authority waste management, the Building Schools for the Future programme (which includes sustainability), and sustainable procurement in central government.
20. In addition to these conventional VFM studies we are doing for PAC, we have also been looking to respond to EAC's interest in the main policy instruments. We have already provided briefings to the Committee on the government's own voluntary carbon offsetting scheme and on central government support for local authority action on climate change. We also have in train two further briefings, one on energy use on the central government estate and another on the effectiveness of the climate change levy (a tax on energy use by industry) as well as the climate change agreements (tax rebates in return for energy or emissions reductions).

Discussion

21. Over the last five years, the NAO has applied a fair amount of thinking on how it addresses climate change in its work. We have also explored different ways of tackling the subject, to two different audiences. The time is ripe to reflect on what we have learned so far.
22. **The policy field is very large and complex – it helps to map the territory.** The work we did on options for scrutiny was useful, and will continue to be useful, because it provides a way of navigating this wide-ranging policy area and to cut it down into sizes small enough to be manageable (as an audit or a committee inquiry). The exercise also prompted us to think beyond individual policy instruments and identify more thematic ways of approaching the subject.
23. **Science and audit do not mix – keep them apart if you can.** In the course of our work, both internally and externally, we have encountered sceptics of climate change. Whilst it is tempting to weigh into the scientific arguments, this is dangerous territory – for two reasons. First (and foremost), auditors are not competent to debate the science, and indeed government and Parliament should look to others to provide such advice. Second, there is an emerging and very strong consensus about the science which most governments take as the starting point for their policy – debate with and within UK Parliament, and many other legislatures, is about how to address the problem of climate change and not about whether it exists or whether it is man made.
24. **There are national and international dimensions, which the auditor should be aware of.** Much of the debate, and a lot of policy formulation, happens on the international stage. For example, many countries are signatories to the Kyoto protocol. Within Europe, the European Community has climate change targets and policies, such as the European emissions trading scheme. And an emerging part of the picture is the potential for climate change policy to be delivered through international

mechanisms (for example, offsetting schemes, carbon trading, development assistance and the Clean Development Mechanism).

25. **It helps if there is a national framework but this is not essential.** A national framework is in place in the UK, in the form of the Climate Change Programme, a strategy document that covers all UK climate change policies. In the course of establishing and reviewing this Programme, the UK government carried out extensive evaluations of the costs and benefits of these policies, and of the likely trajectory of future emissions under different scenarios. With this framework and evaluations underway, our role has therefore been to provide quality assurance to parliament. However, the lack of a national framework need not prevent audit institutions playing an important role. Valuable insights can still come from assessing: the effectiveness and cost-effectiveness of the individual policies that are in place; the coherence and co-ordination of the policies taken as a whole; and the rigour of the analysis underpinning policy choices.
26. **Sustainability is about value for money, and not just compliance or performance.** Neither the UK government nor the UK NAO takes the view that climate change targets should be achieved regardless of cost. As such we both consider the costs and benefits when assessing policies. This is the starting point of the Stern Review of the economics of climate change, a key principle in the UK government's review of its Climate Change Programme, and in our own assessment of that review.
27. **Climate change policy operates over a long time horizon, but there is nonetheless scope for audit attention right now.** Climate change is perhaps unique among global challenges because of the timespan under consideration, with effects expected to occur into the next century. In addition, it is a relatively new policy area, with many policies only recently established. Audit attention can however, be directed at those policies that are already underway, and at whether the analysis that informs policy choice is well-founded.
28. **Ultimate outcomes are very long term, but interim outputs can be assessed.** The long timespan of climate change also poses challenges for assessments of effectiveness. The ultimate effectiveness of climate change policies will not be visible for years to come. In the meantime, however, emissions reductions are a suitable proxy measure of effectiveness.
29. **Some aspects are highly technical, but not beyond the capacity of audit.** As our recent audits on climate change have shown, assessing climate change policies can involve complex areas of analysis such as economic modelling and cost effectiveness analysis. This is a new area for audit, but not without precedent; we have been able to draw on the various approaches in our existing audit 'toolkit'. This includes our ongoing work on performance measurement and our regular assessments of the economic assumptions in the national Budget. Nonetheless, as with all our audit work, we look to bring on board specialist expertise to complement our skills where necessary, through appointing consultants, arranging interviews with experts in the field, or convening expert panels to provide direction and advice throughout a study.

Appendix: The NAO's work to date on climate change

Title	Description
Central government support for local authorities on climate change – Unpublished	This briefing paper was provided in response to a request from the Environmental Audit Committee (EAC) that the National Audit Office provide information on local authorities and climate change. It explains: what funds central government provides to local authorities on climate change; what expectations or targets central government has set; and what is known about performance.
Government carbon offsetting fund— Unpublished	The government made a commitment in its sustainable development strategy <i>Securing the Future</i> to offset all of the emissions produced as a result of official and ministerial travel. This briefing describes the operation of the government's carbon offsetting fund which was set up to offset all ministerial and official air transport emissions from April 1 2006 through the purchase of Certified Emissions Reductions in developing countries. This briefing was written for EAC to inform their enquiry into the voluntary carbon offsetting market.
Cost-effectiveness analysis in the 2006 Climate Change Programme Review— Published 06–07	This briefing for EAC examined the analysis used in the UK's 2006 Climate Change Programme Review. It found that the method of cost-effectiveness was an appropriate tool to appraise policies and that cost effectiveness analysis produced results which were reliable enough to compare different policies. Web reference: http://www.nao.org.uk/publications/nao_reports/06-07/Climate_Change_analysis.pdf
Emissions Projections in the 2006 Climate Change Programme Review— Published 06–07	This briefing for EAC examined the emissions forecasts that informed the 2006 Climate Change Programme Review. It found that government has taken steps to make the 2006 projections more robust than those produced in 2000, though there is still considerable inherent uncertainty in modelling the UK energy market and emissions. In Jan 2006 the Committee launched an inquiry into forecasting, cost effectiveness and climate change, which will draw on the briefings on cost-effectiveness and emissions projections. Web reference: http://www.nao.org.uk/publications/nao_reports/06-07/Climate_Change_Projections.pdf
Climate change policy: options for scrutiny— Published 06–07	This report was intended to facilitate EAC's further work on climate change by setting out different ways the topic could be scrutinised. It described a framework whereby the issue of climate change could be broken down into seven segments: targets; progress and forecasting; policy instruments; greenhouse gases; economic sectors; governance and coordination; monitoring and reporting; and the bigger picture. On the basis of this framework, the report suggested possible lines of inquiry for the Committee. Web reference: http://www.nao.org.uk/publications/nao_reports/05-06/Climate_change.pdf

Title	Description
<p>Department for Environment, Food and Rural Affairs: Reducing the reliance on landfill in England—Published 05–06</p>	<p>This report found that there was a significant risk that local authorities in England would fail to reduce the amount of biodegradable waste sent to landfill by enough to meet EU targets. Under the Landfill Allowance Trading Scheme the government would be able to penalise local authorities who failed to make their share of required savings.</p> <p>Meeting the EU targets would require a reduction of at least 3.5 million tonnes of biodegradable waste sent to landfill by 2010 and a further 3.7 million tonnes by 2013. This report estimated that if no further action was taken beyond that which was planned, local authorities would miss the 2010 target by approximately 270,000 tonnes and the 2013 target by almost 1.4 million tonnes. Exceeding Landfill Allowance Trading Scheme allowance allocations in 2010 could lead to local authorities receiving Scheme penalties totalling £40 million a year, rising to £205 million a year for exceeding allowance allocations in 2013. Failure to meet the Landfill Directive targets could also result in substantial fines imposed on the UK Government by the EU.</p> <p>Web reference: http://www.nao.org.uk/publications/nao_reports/05-06/05061177.pdf</p>
<p>Department of Trade and Industry: Renewable Energy—Published 04–05</p>	<p>This VFM report found that the Government was on course to achieve significant increases in the level of electricity generated from renewable sources, but a number of challenges remained in achieving its 10 per cent target for renewable energy by 2010. Pursuit of this target will cost the consumer and taxpayer more than £1 billion a year by 2010 which will increase the price of electricity by around 5 per cent.</p> <p>Web reference: http://www.nao.org.uk/publications/nao_reports/04-05/0405210.pdf</p>
<p>The UK Emissions Trading Scheme—A New Way to Combat Climate Change—Published 03–04</p>	<p>This VFM report found that the UK Emissions Trading Scheme had brought about a reduction in emissions of greenhouse gases and that the scheme had benefited the UK economy.</p> <p>The NAO analysed the four participants in the scheme who had exceeded their emissions targets by the widest margin. The analysis found that although most of the reductions in emissions reported were as a result of the scheme, 34 per cent of the emissions reductions of these four participants analysed would have happened without the Emissions Trading scheme.</p> <p>Web reference: http://www.nao.org.uk/publications/nao_reports/03-04/0304517.pdf</p>

Title	Description
<p>Warm Front: Helping to combat fuel poverty— Published 02–03</p>	<p>Warm Front is overseen and funded by the Department for the Environment, Food and Rural Affairs (Defra) and is an important part of the Fuel Poverty Strategy, which aims to eliminate fuel poverty in vulnerable groups by 2010 as far as reasonably practicable. The scheme assisted over 300,000 households in 2001–02 providing insulation and heating measures to an average value of £445 for each household. This gave each home assisted the potential to save around £150 a year through reduced fuel bills.</p> <p>This study found that the scheme was not reaching those in greatest need, that the energy efficiency measures were not having as much impact as they might and as a result the scheme was making less of a contribution to eliminating fuel poverty than it could.</p> <p>Web reference: http://www.nao.org.uk/publications/nao_reports/02-03/0203769.pdf</p>

AUDITS OF DOMESTIC ENVIRONMENTAL ISSUES

Management of Clinical Waste at Referral Hospitals (Botswana)

Theme: Audits of Domestic Environmental Issues

Author: Botho Entaile, Office of the Auditor General of Botswana

1.0 BACKGROUND

1.1 Background

In Botswana as elsewhere in the world, there is increasing recognition of the risks associated with clinical waste to human health, environment and natural resources. According to the study conducted by Botswana Government assisted by the German Agency for Technical Cooperation in 1995, the hazardous proportion of clinical waste produced in Botswana was “believed to amount to approximately 2500 tonnes a year”, including clinical waste from the 3 Referral hospitals namely; Princess Marina, Nyangabgwe and Lobatse Mental hospital.

There is also a growing public awareness and Media concerns about clinical waste in Botswana. According to the concerns expressed by the Media, across the country, the principal problem with clinical waste is the inappropriate segregation, handling, storage, collection, incineration, transportation and ultimate disposal. Due to these concerns, the Office of the Auditor General (OAG) conducted the performance audit to assess whether clinical waste generated at the 3 referral hospitals was appropriately managed and disposed of through safe and environmentally sound methods, to protect the employees health, environment and communities within which these hospitals operated.

1.2 Audit Planning

1.2.1 Audit Scope and Target

The audit focused on the entire waste stream from generation/production to the ultimate disposal of residuals, that is, from the cradle to the grave (hospital wards and units to appropriate disposal places) and administrative arrangements in place in relation to clinical waste management at the 3 Referral hospitals. The audit coverage was for the 3 financial years namely; 2003/04, 2004/05 and 2005/06.

1.2.2 Audit Objective

The overall objective of the audit was to assess the efficiency and administrative effectiveness and associated accountability arrangements in place relating to clinical waste management. The sub-objectives were therefore:

- ❖ To determine the extent to which 3 Referral Hospitals implemented and complied with the Botswana Clinical Waste Management Code of Practice and all other strategies in relation thereof.

- ❖ To assess the impact at which inappropriate management of clinical waste affected the human health, environment and natural resources.
- ❖ To assess how risks associated with clinical waste were managed
- ❖ To assess the extent to which management prioritises the activities involving clinical waste.
- ❖ To determine the extent to which information relating to clinical waste generation and ultimate disposal is being collected and compiled to assist in making informed decisions or provide sound advice on the appropriateness, success, shortcomings and future directions of the operation.

1.2.3 Audit Criteria

- 1a. Clinical waste management as one of the 3 hospitals' activities should be reflected in their Strategic Plans and at the strategic level, at the Department of Clinical Services.
- 1b. Clinical waste management objectives should be clearly articulated and reflected in hospitals' Strategic and the Annual Performance Plans in order to establish the required level of performance against which clinical waste management issues, subsequent actions can be judged.
2. The Botswana Clinical Waste Management Code of Practice should be complied with entirely.
3. Clinical waste risks should be appropriately managed to protect human health, the environment and natural resources from risks associated with inappropriate management of clinical waste.
- 4a. Sufficient, reliable and relevant data pertaining to quantities of waste generated and disposed of should be easily accessible, collected and compiled to make informed decisions.
- 4b. There should be consolidated data to indicate the number of injuries associated with needle stick injuries and sharps, emanating from the inappropriate clinical waste management.
5. The Clinical Waste Management Code of Practice should be reviewed to ascertain whether it addressed all clinical waste issues.

2.0 METHODOLOGY

2.1 Interviews

A total of 119 people were interviewed to solicit information about the clinical waste operation, its sources of generation and disposal places and associated risks. The interview sampled 20 professionals representing Doctors, Pharmacists, Radiologists and Laboratory Staff (representing 16.8%), 44 (36.9%) Nursing staff, 31(26.2%) Operatives, and 18 Others (representing 15.1%) including Engineers, Administrators and a Contractor

engaged to collect and dispose of residuals and ash at PMH and 6 Environmentalists representing 5% of the total number of interviewees.

2.2 Document Review

The following documents were reviewed to gather more information regarding the administrative procedures and policy framework, to direct and guide the operations of management and those involved in the clinical waste processes and strategies to be employed in the clinical waste stream:

- ❖ Public Health Act of 1981
- ❖ National policy on Natural Resources Conservation and Development-Government Paper No. 1 of 1990
- ❖ Waste management Act of 1998
- ❖ Draft National policy on Infection Prevention Control and Focusing on Injection safety and Sharps Waste Management submitted by National Safety Advisory Group (NISAG) September 2005.
- ❖ Botswana Clinical Waste Management Code of Practice as adopted in 1996.
- ❖ Study on the Management of Clinical Waste-Report No. NCS/GTZ 7/96
- ❖ Towards Auditing waste Management-INTOSAI Working Group On Environmental Auditing

2.3 Observation

The team observed the processes from the cradle to the grave to obtain first hand information. Observation was made at 43 places, including hospital wards and units within the 3 hospitals, incinerators and landfills. The reason for the observation was to see whether there were; segregation rules placed strategically to assist in that regard, clinical waste receptacles provided and whether waste was; deposited in the appropriate containers, handled, stored, and transported appropriately and incinerated according to the Manufactures,' Instructions and disposed of in a safe and appropriate manner to avoid environmental effects in the long-run. Photographs were also taken in order to have concrete evidence.

Yes, I tried something new as I took photographs to support findings.

3.0 FINDINGS AND RECOMMENDATIONS

3.1 Key Findings

3.1.1 Planning Aspects

There was no provision for clinical waste management issues in the strategic plans of either the Department of Clinical Services or those of the 3 Referral hospitals. This made it difficult to establish the required level of performance against which clinical waste management operation, could be judged.

3.1.2 Compliance to Botswana Clinical Waste Management Code Of Practice (BCWMCP)

The Botswana Clinical Waste Management Code of Practice stipulates the requirements and specifies processes to be followed. It is therefore, important that Health Care Workers and Operatives involved in clinical waste are provided with guidance to manage clinical waste appropriately, so that the Botswana Clinical Waste Management Code of Practice requirements are complied with. Clear guidance also supports the peer review because it can provide a reference for checking that appropriate steps are being followed. This guiding document states the processes that have to be followed from the generation/production to the landfills or areas excavated for clinical waste disposal. However, the OAG observed the following shortcomings in the clinical waste streams:

Clinical waste was not appropriately managed in that;

- It was not wholly segregated from the household waste as; syringes, needles, cannulas, soiled gloves were deposited with the soft drink cans and bottles, and other household waste.
- There was inadequate supply of receptacles such as red plastic bags, sharp containers and pedal bins, which compelled facilities to improvise and use detergent containers.
- Handling of bags containing clinical waste was haphazardously done, in that operatives conveyed red plastic bags containing such waste with hands from wards to the incinerators.
- Bags containing waste were not always securely fastened, to avoid spillage that could lead to serious health hazards and injuries.
- Bags containing clinical waste were left in the sun for unknown length of time and this posed the risk of infection and noxious smell.
- The regular mode of transport was hands and file trolleys whose surfaces were impermeable and this presented risk of dropping bags and/or spilling their contents.
- Waste destined for incineration and disposal off-site was transported in open trucks and this waste could be blown of by the wind thus polluting the environment.
- Waste was loaded in the incinerators before adequate combustion temperatures had been reached and batches fed therein were large (10-20 bags a time) which led to black smoke emission thus polluting the environment and affecting nearby communities.
- (Attached pictures give evidence of the situation at hand)
- Training lacked continuity in that, it would be conducted once in a while or no training at all.

3.1.3 Risk Management

- The Botswana Clinical Waste Management Code of Practice requires that “all health care workers and operatives are offered hepatitis B vaccination as and when they work” but OAG observed that the facilities were reactive in this regard, that is, the vaccination was offered after injuries had occurred.
- Health Care Workers and Operatives were not provided with adequate protective clothing, in terms of quality and quantity due to the fact that the required items would be out of stock for months.
- Clinical waste from operating theatres, maternity wards and laboratories was not prioritised for incineration and as such could wait there indefinitely without being incinerated. This may lead to it getting rotten and releasing noxious smell that is not healthy to the public and the environment.
- The residuals and ash was dumped at the landfills like household waste, that is, it was not buried in a special excavation and covered with soil material, which is 30 metres thick. Moreover, waste would be there without being incinerated for period ranging between 1 to 2 weeks. In this regard the environment ended up being polluted.

3.1.4 Clinical Waste Management Information

Data on the quantities of waste generated, incinerated and ultimately disposed of was not maintained. In addition, there was no consolidated data pertaining to number of Health Care Workers and Operatives pricked by used needles and other sharps during the course of their duty and those received Hepatitis B vaccination thereafter, in order to make informed decisions.

3.1.5 Evaluation

The Botswana Clinical Waste Management Code of Practice had never been reviewed despite its existence since 1996. The evaluation would have assisted Ministry of Health to assess whether the document had addressed all clinical waste issues.

3.2 Recommendations

3.2.1 Strategic Plans and Objectives

- The OAG recommends that both the Department of Clinical Services and 3 Referral Hospitals should develop strategic plans that set assessment criteria based on appropriate priorities, which include, performance indicators and realistic time tables in order to address health and environmental risks and other stated strategies dealing with clinical waste issues and integrate them in their management systems.
- The Health Care Facilities should develop strategic objectives for the management of clinical waste that are concise, realistic,

measurable, and are outcome oriented and fully capture the operation.

3.2.2 Compliance Aspects

- BCWMCP should be complied with in its entirety by the 3 facilities, in order to ensure proper segregation of clinical waste at source.
- Management at facilities level should ensure that all personnel involved in carrying and loading clinical waste in different transport modes treat bags with care.
- Management should ensure that not under any circumstance that Operatives use hands to transport bags containing waste.
- Management at the facility level should ensure that waste, including ash and residuals is kept in adequate storage facilities that are specifically built and designed for that purpose in order to comply with the requirements of BCWMCP and International best practice.
- Health Care facilities should ensure that waste produced within their jurisdiction is transported in safe and secure vehicles or other transport modes that are environmentally sound and efficient, in order to protect human health and the environment against the adverse effects which may result from that transportation.
- Facilities Management should ensure that waste generated is completely incinerated to reduce the effects that clinical waste can have on human health and the environment.
- Facilities should strive to ensure that waste collected within their jurisdiction is appropriately disposed of, in order to minimise the consequences thereof, of human health and the environment.

3.2.3 Risk Management Aspects

- MOH should encourage facilities to manage their risks so as to protect human health and the environment from risks associate with needles stick pricks and injuries and inappropriate management of clinical waste.
- The OAG recommends that as part of accountability and oversight processes, the Ministry of Health should encourage facilities to become more proactive in overseeing operations that impact on the environment and are likely to expose the country to significant risks.
- Health facilities should routinely undertake screening of infectious diseases and health promotion testing, to assess the extent to which clinical waste affects operatives especially Incinerator Operators.
- Facilities should encourage Hospital Wards personnel to ensure that waste leaving their wards is labeled with the type and source of waste for ease of identification and urgent incineration.

- Ministry of Health should establish measures to protect the environment and these should be accordingly implemented

3.2.4 Clinical Waste Management Information

- Facilities should develop and maintain management information that allows recording of information to assist in making holistic informed decisions about clinical waste processes.

3.2.5 Evaluation of the Botswana Clinical Waste Management Code of Practice (BCWMCP)

The MOH should review the BCWMCP in order to assess whether it is commensurable with International Standards on environmental issues, considering obligations acceded to by Government of Botswana in this regard.

4.0 IMPACT AND RESULTS

Management accepted all the audit findings and stated that the report was a masterpiece and it reflected the reality on the ground. They indicated that they were trying to remedy some of the deficiencies brought to their attention during the audit. The follow –up will be undertaken to assess the extent of remedial action taken.

5.0 CHALLENGES AND BARRIERS

Challenges faced were:

- ❖ Although Performance Audit Reports including environmental ones are tabled before Parliament, they are not yet discussed by the Public Accounts Committee like the Financial Audit Reports (Lack of Audit Act-Mandate challenge)
- ❖ Time and resources constraints led to audit focusing on the activities of 3 Referral Hospitals rather than covering all health facilities countrywide.
- ❖ Absence of clinical waste management objectives and non-inclusion of clinical waste management in the 3 health facilities and Department of Clinical Services' Strategic Plans made it difficult for auditors to assess facilities' performance pertaining to clinical waste management (Accountability Challenge)
- ❖ Clinical waste management issues were not regarded as integral part of the 3 health facilities' management thus relegated to triviality (Accountability Challenge)

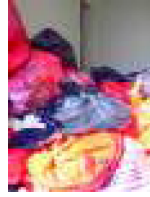
6.0 LESSONS LEARNED

Key success factor was being able to interview the Environmentalists including Toxicologists as they helped in providing valuable information that assisted in the compilation of this report.

It is important to have concrete evidence such as photographs where necessary, so that the auditees may not challenge the audit findings.



14 Incinerator ignited before being cleaned and cleared



01 Clinical waste mixed with house holdwaste



02 Residuals mixed with tins



03 Black plastic bags used for clinical waste



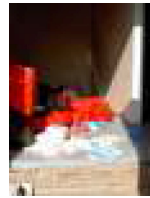
04 Pedal bin without lid used for clinical waste



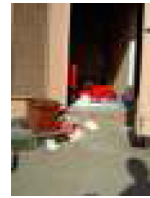
05 Clinical waste being conveyed with hands



07 Waste storage not being used accordingly



07 Waste left in direct sun



08 Clinical waste spilled from the red bags



10 Residuals and ash piled in an open area



11 Residuals stored in unsealed boxes at PMH



12 Waste transportation in open trucks



13 Incinerator not cleared and cleaned of old residuals

Auditoría Especial Sobre Los Residuos Sólidos Urbanos en Colombia (Columbia)

Theme: Audits of Domestic Environmental Issues

Author: Contraloría de la República de Colombia

English not available

“...la protección ambiental exitosa es el resultado de la interacción de un conjunto de influencias y no se puede explicar a partir de un factor aislado, una estrategia de planificación y administración ambiental particular, un instrumento de gestión providencial, un actor determinado o una singular condición de contexto” Guimaraes R..

Definición y Clasificación de Residuos

La definición de residuo puede variar de país a país, pero la mayoría de las definiciones legales consideran el residuo como un producto o una sustancia que ya ha superado su uso inicial, en este sentido, el residuo es un derivado de un proceso. Esta definición incluye sustancias totalmente utilizables pero que son inútiles para el dueño actual.¹

Esa aparente condición de inutilidad de los residuos (basuras) ha hecho que se desatienda su manejo, provocando contaminación de los suelos, las aguas y el aire, derivados de los lixiviados y gases producidos, la quema de residuos y por la generación de ambientes propicios para plagas y organismos diversos que afecta la salud pública.

Para efectos de este análisis la Contraloría General de la República de Colombia acogió la clasificación de residuos derivada de las Conferencias de Río de Janeiro y Johannesburgo, adoptada por la INTOSAI y que los discrimina en *sólidos, peligrosos y radioactivos*.

Problemática Mundial del Manejo de Residuos

De acuerdo con estudios del Programa de las Naciones Unidas para el Medio Ambiente, PNUMA, la contaminación ambiental causada por el mal manejo de los residuos es crítica en muchas áreas del globo y se considera que más del 65% de los países no cuenta con estrategias efectivas frente a esta problemática.

Por tales razones, en 1992 en la Conferencia de Río de Janeiro, la Agenda 21 puso atención específica en asegurar el manejo legítimo del residuo y de la emisión de elementos químicos tóxicos, así como en la prevención de tráfico ilegal internacional de tóxicos y productos peligrosos, el manejo adecuado de residuos peligrosos, el manejo adecuado de residuos sólidos y de las emisiones alcantarillado-relacionadas y de la seguridad para el manejo de residuos radiactivos.

¹ Definición de la INTOSAI, Grupo de Trabajo sobre Medio Ambiente, organización a la que se encuentra adscrita la CGR.

En 2002, en Johannesburgo, ante la persistencia de la problemática a nivel mundial, se reiteró su importancia con un enfoque orientado a la búsqueda de iniciativas para acelerar el cambio en los patrones de consumo y para el logro de una producción sostenible que permita reducir la degradación del medio ambiente, la contaminación y mejorar el manejo de los residuos².

En América Latina y el Caribe -ALC, los diferentes estudios realizados sobre el tema han concluido, entre otros aspectos, que el manejo adecuado de la recolección, transporte, tratamiento y disposición de los residuos sólidos sigue siendo un objetivo prioritario que debe ser complementado con programas de reducción de la generación, reuso y reciclaje de desechos³.

En ALC, el presupuesto dedicado a la gestión de residuos sólidos municipales y peligrosos ha sido hasta ahora muy bajo, por no decir insignificante. A pesar de que en las dos últimas décadas los ajustes y programas de privatización adelantados han incrementado la participación del sector privado en los servicios de limpieza urbana, los elevados índices de pobreza e indigencia y la debilidad de los programas de educación comunitaria, representan una grave restricción para lograr la autosuficiencia financiera y la gestión integral para este servicio público.

El manejo de los residuos, como política pública, demanda visión de largo plazo, sin embargo, en la región, las administraciones municipales y territoriales no cuentan con capacidad técnica e información suficientes y su gestión es ineficaz, lo que limita la planificación y la toma de decisiones.

Los diagnósticos en la región sobre la materia han permitido tipificar a los generadores, sin embargo y a pesar de las normas, el tratamiento no diferenciado de los residuos –peligrosos y no peligrosos- prevalece y ha incrementado los impactos negativos al ambiente y la salud pública.

Procesos como el compostaje -consistente en la transformación de residuos orgánicos en nuevos productos (p.e. abonos), no han dado resultado y han llevado al cierre a cerca de 15 plantas instaladas en ALC y desincentivado nuevos desarrollos por los altos costos operacionales, especialmente frente al menor costo de la disposición en rellenos o vertederos.

En este contexto Colombia no ha sido la excepción y tal como se indica en evaluaciones de la CGR, el manejo inadecuado de los residuos en el país ha provocado impactos en la salud humana y el medio ambiente, y su gestión afronta una crítica situación, especialmente en los grandes centros urbanos⁴.

La Superintendencia de Servicios Públicos Domiciliarios de Colombia –SSPD, institución encargada de la vigilancia y control en la prestación de los servicios públicos, con base en proyecciones de población y de producción de residuos por habitante, estimó que en 2002 se produjeron 27.300 toneladas diarias de residuos de origen residencial⁵.

De acuerdo con la mencionada Superintendencia, la falta de educación y sensibilidad ambiental en las comunidades colombianas con relación al manejo y eliminación de sus

² "Prevenir y reducir residuos y llevar su utilización hasta el máximo, promover el reciclaje y el uso de materiales ambientalmente amistosos y alternativos, con la participación de autoridades, del gobierno y de empresarios, para reducir los efectos adversos en el ambiente y mejorar la eficacia del recurso, con el apoyo financiero, técnico y otro para los países en desarrollo", Plan Indicativo Johannesburgo, 2002.

³ Banco Interamericano de Desarrollo, BID. Organización Panamericana de la Salud, OPS, 1998.

⁴ Capítulo II, Informe al Congreso sobre el estado de los recursos naturales y el ambiente 2002-2003.

⁵ Idem 5, esta cifra de residuos sólidos producidos por sectores domésticos o residenciales se estimó tomando como base una producción presuntiva de 0,65 kilogramos por habitante-día y una población proyectada de 42 millones.

desechos, han propiciado desde hace mucho tiempo, que se dispongan los residuos sólidos en las aceras, vías, prados, parques, quebradas, ríos y cualquier otro espacio público⁶.

La suma de estos elementos, según la misma fuente, genera situaciones comunes como la mezcla de residuos de diferente condición y peligrosidad, la acumulación incontrolada de residuos en distintas áreas, la generación de lixiviados y la contaminación de fuentes hídricas, el incremento en el uso de zonas sin condiciones propicias para la disposición de residuos y/o la colmatación de su capacidad, la generación de gases y olores desagradables, la quema incontrolada de los residuos, la erosión del suelo, la reproducción de transmisores patógenos, el deterioro del paisaje y del medio ambiente, la disparidad en la conceptualización sobre los sistemas de disposición final y las deficiencias en la dotación de equipos para las áreas de disposición.

Para subsanar en parte los problemas planteados, en Colombia la Constitución y la Ley⁷ contemplan herramientas que se orientan en dos sentidos: a) la prestación integral del servicio de aseo por parte de los entes municipales y b) el control, monitoreo y evaluación sobre los impactos ambientales y la salud pública por parte de las autoridades ambientales y las entidades de control, por el incumplimiento de las normas y requerimientos.

A pesar del marco normativo, a la ausencia de una cultura ciudadana sobre el manejo de los residuos sólidos se une el incumplimiento de las obligaciones por parte de los entes territoriales, las empresas prestadoras de servicios públicos, las autoridades ambientales regionales y locales y las instituciones comprometidas con el control de su prestación eficiente, entre otras.

Estos aspectos se reflejan en los bajos niveles de cobertura de servicios –especialmente en el ámbito rural-, en la manipulación, tratamiento y disposición inadecuadas de los residuos sólidos, el deficiente uso de los recursos públicos y la generación de “botaderos de basuras” sin control, que conllevaron al aumento de los márgenes de ganancia para los prestadores del servicio⁸ y el deterioro progresivo de la calidad de vida de la población, especialmente la más vulnerable.

En general, en Colombia y en ALC poco se ha avanzado en cuantificar todos los beneficios derivados de un manejo integral de los residuos sólidos y de la prestación eficiente del servicio de aseo (ambientales, económicos, sociales y en materia de salud). Las evaluaciones se reducen a “valorar” el material recuperado y reciclado, la venta de compostaje, de gas metano o energía proveniente de la incineración, el aumento del valor de los terrenos recuperados por rellenos sanitarios y otros beneficios marginales que no representan realmente todo el beneficio económico del adecuado manejo de los residuos sólidos.

Además, los procesos encaminados a reducir la peligrosidad de los residuos en la fuente, por ejemplo mediante procesos productivos más limpios, son incipientes y encuentran resistencia en el sector productivo por sus costos. De otro lado, la comunidad, ante la ausencia de campañas educativas y de comunicación al respecto, no se siente identificada como parte de la problemática, ni participa en las diferentes soluciones planteadas para resolverla.

⁶ Luisa Fernanda Velásquez Gaviria. Disposición final de residuos sólidos en Colombia. Dirección Técnica de Gestión de Aseo. Superintendencia Delegada para Acueducto, Alcantarillado y Aseo. Superintendencia de Servicios Públicos Domiciliarios – SSPD-. 2002. Bogotá, D.C. Versión en medio magnético.

⁷ Ley 142 de 1994, Ley 99 de 1993 y en los Decretos 605 de 1996 y 1713 de 2002.

⁸ La generación de ganancias para los prestadores del servicio por la no prestación de un servicio integral y el favorecimiento de inadecuados sistemas de disposición, es referenciado por la Política de Residuos Sólidos del entonces Ministerio del Medio Ambiente. 1997. Versión en medio magnético.

Las características señaladas anteriormente en distintos estudios e informes realizados desde 1994⁹, así como las auditorías efectuadas sobre algunos de los rellenos existentes en el país (Presidente, Curva de Rodas, Magic Garden), le permitieron al órgano fiscalizador identificar el manejo de residuos en el país como un objeto de control relevante por su importancia nacional.

Auditoría Especial al Manejo de Residuos

Con la realización de la Auditoría Especial al Manejo de Residuos, la CGR buscó identificar la problemática de residuos en Colombia y evaluar la Política Integral de Manejo de Residuos, estableciendo de manera precisa las irregularidades, las limitaciones del sistema del manejo, los actores responsables y potenciales acciones de mejoramiento.

En tal sentido, la auditoría, además de mejorar el conocimiento de la problemática, permitió que las deficiencias encontradas fueran tenidas en cuenta por las instituciones responsables para redireccionar, cuando la situación lo amerite, las estrategias hasta ahora utilizadas en el manejo de residuos.

Además de la información producida por la CGR, para adelantar el proceso auditor se retomó información de la Superintendencia de Servicios Públicos Domiciliarios, la Defensoría del Pueblo, la Asociación Nacional de Recicladores, el Departamento Administrativo Nacional de Estadística, el Instituto de Hidrología, Meteorología y Estudios Ambientales y el trabajo de diagnóstico realizado por la Procuraduría General de la Nación y como complemento a dicha información se realizaron visitas de campo a los rellenos sanitarios de centros urbanos de gran importancia nacional¹⁰.

Cifras para destacar

En desarrollo de uno de los objetivos del ejercicio auditor, la CGR evaluó, entre otros aspectos, la cobertura en el servicio de recolección y los tipos de disposición final (rellenos, botaderos, enterramiento). A partir de ello, estableció que la disposición y eliminación no controlada de residuos sólidos (domésticos, pequeños comercios, industriales) y peligrosos (hospitalarios, químicos, industriales tóxicos, etc.) sigue siendo una constante que afecta directamente el medio ambiente y amenaza la salud pública.

A pesar de lo anterior, pocos estudios reflejan cualitativa y cuantitativamente tales impactos¹¹. El desconocimiento de la problemática, que según la CGR afecta al 78% de las entidades, se une a la falta de coordinación institucional para la realización de actividades conjuntas de mayor impacto y menor costo. A juicio de la CGR, la falta de información y de divulgación es una de las causas del poco interés que despierta el tema.

Sólo el 24% de las entidades cuenta con una estructura administrativa suficiente con metas establecidas, apoyo financiero y logístico, y con procedimientos de seguimiento para garantizar su cumplimiento. Ni en las Corporaciones Autónomas Regionales –CAR- ni en el Ministerio de Ambiente, Vivienda y Desarrollo Territorial –MAVDT- se pudo evidenciar un trabajo articulado de las dependencias en materia de residuos.

⁹ Informes al Congreso “Estado de los Recursos Naturales y del Ambiente (años 1995 y 2002-2003).

¹⁰ La Contraloría General de la República y la Procuraduría General de la Nación adelantaron un trabajo conjunto de evaluación en las ciudades de Santa Marta (relleno sanitario de Palangana y de Veracruz) y en Medellín (relleno sanitario La Pradera).

¹¹ Una encuesta realizada por el Ministerio de Ambiente, Vivienda y Desarrollo Territorial a la que respondieron aproximadamente 400 municipios reflejó que el 60% de las Autoridades Ambientales Regionales no cuentan con información sobre impactos de la mala gestión de los residuos; en el 33% de ellas es incompleta y sólo en el restante 7% se cuentan con información suficiente.

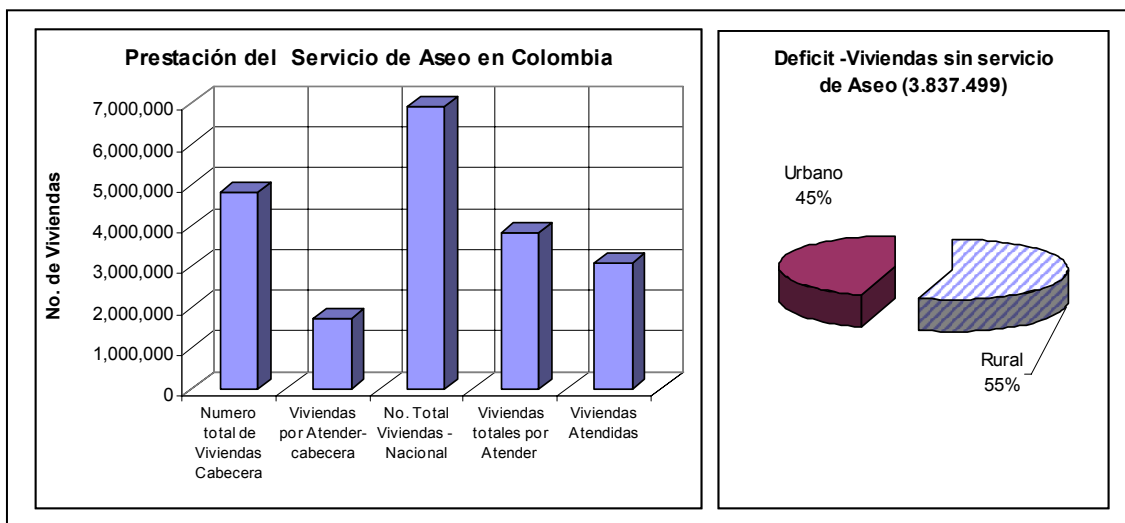
El análisis realizado por la CGR evidenció, como se señala en las cifras revisadas de cada ente, tanto en la rendición de la cuenta como en la información solicitada, que la asignación de recursos fue mínima y los pocos proyectos adelantados se convierten en esfuerzos aislados, que no atienden criterios de economía y eficiencia, si se considera la complejidad de la problemática; esta situación obedece posiblemente a la inexistente o insuficiente estructura administrativa antes señalada.

Estas condiciones son congruentes con la poca ejecución de acciones y proyectos de carácter regional para el manejo integral de los residuos. En este ámbito, los municipios que albergan muy poca población no resultan atractivos para los inversionistas privados que prefieren ciudades intermedias y grandes centros urbanos, donde la gran generación y disposición final de residuos les genera mayores utilidades operacionales.

La regionalización en el manejo de los residuos ha sido rechazada en general por la población porque puede significar el traslado de problemas ambientales y de salubridad y, en general, porque muy poca participación efectiva se les ha dado en la toma de decisiones.

Ante este panorama de limitados recursos se hace necesario fortalecer la asesoría técnica a los municipios por parte del Ministerio y las CAR para que se extienda más allá de los talleres básicos. En este sentido, las Guías para la elaboración de los Planes de Gestión Integral de Residuos Sólidos realizadas por el MAVDT pueden ser un punto de partida, sin embargo, requieren de acciones complementarias.

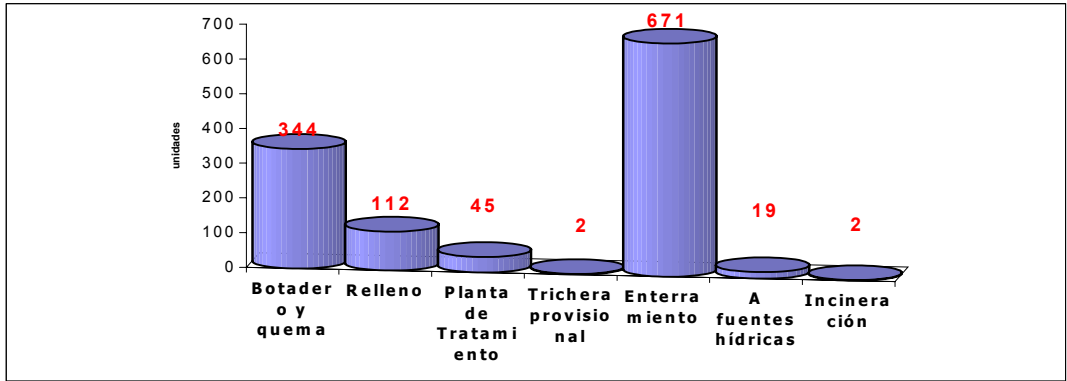
Las cifras de cobertura del servicio de aseo siguen indicando serias deficiencias. El 55% de las viviendas rurales y el 45% de las viviendas ubicadas en las cabeceras municipales no cuentan con el servicio¹², por lo cual la disposición de residuos se hace en áreas abiertas o en fuentes de agua.



Fuente: Censo Poblacional de 1993. SuperCifras No. 6/2002. Superintendencia de Servicios Públicos.

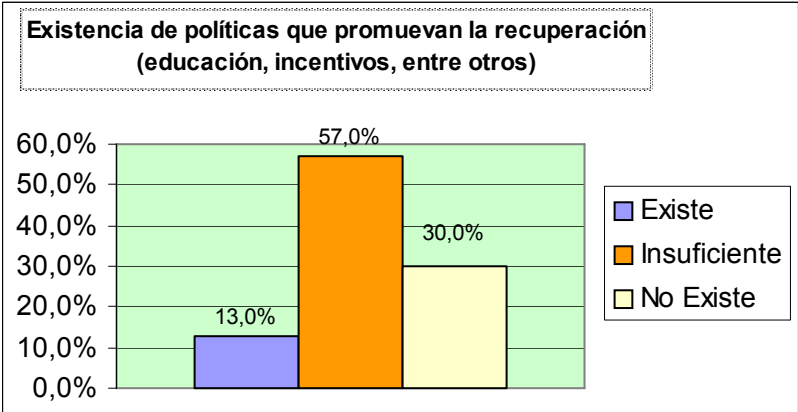
La mayoría de los residuos en el país se disponen de manera ilegal e inadecuada. La disposición final de los mismos se hace en su mayoría a través de enterramientos, en botaderos a cielo abierto y con quemas indiscriminadas, e incluso disponiéndolos en cuerpos de agua. Además, según las CAR, el tratamiento en general es muy reducido, con lo cual se pierde cerca del 70% de los residuos que son material reciclable y reutilizable.

¹² Cifras de 2002 de la Superintendencia de Servicios Públicos Domiciliarios.



Fuente: Contraloría Delegada para el Medio Ambiente, CDMA

No existen políticas definidas de reciclaje/reutilización/recuperación, que incluyan herramientas de tipo cultural, ambiental, económico y social, con elementos como participación del sector industrial, educativo y la creación de mercados que promuevan el aumento de los porcentajes reciclados, reutilizados y recuperados.

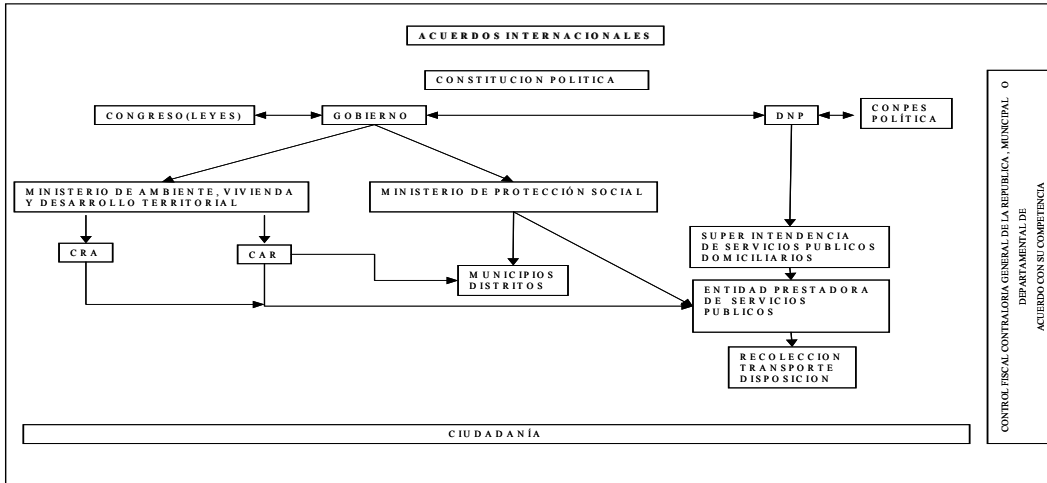


Fuente: Contraloría Delegada para el Medio Ambiente, CDMA

El análisis de la CGR sobre la estructura tarifaria permitió inferir que, en algunos casos, usuarios industriales y domésticos se equiparan en la tarifa del servicio, a pesar de las diferencias entre sus residuos.

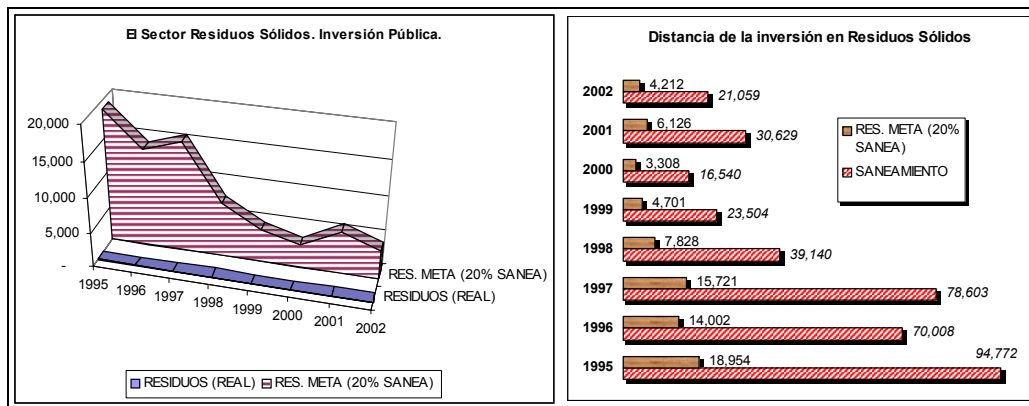
El análisis institucional

Existe un sobredimensionamiento institucional en el nivel central, en el cual la delimitación y el cumplimiento de las funciones y competencias puede generar conflictos. A pesar de la participación de tales instituciones, en la práctica la responsabilidad de gestionar los residuos sólidos solo es de los municipios.



Fuente: Análisis Auditoría Especial Manejo de Residuos, CDMA

Adicionalmente, es imperiosa la necesidad de expedir una legislación coherente, suficiente y enmarcada en la gestión integral, que defina claramente las responsabilidades, que ofrezca herramientas efectivas y recursos y que se acompañe de mecanismos de control y seguimiento para la vigilancia de la gestión.



La asignación presupuestal acumulada del sector de residuos durante el periodo mencionado no alcanza ni siquiera el 1% de la inversión en agua potable y saneamiento básico. El análisis adelantado con base en las cifras presupuestales indica la baja asignación y su aplicación sin metas específicas nacionales y regionales prioritarias.

La política para la gestión de los residuos

Otro de los objetivos de la Auditoría Especial al Manejo de los Residuos fue la evaluación a la Política para el Manejo Integral de Residuos, cuyo principios rectores son impedir o minimizar eficientemente los riesgos para los seres humanos y el medio ambiente ocasionados por los residuos sólidos y peligrosos, y en especial minimizar la cantidad o peligrosidad de los que llegan a los sitios de disposición final, contribuyendo a la protección ambiental eficaz y al crecimiento económico.

En desarrollo de la auditoría especial se adelantaron programas específicos de control sobre la gestión del Ministerio de Ambiente, Vivienda y Desarrollo Territorial –MAVDT, como ente formulador de la política.

Es de resaltar que no se encontraron cifras de seguimiento y cumplimiento sobre las tres grandes metas, ni en el nivel nacional ni en el nivel regional, las cuales se referían especialmente a minimización, aumento del porcentaje de aprovechamiento y mejora de los sistemas de eliminación, tratamiento y disposición final de los residuos.

Estas metas fueron planteadas para ejecutarlas en un plazo máximo de 5 años lo que le restó visión de largo plazo. A pesar de ello, una de ellas referida a alcanzar un 50% de cobertura y mejora de los sistemas de disposición no fue cumplida pues en el país persisten los enterramientos y botaderos a cielo abierto.

La meta de minimización de residuos generados, propuesta en 1998 para tres años, tampoco se cumplió y en la actualidad no hay un reflejo de una reducción significativa en tal producción.

En el ejercicio auditor no fue posible evidenciar el incremento propuesto del aprovechamiento de materiales revocables y reutilizables (30%), los cuales aun hoy día van a los sitios de disposición final, disminuyendo su vida útil.

Así mismo, la CGR determinó que las estrategias propuestas para el éxito de la política, basadas en: educación y participación ciudadana; sistemas de información de residuos sólidos; planificación y coordinación institucional; ciencia y tecnología y consolidación de las finanzas requeridas, no se instrumentaron y por tal razón las deficiencias aun están presentes.

Se pudo concluir que no se establecieron prerrequisitos adecuados (como la revisión del marco normativo y su coherencia, programas educativos, recursos financieros necesarios para garantizar una cobertura suficiente, definición de estructuras tarifarias, fondos requeridos, información sobre la problemática suficiente y confiable, estudio y creación de mercados, entre otros), para que la implementación de la Política Integral para el Manejo Integral de Residuos pudiera ser exitosa, y los recursos destinados en las diferentes acciones fueran invertidos de manera económica, eficiente y eficaz, con metas de efectividad identificables.

Por todo lo anterior, así como por las diferentes cifras de diagnóstico analizadas en el transcurso de la auditoría, la CGR consideró necesario señalar al MAVDT, en su papel de rector de política, y a las Corporaciones Autónomas Regionales como autoridades ambientales, la importancia y urgencia de contar con estrategias nacionales y regionales que apoyen la gestión local que debe adelantarse para lograr una efectiva gestión sobre el manejo de residuos en el país.

En efecto, la preocupación que se señala en el párrafo anterior, surge en un momento en que la ley ordena a los municipios planificar e implementar la gestión integral de los residuos sólidos y disponerlos adecuadamente, cuando aun persisten las deficiencias técnicas y la disposición final es inadecuada en buena parte del país.

Finalmente, ya que la disposición final aun es inadecuada según la información de las CAR, La Contraloría General de la República de Colombia considera que los municipios no tienen alternativas de corto plazo para tal disposición y considera de difícil aplicación un nuevo marco tarifario que, según la Comisión de Regulación de Agua Potable y Saneamiento Básico, no podrá incluir costos por disposición si la misma no se lleva a cabo en rellenos sanitarios técnicamente construidos y operados.

Management of finances earmarked for the State Programme to Promote Energy Savings and the Use of Renewable Energy Sources (Czech Republic)

Theme: Audits of Domestic Environmental Issues

Author: Supreme Audit Office of the Czech Republic

The aim of the audit was to scrutinise the use of state finances spent on implementing the “State Programme to Promote Energy Savings and the Use of Renewable Energy Sources” in the departments of the Ministry of the Environment and the Ministry of Industry and Trade.

The audited period was 2001 to 2004; prior and subsequent periods were also scrutinised where relevant.

Auditees: Ministry of the Environment (hereinafter “MoE”); Ministry of Industry and Trade (“MoIT”); State Environmental Fund of the Czech Republic (“SEF”); Czech Energy Agency (“CEA”); State Energy Inspection (“SEI”) and 40 selected support beneficiaries.

I. Introduction

The “Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects” was adopted in Lisbon in 1994. The Czech Republic signed the Protocol in 1995 and it took effect for the Czech Republic in 1998. The Czech Republic thus committed itself to drawing up and complying legislative and regulatory measures and also to drawing up a programme to promote energy-saving measures and the use of renewable and secondary sources of energy.

The government approved the “State Programme to Promote Energy Savings and the Use of Renewable Energy Sources” by resolution no. 480 of 8.7.1998. The programme was chiefly designed to initiate activities leading to energy savings and reducing energy-intensiveness, minimising negative environmental impacts during the consumption and conversion of fuels and energy.

Government resolution no. 686 of 12.7.2000 instructed the relevant ministers to submit, by 30 June each year, annual evaluations of the State Programme to Promote Energy Savings and the Use of Renewable Energy Sources (“State Programme”) for their department for the previous calendar year, starting with a report by 30 June 2001 for the year 2000.

Promoting the use of renewable sources of energy is also one of the priorities of the European Union and is required by EU Directive 2001/77/EC, on the promotion of electricity from renewable energy sources, under which the Czech Republic should achieve a target of 8% of gross energy consumption from renewable sources. The EU directive spurred the announcement of a National Programme for Efficient Energy Use and Use of Renewable and Secondary Energy Sources (“National Programme”); the MoIT and MoE co-formulated the programme. The National Programme was intended to be a step towards coordinating previously fragmented activities. In it, the government set out specific goals related to reducing energy consumption and promoting use of renewable and secondary energy sources in line with economic and social needs, sustainable development and environmental protection.

The government approved the National Programme for a four-year term of 2002 to 2005 by resolution no. 1079 of 22.10.2001. The government took note of an interim assessment of the National Programme for 2002 and 2003 by resolution no. 683 of 7.7.2004. This assessment

served as a basis on which to draft the National Programme for 2006 to 2009, which the government approved on 13.7.2005 by resolution no. 884.

The National Programme is implemented through state programmes that are every year announced and evaluated by government resolution. 11 government departments are currently involved in the State Programme. Besides the MoIT and MoE, these were the Ministry of Agriculture, Ministry for Regional Development (“MfRD”), Ministry of Health, Ministry of Defence, Ministry of the Interior, Ministry of Culture, Ministry of Justice, Ministry of Transport, and Ministry of Education Youth and Sports.

The draft State Programme is submitted to the government by the MoIT in cooperation with the MoE, including on behalf of the other ministries. The State Programme for each year consists of individual parts (in 2001 these were Parts A to G (with Part E left empty); by 2004 it had expanded to Parts A to K). The MoIT draws up and implements Part A and the MoE Part B of the State Programme, which were the subject of audit.

II. Definition and attainment of the goals of the National Programme for Efficient Energy Use and the Use of Renewable and Secondary Sources

The principal **goal** of the 2002–2005 National Programme **was to attain** a target for the proportion of gross energy consumption accounted for by from renewable sources including large hydroelectric power stations over 10 MW (“LHPS”) of 5.1%, or 3.0% without LHPS. Gross consumption of electricity from renewable energy sources (RES) did not increase between 2001 and 2004, which caused the proportion of electricity consumption accounted for by RES to stagnate (see Table 1).

Table 1 – Electricity generation from RES (in GWh)

	2001	2002	2003	2004
Electricity generation from RES (not including LHPS)	1 404	1 440	1 155	1 607
Electricity generation from RES (including LHPS)	2 768	3 183	1 878	2 768
Electricity consumption	65 108	64 961	67 013	68 616
Proportion of electricity consumption accounted for by electricity generation from renewable sources (not including LHPS)	2,2	2,2	1,7	2,3
Proportion of electricity consumption accounted for by electricity generation from renewable sources (including LHPS)	4,3	4,9	2,8	4,0

(Source: 2006–2009 National Programme)

Developments to date and the expected activation of new RES in 2005 suggest it is highly probable that the target of a 5.1% share of gross electricity consumption from electricity generated from RES will not be met. That also jeopardises the endeavour to meet a target of 8% share of electricity consumption from electricity generated from RES in 2010.

III. Support provision system

Section 4.1 of the 2002–2005 National Programme states: *“The Ministry of Industry and Trade and the Ministry of the Environment will see to attainment of the National Programme’s goals related to the reduction of energy-intensiveness and the use of renewable and secondary*

energy sources and will coordinate activities in the competence of other bodies of state administration and regional authorities.”

The involvement of 11 different departments providing support entirely independently of one another and in uncoordinated fashion makes the management role of the ministries responsible – the MoIT and the MoE – hard to fulfil.

The system for providing support under the State Programme is too fragmented.

The lack of coordination and insufficient control has resulted in the following:

- for the same action supported concurrently by MoIT and SEF finances (ascertained in one of seven cases) the providers defined different binding parameters (the deadlines for the final evaluation of the action differed by 10 months) and conditions (the shares of own funding differed by CZK 200,000); there were also different timetables and total costs for the action;
- in their applications for grants (which serve as the basis for calculating support from Part A of the State Programme “for building insulation” (investment programme) and from Part D, i.e. from MfRD finances, “for eliminating defects in panel technology” (non-investment programme)) investors/appropriation beneficiaries stated total construction costs which were once reported as investment costs and in the second case as non-investment; the CEA failed to detect this violation of the conditions. In this way the investors increased the basis for calculating support and, in the final phase, the actual level of support as well. The binding condition of the defined percentage of the appropriation was not complied with in these actions. Out of a selected sample of 51 actions, this procedure was found in thirteen (i.e. 26%). In these cases the investors (applicants) obtained an appropriation for the same action (one contract was signed with one contractor; one set of accounts was kept; one set of operational records of expenditure; the same amount of total costs) from two sources.

IV. Financing of parts A and B of the State Programme to Promote Energy Savings and the Use of Renewable Energy Sources

Part A of the State Programme

This part of the State Programme is handled by the MoIT, which assigned the CEA to administer it. Finances were provided out of the Ministry of Industry and Trade’s budget heading in the form of mainly investment appropriations for individual projects.

Part A of the State Programme dealt with the introduction of energy-saving measures and greater use of renewable and secondary energy sources. That meant, for example, implementing energy-saving projects in apartment blocks and houses, education, the healthcare system, state and public institutions, renewable and secondary energy sources projects, developing the combined electricity and heat generation, performing energy audits, devising energy policies for towns and municipalities, energy savings in industry, transport and agriculture, and also advisory, educational and promotional services. The maximum level of support for individual actions was defined in the terms of sub-programmes as from 15% to 50% of recognised costs.

Unused finances were returned to the state budget. The amount returned to the state budget in 2002 was approximately 10% of the allocated finances.

Table 2 – Overview of submitted applications, supported actions and state budget finances from the MoIT heading spent on the State Programme – Part A

Year	Submitted applications ¹⁾	Supported actions		Approved budget ²⁾	Unused finances	
	number	number	%	(CZK thousands)	(CZK thousands)	%
2001	1 249	529	42,4	102 200	1 398	1,4
2002	1 308	501	38,3	92 508	9 083	9,8
2003	1 106	299	27,0	103 160	860	0,8
2004	646	228	35,3	102 778	2 059	2,0
Total	4 309	1 557		400 646	13 400	

NB: ¹⁾ According to the Evaluation of the State Programme for individual years.

²⁾ According to the state budget act for individual years; in 2001 this also includes finances transferred to other state budget headings.

a) Selection of actions

The award process, i.e. the evaluation of applications and selection of actions suitable for support, was handled by an assessment commission appointed by the administrator of the budget finances, the MoIT. The assessment commissions had no statute, rules of business or chairman. Sessions of the assessment commissions were attended, besides by the appointed members, by the appropriate project managers (CEA employees), who also took and signed the minutes.

No criteria for selecting actions were predefined. Project managers compiled lists of actions for discussion and presented them to the commission. The minutes reveal that in certain cases general selection criteria were defined at the commissions' sessions, but not how to apply them. It was not until 2004 that a single assessment commission was appointed and projects were submitted with (pilot) multi-criteria assessments.

Considering that the criteria for assessing applications were not defined in advance and the process by which applications were assessed was not made public, applicants had no information about how support applications were judged. The usual reason given to applicants as to why their applications were not selected (supported) was "lack of finances". The documentation makes it impossible to identify why some applications were rejected and others accommodated.

No objective criteria were defined for the selection of actions by the assessment commission. The system of appropriations allocation was not transparent.

b) Decision on state budget participation in action financing

The appropriation drawdown conditions, which are an integral part of decisions on state budget participation in financing actions ("Decisions"), imposed a duty on investors to keep operational records and the minimum scope of such records but did not define how own performance was to be proved. As a result, the reporting of own work, i.e. work done by the appropriation beneficiary, was not uniform and was entirely insufficient. In some cases, works were not recorded in the accounts; in some cases, documents only specified the value of own works done by the investor without any details or expert opinion, or the expert opinions did not document actual expenditure on costs.

Up to 2004 the MoIT failed to define appropriation drawdown conditions in a way that would ensure economical use of state budget finances; for example, the question of reporting and financing own works was insufficiently resolved.

c) Definitive appropriation award

The final evaluation of actions submitted by appropriations beneficiaries within the meaning of Section 8 of Decree No. 40/2001 Coll., on state budget participation in the financing of assets replacement programmes, was meant to be completed by the issuing of a “definitive appropriation award”.

By the end of the audit, however, definitive awards had been issued (by the provider) for just 290 out of 1,557 actions implemented in the audited period, i.e. 18.6%.

The appropriation award conditions required beneficiaries to submit, within two years after the definitive appropriation award was issued, annual overviews regarding attainment of the action’s projected parameters. **The provider failed to issue definitive awards in time, and thus did not put in place the conditions for requiring appropriation beneficiaries to submit annual overviews of the attainment of projected parameters; these overviews were necessary for appraising the actions’ success.**

Part B of the State Programme

This part of the State Programme is handled by the MoE. Support was channelled into investments, awareness and education in the area of renewable energy sources. Finances for this part of the State Programme were provided out of the SEF, which administered and implemented it.

The provision of support in a given year was governed by the Ministry of the Environment Guidelines for Providing Finances out of the State Environmental Fund of the Czech Republic (the “MoE Guidelines”) and its appendices, most notably Appendix 2, applicable for the year in question. Appendix II contained an overview of announced programmes, principles for providing SEF finances, procedure and the necessary documents to be attached to applications for support.

Table 3 – Overview of finances provided out of the SEF for projects in Part B of the State Programme in the years 2001–2004 (CZK thousands)

Year	Appropriations	Loans	Total
2001	143 620	134 695	278 315
2002	269 338	92 430	361 768
2003	334 368	107 470	441 838
2004	366 162	98 369	464 531
Total	1 113 488	432 964	1 546 452

(Compiled using SEF accounting documents.)

a) Selection of actions

In 2001 the MoE Guidelines included a Methodological Procedure for Assessing Applications for Support in Investment Programmes (“Methodological Procedure”). The Methodological Procedure defined groups of criteria (environmental, economic, regional, technical and energy-related) and their weights for assessing applications for support in investment programmes. Since 2002 the Methodological Procedure has not been made public and applicants have not had precise information about what criteria their applications would be judged by. **This makes the system by which financial support is allocated from the SEF non-transparent for applicants.**

b) Evaluation of the State Programme

The level of provided financial support was not reported objectively by the MoE, because:

- **it overstated the actual amount of financial support provided;** it was not based on SEF accounting but on projects approved by the environment minister for provision of SEF finances, meaning that support was also counted in the case of projects where no contract was concluded or the contract between the SEF and the end beneficiary was renounced;
- **it is not comparable with the declared level of financial support of other participating departments,** because these are pledged finances and not finances actually spent.

c) Final evaluation of actions and definitive award of financial support

Just 90% of pledged appropriations was provided during implementation. The SEF only released the remainder of the approved appropriation once the final evaluation of an action had been appraised and approved. Although in contracts with beneficiaries the SEF undertook to adopt an opinion on the documents submitted for final evaluation of actions within 12 months after delivery and to disburse the remaining 10% of the appropriation on that basis, the SEF did not honour this commitment in the case of 492 out of 2,860 audited actions, despite the fact that all the documentary materials necessary for appraisal had been supplied by the end beneficiary.

Findings common to both Part A and Part B of the State Programme

a) Energy audits

One essential precondition for obtaining support from the State Programmes, parts A and B, was submission of an ex ante energy audit. In Part A, an ex post energy audit is required for final evaluation of actions. Only entities with an authorisation issued by the MoIT and included on the energy auditors list could perform the energy audits.

Neither Decree No. 213/2001 Coll., issuing the details of the requisites of energy audit, nor the Methodological Instruction, nor the conditions of allocation of support defined certain basic rules for drawing up energy audits. In particular, there was no uniform definition of ex ante data, and different relative criteria and different methods for calculating ex ante and ex post values were used.

The “random walk” statistical method was used to select for audit a sample of 65 small hydroelectric power plants, 167 heat pumps and 51 building insulation actions from Parts A and B of the State Programme.

The audit identified shortcomings mainly concerning fundamental differences between the data set out in energy audits and the actual state of affairs. Erroneous ex ante data were given, e.g. the degree of buildings’ energy-intensiveness was distorted; certain audits did not contain a description of the composition of construction layers included in the calculation of heat losses and did not appraise the actual state of the building; the heat insulation of perimeter walls of buildings required in the audit had not actually been performed; etc. **The resultant economic and environmental assessment cannot be regarded as reliable and conclusive in such cases.**

Environmental assessment of actions was only done on the basis of planned reductions of the emissions stated in energy audits. These assessments displayed a large dispersal of values; major differences were identified between minimum and maximum values in the case of individual pollutants between comparable actions; in some cases negative values were reported.

b) Channelling of support

Both the MoIT and the MoE failed to draw up analyses of economic potentials, investment-intensiveness or environmental benefit as a basis on which to distribute and channel finances into individual programmes or sub-programmes; such analysis could have defined the required ultimate composition of RES and steered support towards individual types of RES and energy-saving measures for individual types of RES. Finances were distributed on the sole basis of the applications and interest of individual applicants.

As a result, there was no definition of a desirable ratio for the use of solar, wind, water and geothermal energy and biomass or of energy-saving measures; that made it impossible to quantify the cost of implementing the Czech Republic's commitment deriving from EU Directive 2001/77/EC.

c) Evaluation of the State Programme

Up to 2004, there was no uniform method for evaluating the benefits of the State Programme, evaluating environmental impacts or evaluating energy efficiency; the administrators of individual parts of the State Programme proceeded at their own discretion in analysing the benefits.

The evaluation was based on planned values, so benefits of actions that were not implemented or failed to attain the planned parameters were also included.

Environmental benefits were overstated and the actual benefits were markedly lower, given the fact that they were calculated on the basis of the expected generation or savings of energy as stated in energy audits. As a rule, however, this energy was not generated and the planned reduction in energy-intensiveness was not achieved.

The evaluations of the State Programme contained considerable distortions of the actual benefits of the reported actions, as the enumeration of energy savings, RES use and calculated environmental benefits were insufficiently conclusive and were overstated in comparison with actual achievements.

Evaluation of the benefits of the State Programme was only unified for all involved ministries by government resolution no. 81 of 21.1.2004, whose appendix contains a "Methodology for Evaluating the Benefits of the State Programme to Support Energy Savings and the Use of Renewable Energy Sources". Even this methodology displays some shortcomings, however: e.g. it does not contain a definition of the ex ante state for calculating benefits and does not specify which benefits (parameters) will be included in the evaluation of the State Programme, i.e. planned benefits of actions launched in the given year (but not finished) or actions whose implementation was commenced and support drawn down (but not finished), or benefits of actions completed in the year of evaluation (evaluated), in other words benefits actually achieved. Yet there may be a gap of up to five years between when a programme is announced for a particular year (or support is provided) and implementation of the investment is completed.

V. Analysis of the benefits of the State Programme

1. Evaluation of projected parameters

a) Energy generation from wind and small hydroelectric plants subsidised under parts A and B of the State Programme

72 actions from parts A and B of the State Programme involving wind and small hydroelectric plants were selected for audit by the "random walk" statistical method. Of that number, 28 actions were assessable, as they had been in constant operation for at least a year and so

data on actual energy generation were available. The evaluation showed that **actual electricity generation** stated in the final evaluation of actions **is as a rule less than projected generation** stated in the ex ante energy audit. An output lower than projected was achieved in 79% of the scrutinised actions.

b) Energy savings from measures subsidised under Part A of the State Programme

The benefits of a selected sample of **51 actions** for building insulation were evaluated. Only 10 of these could actually be evaluated, however (using data taken from documentation of the actions).

In the case of actions subsidised under the sub-programme designed to promote measures to increase energy efficiency in Part A of the State Programme **the envisaged energy savings were not achieved in 9 out of the 10 evaluated actions.**

Both actual electricity generation and the anticipated level of energy savings were lower than had been stated in the energy audits and had been reported as implementation of the State Programme.

2. Financial cost

Based on evaluation of actions done under Parts A and B of the State Programme for which the necessary data were available, it was found that average investment cost per 1 Joule of energy generated (calculated from the planned energy generation data for one year and total investment costs stated in energy audits) was CZK 35.70 in the case of small hydroelectric plants (65 actions evaluated), CZK 60.90 in the case of heat pumps (167 actions evaluated), and CZK 88.90 in the case of wind-driven plants (2 were evaluated).

Small hydroelectric plants would appear to be the most suitable of the scrutinised RES alternatives for the direct generation of electricity from RES. Wind power is among the riskiest RES: it is one of the most expensive forms of energy from RES, it tends not to be constant (the incidence and intensity of wind cannot be fully relied on) and in Czech conditions it has little potential.

VI. Summary and evaluation

The system for providing support under the State Programme appears too fragmented and insufficiently transparent. The Ministry of Industry and Trade and the Ministry of the Environment, which are the departments responsible for implementing the National Programme in the area of reducing energy-intensiveness and the use of renewable and secondary energy sources and coordinating activities in the competence of other bodies of state administration and regional authorities, have very limited powers under this system to influence efficient and economic use of state finances.

No fundamental analysis was done to enable support to be channelled into individual types of RES in order to fulfil the Czech Republic's commitment regarding the proportion of overall electricity consumption accounted for by electricity generated from RES; neither the MoE nor the MoIT directed the support in this sense. An optimal RES composition was not defined on the basis of economic potential and the investment-intensiveness of individual types of RES, i.e. a desirable ratio for the use of biomass and solar, wind, water and geothermal energy.

No relationship was defined between the State Programmes approved for individual years and attainment of the goals set in the National Programme; consequently, although the State Programme is implemented in individual years, the goals identified in the National Programme are not being achieved.

In the evaluations of the State Programme for individual years the values of expected benefits from actions for which support was provided in the given year were stated as the values of attained benefits, even in cases where the action had not been completed. In the case of completed actions, actually attained values for electricity generation from RES and achieved energy savings were altogether lower than projected. The annual evaluation of the State Programme submitted to the government cannot therefore be regarded as objective.

A considerable portion of finances (approx. 70% of total reported finances for implementation of the State Programme is spent on programmes where using renewable sources or making energy savings are merely a secondary effect.

Developments to date and the expected activation of new RES in 2005 suggest it is highly probable that the 2002–2005 National Programme’s target of “attaining a 5.1% share of gross electricity consumption from electricity generation using RES” will not be achieved. That also jeopardises the endeavour to meet a target of an 8% share of electricity consumption from electricity generated from RES by 2010 as per EU Directive 2001/77/EC.

Audits

Management of Finances Earmarked for the State Programme to Promote Energy Savings and the Use of Renewable Energy Sources (2005)

Environmental Auditing on Waste (Egypt)

Theme: Audits of Domestic Environmental Issues

Author: Dr. Emad Mohamed Riyad of the Central Auditing Organization of Egypt

Introduction

The phenomenon of environmental pollution has drawn the attention of both national and international public opinions in both developed and developing countries, therefore, state institutions should consider all factors and variables that affect environment when formulating their strategies and policies.

Consequently, some controls should be established to facilitate ascertaining that such institutions satisfy their responsibilities towards environmental protection, and to obtain a complete obvious and true picture of their results of operations, for this purpose, the so-called environmental auditing or auditing the issues of environment has appeared.

Environmental auditing can be defined as the Approach particular to auditing the environmental policies, programs and activities. It includes: financial auditing, economy, efficiency and effectiveness auditing of these policies, programs and activities—with the objective of examining to what extent the audited entity actually complied with laws and regulations that organize environmental activities and programs—ascertaining the soundness of financial transactions - expressing an opinion on the validity and accuracy of their data, the degree of economy, efficiency and effectiveness in achieving the environmental policies, programs and activities and preparing a report on such aspects.

Moreover, environmental auditing is divided into:

1. Financial auditing: that aims at making sure of defining and reaching a value for the costs, liabilities and assets related to environment activities and of the soundness of financial transactions and to give an opinion on the correctness and accuracy of the relevant data according to the generally accepted accounting standards.
2. Compliance auditing that aims at assuring the actual adherence to environmental laws standards and policies applicable on the national or international level where appropriate.
3. Performance audit that aims at assuring the existence of the aspects of economy, effectiveness and efficient in achieving environmental policies, programs and activities and to prepare a report on such aspects.

Environmental auditing may covers many fields such as water, wastes, biodiversity, sustainable development.

In this paper, we shall discuss the competences, responsibilities, methods and techniques used in auditing the management of wastes by the Central Auditing Organization (CAO) as the supreme audit institution (SAI) in the Arab Republic of Egypt.

Governmental policies & programs related to wastes

The Arab Republic of Egypt has paid particular attention to wastes and made great efforts in this area. It issued many laws and resolutions, established many organizations with the objective of environmental, the Environment Law No. 4 of 1994 is the most recent Egyptian Legislation addresses the environmental issues in the field of natural resource preservation and environmental protection against pollution, this law is the main legislative tool in various environmental fields in Egypt, the law includes several items relating the proper handling and

management of hazardous and non hazardous materials and wastes, In addition there is a national program for integrated management to Hazardous healthcare wastes . national strategy for integrated municipal solid waste management and an Information system to deal with hazardous wastes has been developed since 2001, cooperation with six ministries.

The Central Auditing Organization's Approach in Auditing the management of wastes:

1. The CAO practices environmental auditing on management of wastes according to law issued in this regard, the generally accepted accounting principals and on codes and rules of professional ethics and behavior, in addition to government policies, laws, decisions, statutes and instructions related to wastes management.
2. Major authorities and responsibilities of the CAO in auditing the management of wastes are represented in the following:
 - a. Following—up the national wastes policies and programs and to what extent they are in compliance with the international obligations and commitments.
 - b. Auditing the adherence of ministries, governmental organizations, units of local administration and public business enterprises to the national environmental laws belongs to wastes and regulations as well as the international obligations and engagements.
3. Reporting and following-up the Recommendations:

In the field of reporting and following-up the recommendation of the auditing management of wastes, the CAO prepare a group of different reports according to each entity, these reports include the CAO findings and recommendations on management of wastes that should be followed-up to ascertain that the audited entities observe the appropriate procedures therein, on the other hand, the CAO follows-up its recommendations mentioned in reports according to its law.

Work Scope and Methodology

The central Auditing Organization has developed and implemented a plan for control management of Hazardous healthcare wastes in some governmental hospitals in 2005.

The inspection was conducted with a view to evaluating the efficiency of the state strategy in dealing with such wastes in addition to measuring effectiveness of means of disposal and compliance with environmental requirements in the different phases while collecting, transporting, piling and disposing of such wastes. However, the CAO faced a number of challenges, of which some were overcome. At the final step, salient conclusions and recommendations were reached according to the following procedures:

1. Nature of mission and objective:

The plan of the CAO targeted control on the management of Hazardous healthcare wastes in public hospitals to verify compliance with environmental standards and requirements with the aim of:

- i. Preserving, protecting and improving environment.
- ii. Contributing positively to the protection of public health.
- iii. Achieving optimal use of financial and human resources.

2. Work planning and field of inspection:
 - a. Work planning comprised defining tasks and roles of every one in the work team, establishing a time schedule for implementation, and adopting a system for supervision and follow-up of the team's work.
 - b. Scope of work included carrying out a financial, compliance, performance auditing on the management of Hazardous healthcare wastes through focusing on the following aspects:
 - i. The national strategy on environmental work in Egypt in the field of management of wastes,
 - ii. Law No. 4/1994 and its executive regulation in respect of environment,
 - iii. The instructions issued by the Egyptian Environmental Affairs Agency (EEAA), and ministry of health in relation to dealing with Hazardous healthcare wastes,
 - iv. Standards stipulated in the international agreements (Basel convention) Regarding dealing with hazardous wastes.
 - v. Environmental management systems in hospitals and the strategy of each hospital to treat Hazardous healthcare wastes.
3. Plan implementation and Reporting: The plan of inspection was implemented in light of the following guides:
 - a. International Auditing Practice Statements (IAPS, 1010), The Consideration Of Environmental Matters In The Audit Of Financial Statements.
 - b. Guides issued by WGEA especially which related to wastes,
 - c. Field visits and interviews with executives in charge of environmental affairs.
 - d. Requests of data, documents and worksheets relevant to the nature of the mission,
 - e. Seeking the advice of some experts in the environmental field to provide the necessary technical of assistance,
 - f. Carrying out documentary inspection,
 - g. Obtaining written Representation letter from the management as audit evidence.

Key problems and challenges

1. Poor facilities required for carrying out the work In terms of abundance and experience.
2. Non existence of local auditing standards or guides in the field of audit the management of wastes.
3. Some hospitals have no databases or necessary information covering various environmental matters including treatment of wastes.
4. Some hospitals gave no response to the inquires of the CAO relating to the mission, nor did they furnish the CAO with their strategies regarding processing of Hazardous healthcare wastes.
5. Increasing number of hospitals subject to inspection in compare to the limited number of qualified staff in the CAO who are able to perform such task.

Action steps taken to resolving the problems and challenges

The CAO has overcome this problem by the following ways:

1. Outsourcing technical experts, besides seeking the assistance of physicians working in the CAO's staff Medical care unit.
2. Preparing a training courses for the teamwork in charge of the inspection about types, methods of disposal of wastes, methods and techniques of auditing management of wastes besides their previous knowledge of generally accepted audit practices.
3. Recruiting technical and specialized skills to help in conducting auditing the management of wastes.
4. Depending on the International Standards on Auditing (ISA), and the guides which are issued by both IF AC and WGEA, relating to environmental auditing in general and auditing the management of wastes in particular.
5. Benefiting from the reports prepared by technical and professional competent bodies, i.e. Egyptian Environmental Affairs Agency(EEAA), and the ministry of health, which contain results of the periodical inspection conducted by such bodies on some hospitals.
6. Addressing the supreme authorities to bind inspected hospitals to respond to the inquires of the CAO.
7. Setting a time plan to cover the entire society subjected to inspection starting with selecting a sample of hospitals with due consideration to relative importance of hospitals in terms of size and number of incoming sick persons.
8. Introducing new model forms for evaluating environmental performance to be filled by the unit subject to supervision to decide the extent of compliance with environmental requirements and standards pursuant to the provisions of law No. 4/1994 as well as the technical criteria, described in detail according to activity of the body.

Such forms reveal the following points:

- a. Kind of the project's wastes.
 - b. Amount allocated in the budget for financing projects related to environment.
 - c. Source of finance (local-external),
 - d. Rate of implementation in every project.
 - e. Obstacles and problems hindering the implementation of the project,
 - f. The suggested action plan for minimizing environmental pollution, or dealing with wastes, and proposed projects to be carried out in the future.
9. The CAO has introduced descriptive indicators to measure the extent of existence of an intact system for dealing with wastes including:
 - a. Putting the wastes in bags distinctive with different colors,
 - b. Do not touch the hazardous wastes unless you wear the gloves.
 - c. Using well-built box with tight cover for disposal of needles,
 - d. If this box is three-fourths filled, it should be tightly shut.
 - e. The place of disposal should be carefully covered to avoid animals trifling.

- f. Disposal of hazardous wastes in a safe and correct manner in accordance with the governmental instructions,
- g. Concluding a written agreement with a place assigned for disposal of hazardous healthcare wastes by burning or other wise in a safe way.
- h. A written document should be available explaining the different phases and steps of safe treatment with Hazardous healthcare wastes.
- i. A proper table for collecting wastes according to time and type.

Conclusions (results)

The report include the following key comments:

1. Lack of environmental management systems within some hospitals.
2. Some hospitals have not efficient tools to dealing with hazardous healthcare wastes.
3. Poor potentials and necessary financial resources required to develop or replace or maintain the existence disposal methods of wastes.
4. In some hospitals no book-keeping or recording of the hazardous healthcare wastes and the section they are coming from.

Recommendations

1. Facilities for dealing with wastes should be developed, operated, and maintained to improve the disposal process.
2. The necessary financial resources should be provided to supply, fix and maintain facilities for disposal of wastes.
3. Environmental standards requirements and conditions provided for in the laws, regulations and intentional agreements should be complied with.
4. Periodical inspection and follow-up management of wastes in the hospital by the technical supervisory professional bodies should be regularly conducted.

It is noteworthy that the audited entities consider and adhere to the recommendations mentioned in the CAO's reports.

Environmental Audit on Medical Waste Management (Ethiopia)

Theme: Audits of Domestic Environmental Issues

Author: Office of the Federal Auditor General of Ethiopia

1. INTRODUCTION

What is medical waste?

Waste in general is a continual]*." growing problem in any country or community. The handling and disposal of waste usually leads to discharges into the soil, air, and water and is a source of pollution.

Waste categorized broadly into non hazardous (solid waste) and hazardous (toxic) regardless of their property. Medical waste is a form of hazardous waste and involves waste from the treatment of diseases in humans and animals. This type of waste consists of medicines, sharp objects, body fluids, body parts and bandages.

Hazardous nature of medical waste

Medical waste usually contains bacteria and other microorganisms that can spread harmful diseases and can infect and damage biological things and causes death if not properly handled and disposed. Due to this hazardous nature of medical waste it must be treated separately and disinfect before disposed of into any thing including subctic tank.

The role of federal government in environmental health

In Ethiopia, the responsibility for improving and enhancing the health and quality of life of the citizens and promoting sustainable development is shared among institutions. The ministries of health and the environmental protection authority have the main legislative responsibility for ensuring the health and safety of the people and the development of environmental health of the country. To this end both institutions produced policies and was approved by the government. Waste management is therefore an important factor in safeguarding human health and environmental protection.

Audit criteria

32 Audit criteria were developed from the necessary and available materials such as:

- INTOSAI, waste management audit guideline
- Health policy
- Medical waste management guidelines
- Environmental policy
- Human health protection regulation
- Infection prevention guidelines—Audit report on medical waste management, South Africa
- Literature on environmental management

2. MAIN FINDINGS

2.1. About segregation, collection and transportation of medical waste

According to the principles of medical waste management and the steps that has got acceptance by the ministry of health must be performed in accordance with segregation, collection and appropriate transportation to disposal sites.

However, in all the six hospitals we audited there was no any waste segregation system and hence any kind of waste (hazardous and non-hazardous) handled together where generates.

The collection procedure was also not in accordance with internationally recognized color-coding system, i.e. Black bag for non-hazardous municipal waste; yellow for chemicals, medicines, and laboratory wastes; Red for hazardous, sharps, blood and blood fluids. The containers, bags or bins were found having no lid and stayed in the corridor where: many people moving around (photo 1).

Transportation from collection areas /wards to disposal sites using open trolleys through crossing working areas that has crowd of people. Those waste—collected from upstairs transported using lifts that are common with people, foods, medicines etc.

The responsible departments of both the federal ministry of health and the regional health bureau acknowledges the absence of segregation & proper collection of medical wastes and pollutant way of transportation. The reason given was just the problem of exercising while there was know how. According to medical doctors and sanitation heads of those hospitals it is because of lack of guideline how to manage medical wastes.

However, we believe this may not be sufficient answer from any health professionals or responsible bodies. The condition can led to serious damage on both people and the environment.

2.2 Porters do not use protective clothes at work

Porters must use personal protective equipment where ever they are on duty. This can able to protect clients, porters themselves and employees from microorganisms present on medical waste. However, porters in the audited hospitals were found using no mask, gloves, cap and closed boots or shoes while they are on duty in collecting, handling, transporting and disposing of medical wastes (photo 2)

According to the responsible bodies of the auditee the cause for this condition was just lack of guidelines. In addition they forward reasons such as lack of awareness of porters. However, the reasons are not satisfactory while the situation can cause the spread of microorganisms and damage human health, which is not expected from any health centers.

2.3 Lack of proper solid medical waste disposal system

Medical waste should be incinerated properly and trained workers should perform the process. Before incineration takes place waste should be separated in accordance with the nature and suitability of disposing to ensure combustion. However, in all hospitals audited medical waste was incinerated in unsuitable incinerators, spewing toxic fumes into the

atmosphere. In addition, except one regional hospital incineration was performed by porters who do not get any training.

All incinerators we looked at did not have scrubber or cyclone that can filter flue gases before entering into the atmosphere and hence they are found polluting the environment. The incinerators were broken and found open and hence cannot be able to contain high temperature that can ensure combustion. One federal hospital was found burning medical waste at open site in a way that poses infection risks due to lack of incinerator (photo 3). Disposal by burning using such unsuitable incinerators or open site also incinerated in working hours by the time many people are working and moving. For example, time was not allocated considering day offs, low movement of people, weekends, etc in order to prevent people from inhaling polluted air. The condition can affect human and animal health.

2.4 Untreated liquid waste disposed of into rivers and municipal drainage system

Liquid waste generated in hospitals should be treated and must be disinfected before entering into a septic tank or disposed of into municipal sewer line. Other possibilities can also be possible using modern liquid waste treatment system. However, from the audited hospitals four of them disposed of liquid waste into the nearby rivers and the rest disposed of into municipal sewer line without any treatment. No hospital had disinfection mechanism or treatment system while they are the largest and referral hospitals. These rivers are the major source of income (irrigation, watering animals, recreation, construction, etc) for downstream communities. These rivers are known by their high level of pollution and this is mainly due to hazardous liquid disposed from hospitals in the capital. The condition cannot be able to ensure sustainable development of the capital, damage human and animal health and destroy biodiversity.

2.5 Lack of proper site selection for disposal of waste in hospitals

Disposal site selection must be based on proper criteria and should get certificate of approval (permits) for utilizing the disposal site.

However, we found that there was no any criteria set by the ministry or bureau of health and no hospital has got certificate of permits to operate on the existing disposal sites. There was also no application of environmental impact assessment. Therefore, incinerators were found located along the road side, in close contact with offices and residential areas causing pollution. In addition, the place was not properly sealed and sanitarily secured, and no warning had been existed around.

2.6 Lack of medical check-up for porters and incinerator operators

In order to prevent the risk of transmitting infections, porters and incinerator operators must get medical check-up in a fixed interval of time. But, we found no system of medical check-up in any of the audited six hospitals. We believe that as porters do and operators have close contact with medical waste they are highly vulnerable to infections and can possibly transmit to other people. If there is medical check-up they may know their health status, become aware of infections and can implement recommendations given by medical professionals.

2.7 Lack of data compiling and recording system on medical waste

We expect that data compiling and recording system existed at the level of hospital, regional health bureau and the ministry office in a harmonious and up to date manner. However, there was no such kind of information or recording system at every level of hierarchy. We believe that lack of medical waste information and data compiling system may have impact on decision-making, planning, implementation, monitoring and evaluation and researches in the field.

2.8 Need for community participation in waste management

In order to get independent information from clients and the community it is appropriate to establish system for receiving suggestions and complaints. We identified one federal hospital as lesson on such a system while others attempting even if it was inconsistent.

We believe that appropriate system for receiving suggestions and complaints from the clients and the surrounding community can improve waste management and develop participation approach.

2.9 Poor internal control system on waste management at hospitals

In order to improve efficiency and effectiveness of waste management and prevent infection risks there must be strong internal control system at every hospital. However, except one regional hospital others did not establish strong internal control system. The lessons gained from such a regional hospital was that the medical director, the members of infection prevention committee, and head of sanitation together established a system for the day to day control and monitoring process. Immediate decisions are also given on corrective actions.

2.10 Lack of monitoring in the implementation of health and environmental policies

Even if there are Health and Environmental policies in the country both the responsible agencies did not establish monitoring system for the implementation to ensure environmental health in hospitals. We expect that both the federal and regional agencies had monitoring system on how their policies were implemented and what problems were existed. However, both the ministry and regional health bureau and environmental protection authority did not take any monitoring and control work in any of the audited hospitals.

We believe that it is the lack of monitoring one of the reasons for pollutions caused by hospital waste those disposed of into rivers, air and soil.

2.11 Lack of awareness and training program for employees of hospitals

In order to inform the hazardous nature of medical waste and the mechanisms to prevent infection there must be awareness and training program for employees of hospitals including health professionals, porters and administrative staffs. However, there was no such kind of program in any of hospitals audited. Both the ministry and regional health bureau recognize the need for such program and have long term plan.

We believe that it is one of the reasons for the poor conditions and inefficiencies observed in hospitals.

Auditing the Hot Mud Eruption In Sidoarjo, East Java, Indonesia With Environmental Perspectives¹

Theme: Audits of Domestic Environmental Issues

Author: Prof. Dr. Anwar Nasution²

Introduction

The mud eruption that started in Porong, District of Sidoarjo, East Java on May 29, 2006 at 5,000 m³/day (currently reaching 170,000 m³/day) at an exploration well owned by PT Lapindo Brantas Inc. (LBI) was a tragic event to be sure. The catastrophe and its handling indicate a number of issues. First, it is the result of the negligence of a certain company. The company, LBI, a public company listed in Delaware, USA, contracted the un-reputable company which most likely its own subsidiary to do the exploration. The company explored the well using risky and careless techniques such as drilling through an overpressure formation without adequate casing and drilling a high risk exploration well close to a densely populated area without in-depth and comprehensive survey and risk assessment. Furthermore, the drilling process was done by inexperienced and incompetent personnel using inadequate equipment.

Secondly, the government's response in handling the impact of mud is very slow. The Government acted slowly in helping the victims and relocating them and the vital infrastructures, such as gas pipe and electricity power transmission, to the safe areas. The victims, who have lost more than 11 thousands homes and two dozen business that have been buried in more than 6 sq km under 20 m deep covering nine villages in Sidoarjo area, could not be helped immediately due to the absence of protection of property rights. Moreover, the choked-off of transportation to the main seaport of Tanjung Perak and Juanda Airport, near Surabaya, the capital of East Java, has also negatively affected the economy of hinterland in the southern part of East Java. All of these governmental delays induced wide-spread negative impacts to the environment and economy.

Furthermore, the little progress in prosecution of who are responsible for the drilling failure is also the indication of the government's slow response. It took nine months for the police to complete the investigation; however, the case has yet to go to trial. Only individual employee and contractor, not the company, are being probed as suspects.

The absence of effective, low cost of enforcement of contract caused a slower response in helping the victims. On 4 December 2006, six months after the eruption occurred, LBI agreed to buy the entire victim's destroyed properties and pay the compensation cost. The implementation of the agreement was very slow. Few dozen victims have begun to receive compensation promised by LBI.

The slow response of the government is partly because the LBI is owned by the family of Mr. Aburizal Bakrie, the Coordinating Minister for Social Affair whose in-charge in coordinating the handling of the eruption. The minister is a prominent member of the leading political party. The Bakrie group is a local business conglomerate that has interest in many business sectors,

¹ A paper prepared for the Eleventh Meeting of INTOSAI-WGEA, Arusha, Tanzania, on June 28, 2007.

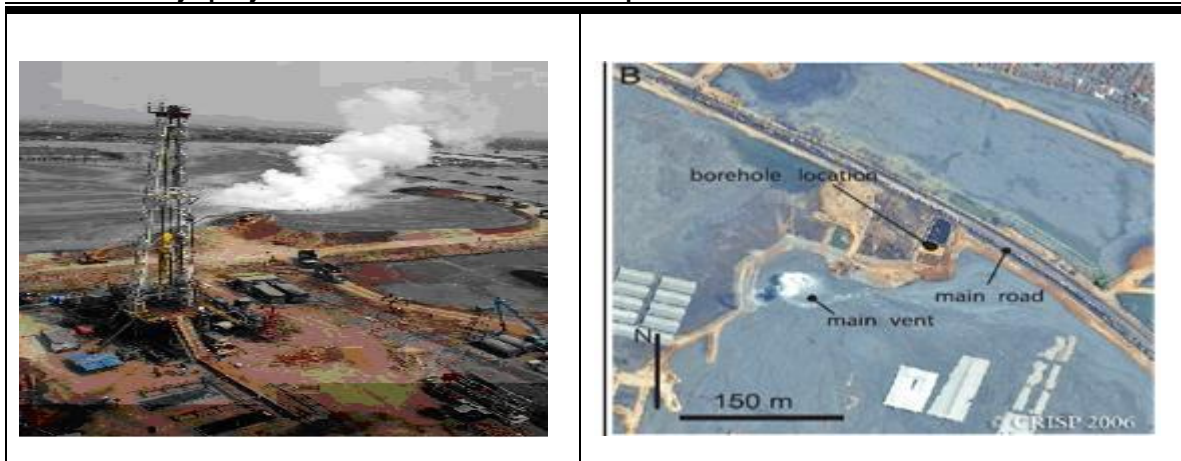
² Professor Dr. Anwar Nasution is the Chairman of Badan Pemeriksa Keuangan (BPK), the State Audit Board of the Republic of Indonesia, and Professor of Economics, the University of Indonesia, Jakarta.

mainly trading and plantations. LBI is the first interest of the group in oil exploration and exploitation.

The Source of Disaster

The eruption started just 150 meters away from the exploratory Banjarpanji-1 well at the time of drilling.(exhibit 1). Banjarpanji-1 well was located in the Brantas Block concession area, operated by Lapindo Brantas Incorporated.

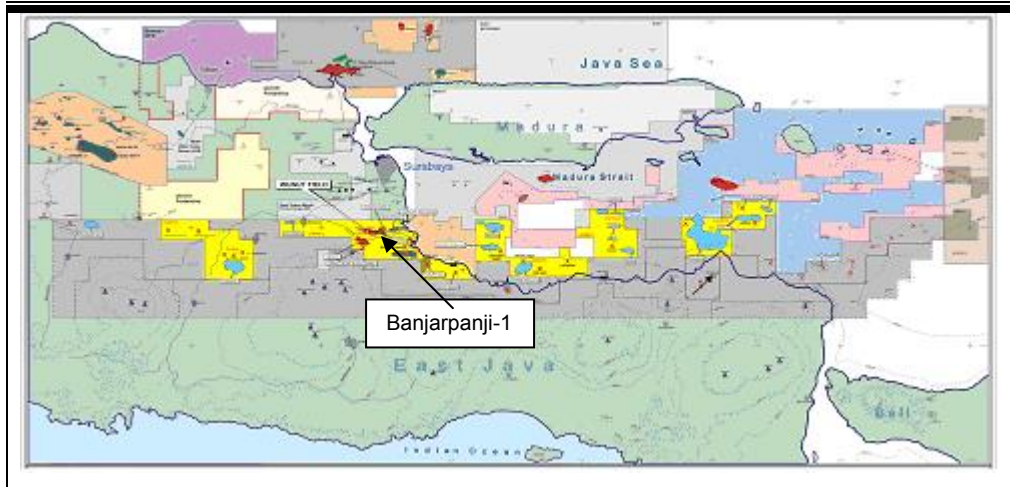
Exhibit 1. Banjarpanji-1 well and the center of the eruption



The Brantas Block concession was awarded to Huffco Brantas Inc. in 1990. The name of the operator, Huffco Brantas Inc, was amended to P.T. Lapindo Brantas Inc. (LBI) on April 10, 1996. LBI is owned by PT. Kalila Energy Ltd and Pan Asia Enterprises. After the amendment, the participating interests of the Brantas Block (exhibit 2), have been changed many times from, Huffco Brantas Inc to, finally, LBI (50%), PT. Medco Brantas E&P (32%) dan Santos Brantas Pty Ltd.(18%), as from 2006. LBI acted as the operator. LBI is controlled by the family of Abu Rizal Bakrie, the Coordinating Minister of Welfare, Republic of Indonesia and a prominent leader of the majority party in the Indonesian Parliament.

In exploring the Banjarpanji-1 well, the company sub-contracted the Integrated Drilling Project Management (IDPM) to PT Medici Citra Nusa (MCN), a private company. MCN further subcontracted the work to other companies and acted as the coordinator for the project. The company started to drill (spud in) Banjarpanji-1 well, on March 8, 2006 and reached the depth of 9,279 feet on May 27, 2006. At this depth, the exploration of the Banjarpanji-1 well suffered from a number of drilling problems, such as well kicks, where fluid from the formation penetrates the bore hole, and losses, where fluid or mud from the bore hole leeches out to the formation. When the well reached a depth of 2,834 meters, an eruption of steam, water, and a minor amount of gas was observed at 05:00 a.m. just 150 meters southwest of the well. A mud volcano was born!

Exhibit 2. Location of Brantas Block and Banjarpanji-1 well



The Cause of Mud Eruption

Majority of experts, including the geologists and drilling consultants who assisted BPK in the audit, concluded that insufficient handling of well drilling by LBI had caused a crack in the formation and created channels for the mud in the clay/shale stone formation to flow to the surface. This conclusion is also corroborated by Richard I. Davies and Richard Swarbrick et.al. in the article "The Birth of Mud Volcano, East Java, 29 May, 2006" published in GSA Today, February 2007. They stated that the eruption was the direct result of connection (caused by the drilling activities) of a high-pressure fluid at depth with shallow sediments at a depth at which fractures could be initiated. Once initiated, the fractures would have propagated to the surface, driven by the deep pressure (ref. the illustration of the cause of the eruption below).

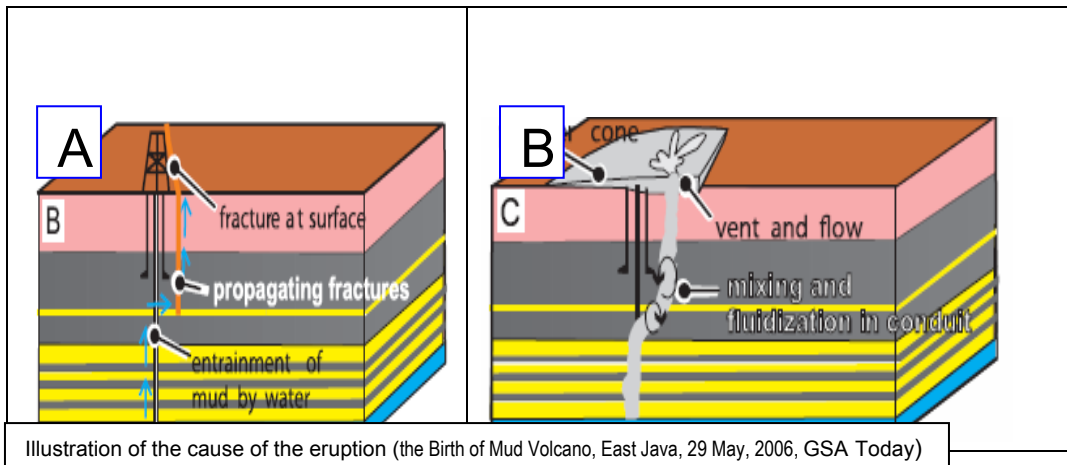


Illustration of the cause of the eruption (the Birth of Mud Volcano, East Java, 29 May, 2006, GSA Today)

Other group of experts indicated that earthquakes can create cracks that allow trapped mud and bubble to the surface. On 27 May 2006, an earthquake shook Yogyakarta on the central part of Java Island, and this could have cracked the ground, potentially helping to release the mud. However, the quake's epicenter was some 300 kilometers away from the mud volcano which

means it was felt in the area of the drilling at approximately 2 on the Richter scale. On top of that, Davies and Swarbrick mentioned that the primary reasons for not considering the earthquake to be the trigger or a significant contributing factor are (a) no other mud volcano eruption was reported in Java at the same time; (b) the earthquake preceded the eruption by two days; seismogenic liquefaction usually occurs during earthquake-induced shaking of sediment (at the same time) (e.g., Ambraseys, 1988); (c) there are no reports of a “kick” during the earthquake or immediately afterward; and (d) sand, rather than mud, is more conducive to liquefaction due to earthquake shaking because it is a non-cohesive, granular sediment.

Operational Negligence Had Initiated the Birth of One of Huge Mud Volcanoes

No steel casings to protect the well created open-hole section of the Bajar Panji-1 well plus insufficient handling of the well problems had caused a crack in the formation and created channels for the mud in the clay/shell stone formation to flow into the surface Compared to other similar phenomena, Lusi eruption has a significant volume, duration, and spatial extent. (Table 1).

Table 1. Volume, Duration, Aerial Coverage And Rate of Selected Large Scale Modern Eruption From The South Caspian Sea and Trinidad Compared to Lusi³

	Lokbatan (Azerbaijan, 2001)	Koturdag (Azerbaijan, 1950 – present)	Piparo (Trinidad, 2001)	Lusi (East Java, 2006)
Volume	0.0003 km ³	0.00045 km ³	0.025 km ³	0.012 km ³
Duration	30 Minutes	18.200 days	1 day	173 days**
Area	0.098 km ²	0.3 km ²	2.5 km ²	3.6 km ²
Average rate*	0.0144	0.000000025	0.025	0.00007 – 0.0015

* Cubic km/days **As of February 2007

Started at a rate of 5,000 cubic meters/day, the mudflow reached 170,000 cubic meters at the time of the audit (February 2007)(appendix 1). At the current rate, the cumulative amount of mud within the next 10 years would be able to submerge the whole of Sidoarjo Regency at one meter depth. Geologists are still facing big quandaries in predicting the future of the mudflow. According to Richard I. Davies and Richard Swarbrick et.al., prediction of the next developmental stages is fraught with difficulty, but the unabated very active eruption indicates that a large aquifer has been penetrated. Those experts are confident that some sort of eruptive activity (perhaps at lower-level) will continue for many months and possibly years to come. A region several kilometers wide should undergo sag-like subsidence over the coming months with more dramatic collapse surrounding the main vent. In order to predict what the future impact the Lusi mud volcano has on the local population, a geological modeling and direct measurement of the inevitable land subsidence will help the efforts to mitigate the disaster impact.

The importance of Sidoarjo Regency

The worst affected area is Sidoarjo Regency, a densely populated area with 2,843 person/square kilometer, 1/3 of the density of Hong Kong (6,294 persons/sq. km). This area

³ Birth of a mud volcano : East Java 29 May 2006, GSA Today, February 2007

is a buffer zone of Surabaya, the capital city of East Java Province and the second largest industrial zone in Indonesia after Jakarta (table 2).

Table 2. The Characteristics of Sidoarjo Regency

1. Area of the land :	
a. Rice field	28,763 Ha
b. Sugar cane plantation	8,000 Ha
c. Fishpond	15,729 Ha
d. Others (manufacturing and residence)	10,998 Ha
Total the area of land	63,490 Ha
2. Population	1,682,000 persons
3. Population Density (in 2003)	2,843 persons/sq. km

Sidoarjo Regency plays significant economic roles not only for the neighboring areas such as Surabaya municipality, Gresik Regency in the north, Pasuruan Regency in the south, Mojokerto Regency in the west and Strait Madura in the east, but also for areas such as other provinces in Java and Bali (exhibit 3). Many important infrastructures are functioning as the aorta for goods and services distribution for East Java Province such as: gas pipeline transmission system which supplies gas to a fertilizer-factory in Gresik, toll road and railways which functions as the distribution channel for goods and services for all of East Java, an Electricity Power Transmission which acts as a back-bone system for Sumatera and most of Java (exhibit 4 and appendix 2).

Exhibit 3. Sidoarjo Regency

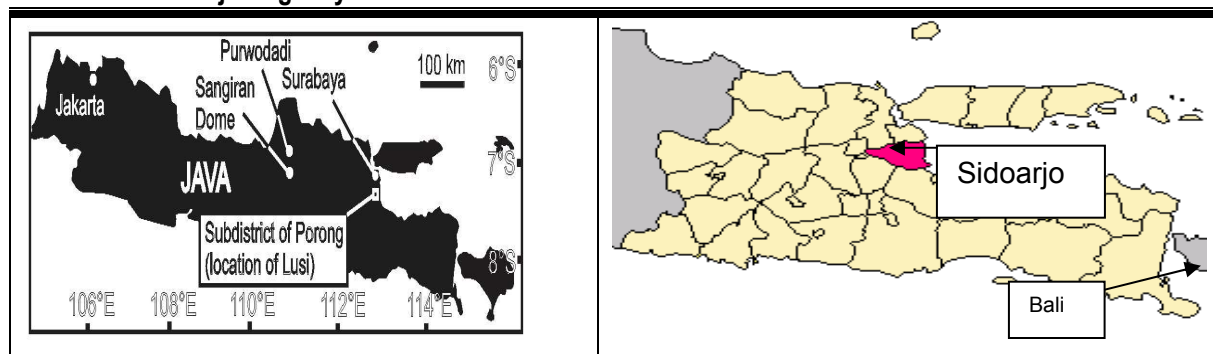
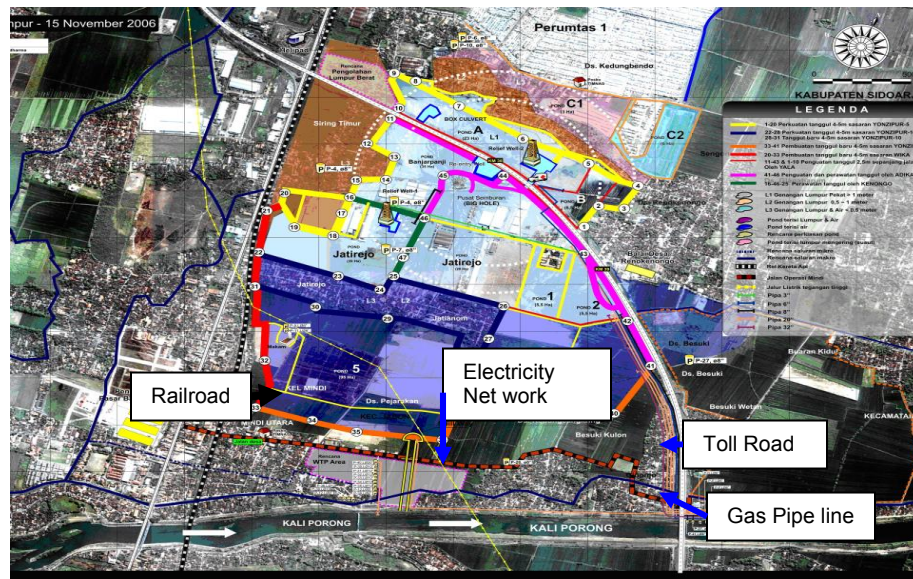


Exhibit 4. The vital infrastructures map



Government Initiatives

In the beginning, the central government gave the initiatives to handle the disaster to both the company and local (provincial and district) government. The initial efforts failed due to the lack of power, expertise, and resources. In spite of the magnitude of the destruction, the government has not declared the mudflow as disaster.

After the failed efforts, the central government took over the management of the disaster through a Presidential decree in September 2006. The government set up the National Team for Handling the Mud Flow in Sidoarjo (National team). This ad hoc unit, which worked for eight months, was assigned to handle the eruption and liaise with various institutions related to the gas and oil mining industry, including local governments at the provincial and sub provincial level, Ministry of Environment, Department of Energy, Mining, and Natural Resources. In general, there are three objectives that the national team wanted to reach: 1) stopping the eruption, 2) mitigating the impacts of the eruption and 3) minimizing the social, economic, and environmental impacts.

With regard to the first objective to halt the eruption, so far, four strategies have been attempted, namely: a) capping the wellhead from above, b) snubbing the well from the sides, c) digging three relief wells and again tried plugging the mudflow from the sides, and d) dropping concrete balls linked by chains to the mud volcano. All the four strategies ended up in failure, making the National Team unable to realize its first aim, even after spending US\$ 21.83 million. Currently, the government is considering to use a new but untested strategy, namely, to plug the mud by building a dam around the crater. The amassing mud will be used to counterweight against the out flowing mud from the mouth of the volcano. Many experts, however, believe the flow is unstoppable.

The efforts at mitigating the impacts of the eruption had realized some achievements. A network of dams and barriers has been erected to contain the mud. On September 26, 2006 barriers failed, resulting in the flooding of more villages. Further strengthening of the dam system appeared to contain the sludge and since the end of September no further reports on

breaches have been released. However, the government was blamed for not effectively relocating infrastructure and for delay in determining the alternative route for transportation of goods and services. This delay caused excessive traffic along public roads, causing increased transportation costs.

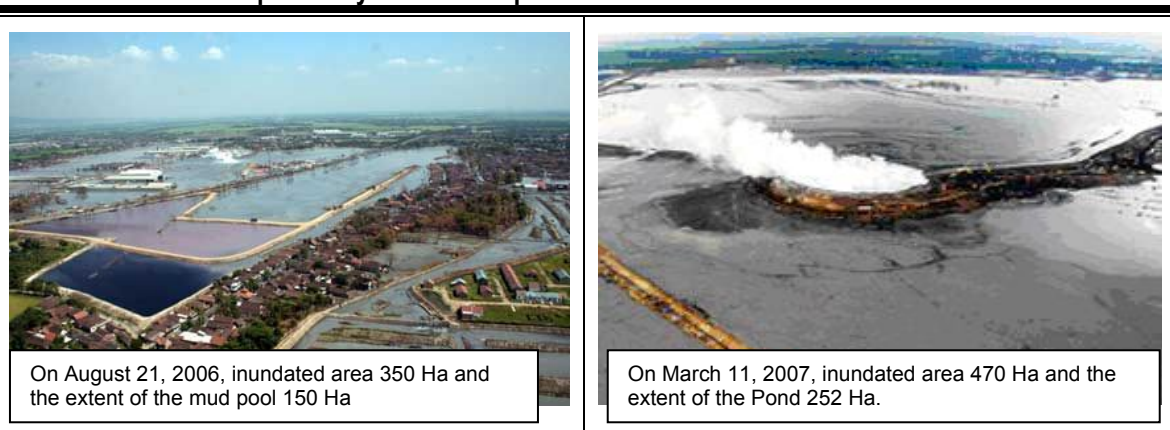
The third objective had been realized with some successes. As the company is expected to fully compensate the victims and some of the clear cost, the National Team facilitated an agreement between the company and the mud eruption victims. In December 2006, the government declared that LBI, the operator of the well, would have to pay US\$351 million in compensation to people whose houses had been destroyed by the mud. In addition, the company was expected to pay about US\$182 million for efforts to stop the mud between January and March 2007. As of the time of the audit (February 2007), the company had compensated refugees in 9 villages. The company has given US\$ 1.837.400,00 for living allowance, US\$ 1.794.000,00 for renting allowance, and US\$ 164.000,00 for moving allowance (appendix 3). In addition to that, the company also has given US\$ 292.631,58 to 21 families to replace homes that had been destroyed by the mud⁴.

On March 31, 2007, one year after the mudflow started, a new team has been established by the central government to handle the mudflow. The team could not work optimally due to insufficient authority, expertise, and resources.

Damage and Loss Assessment

The mud eruption has become an ecological disaster that shows no slowing down. At the beginning of the eruption, the volume of flow was 5,000 meter cubic/day and as of February, it reached 170,000 meter cubic /day. The unprecedented event had made a river of mud on the surface, flooding and submerging the surrounding areas. The hot torrential mudflow has buried 9 villages, 10,426 units of houses, 18 schools, 2 local government offices, 15 places of worship, 23 factories, and displaced 26,317 people. It has already inundated and contaminated 306 Ha of paddy fields, 64 Ha of sugar cane field, and 2 Ha of various crops (Appendix 3). The total area that has been inundated is 470 Ha (exhibit 5), which is equivalent in size to the Kingdom of Monaco. (Appendix 1). At present, the sludge is still flowing despite all efforts to halt it.

Exhibit 5. The area impacted by the mud eruption



⁴ Media center, Monday, March 26, 2007

Infrastructure has been damaged extensively, including toll roads, railway tracks, power transmission systems, gas pipelines and national artery roads, major public roads and the railroad. The gas pipeline transmission blew out in November 21, 2006, taking a number of fatalities. The accident occurred because the ground subsided 2 meters due to the significant outflow of mud and water, and a dike collapsed causing the state-owned [Pertamina](#) gas pipeline to rupture. The damage impacted 20% of the national fertilizer supply. The damage has since been repaired. A major toll road was forced to close on November 22, 2006 due to subsidence effect. Another example is the electricity system. Disruptions to the electricity power transmission system will negatively impact the economy in Java, and is likely to affect Bali as well (exhibit 6).

Exhibit 6. Infrastructure Dysfunctions



A giant volume of unprocessed mud that was pumped into the Porong River had significantly decreased the water quality therein through contaminating it with hazardous chemicals such as phenol, H₂S, and hydrocarbon (table 3).

Table 3. The substance of the mud and the water of the mud

Parameter	Measurement	Parameter	Measurement
DHL	4475-6500 um/cm	Chrom Total	0.21 – 0.93 mg/L
COD	2350-2525 mg/L	Amonia	4,460 -6,557 mg/L
Phenol	10,37-13,17	H ₂ S	0.007-0.008 mg/L
Chrom (VI)	0.033-0,036 mg/L		

Source: Brawijaya University Report on Environmental Impacts Assessment of the Mud Flow, 2006

The contaminated water will surely endanger all aquatic biotas in the Porong river ecosystem, threatening its biodiversity. The solid particle of the hot mud poured into the river would solidify thus making layers that would decrease the depth of the estuary. This sedimentation effect to Porong river will put Surabaya municipality and other areas at an increased risk of flooding.

In the long run, the mud and the water of the mud will threaten the lives of the people who depend on the river for their daily needs. The contaminated fish, through the food chain, will impact the health of the people.

The eruption also puts the region at increased risk of subsidence. In several places around the mud eruption hole, many houses have fissures and many land surfaces have shifted down around 1-5 meters. In the future, the subsidence effect could destroy local infrastructure such as the houses, roads, bridges, and the gas pipe.

The unabated mudflow and the resulting floods had induced further ramifications that have lowered the life-supporting capacity of the submerged area, disrupted economic activities, thus reducing the economic capacities of the affected regions. The ecological disaster has brought about social and economic losses to the people in the Sidoarjo Regency and surrounding regions. The economic losses and financial costs are summarized in Table 4.

Table 4 : Economic and Financial Costs to Sidoarjo and the Surrounding Regions in the period of 2006 – 2015

(US\$ thousand)	
Direct Economic Cost	2,093,722.53
Indirect Economic Cost	779,730.53
Economic Cost for Recovering	589,385.26
Total Economic Cost	3,462,838.32
Financial Cost	516,290.76
Gap (Economic Cost v.s. Financial Cost)	2,946,547.56
Note :	
1. Economic Cost : The value of the negative effect to the assets and people's income	
2. Financial Cost : The value of cash that has been paid plus commitments	
3. US\$ 1 = Rp 9.500,00	

Source: Brawijaya University Report on Economy Impacts Assessment of the Mud Flow, 2006

It should be noted that the difference between economic costs and financial costs to Sidoarjo totaled to US\$ 2,946,547,560.00. The gap has to be borne by the people in and around Sidoarjo regency. This gap has decreased their quality of life and slowed the development of the regency. Higher inflation has been also observed. The biggest part of the economic costs have and would be borne by the people (84 %), whilst the remaining portions were borne by the government (7%), Private Companies (6%) and State-owned enterprises (3 %) (Appendix 4).

The Roles of BPK

BPK audited the hot mud flow in Sidoarjo with the assistance of the environmental, geology and regional economy consultants. The main purpose of this audit is to assess the activities in the exploration of the Banjarpanji-1 well, including the concession granting process, the subsequent disaster management processes, and the overall impact to the economy and the

environment. The audit focused on evaluating whether all of the activities are in accordance with the law and regulations. Moreover, the audit also used risk based audit methodologies in selecting key areas to be audited. With this approach, the audit has selected the activities above to be the key areas.

Relating to the environmental aspect, BPK focused the audit on the impact of the National Team activities in mitigating the impacts of the eruption. BPK-RI evaluated the impact of building the mud embankments, efforts to terminate eruption, efforts to dispose of the mud in the river. BPK also conducted limited research with environmental consultants in order to assess the quality of the river. BPK also attempted to forecast the impact to environment for the next ten years. In doing this, BPK and the consultants made many assumptions in order to predict the environmental impact in the next two and ten years.

Audit Results and Recommendations

BPK found the following aspects that need to be improved by the government in managing the mud flow in Sidoarjo:

- Some regulations related to the exploration of gas or oil wells have not sufficiently protected the people and the environment. Current regulation only requires the company that wants to explore a gas and oil well to have shallow survey efforts instead of in-depth survey efforts including important impact and risk evaluation.
- There are weaknesses in government monitoring system on oil and gas exploration and exploitation to enforce the rules and regulations and contracts. The monitoring system needs to be revised and improved in order to ensure the exploration and exploitation processes conducted by the production sharing companies, are done prudently in accordance to the best practices.
- The government responses to address the mudflow disaster have been very slow. This has exacerbated the negative impacts of the mishap to the society, environment, and economy.
- In handling the eruption, the government has never conducted a thorough risk assessment in order to develop detailed action plans or activities. Many of the activities including the building of the mud dams were based on temporary (short term) plans.
- There is no consistent result from the researchers about the toxic sludge and water of the mud. The researchers' opinions are divided into two main groups. One group said that there is no toxic chemical substance in the mud, while another group said there were toxic chemicals in the mud. However, people in nearby villages complained that toxic sludge and water have invaded their drinking water, river, agriculture fields, fish ponds, marine ecosystem, and homes.

In order to improve the quality of the handling of the eruption, BPK made the following recommendations:

- The Government together with other related entities or people should thoroughly investigate the causes of the eruption and prosecute those responsible for causing it.

- The government should officially declare the mudflow as a disaster and take over the management of the disaster to handle the mishap and mitigate its social and environmental impacts.
- The government should immediately help the disaster victims, restore their livelihood, and restore the economy activities of the province by rebuilding and relocating the damaged infrastructures.
- The government should conduct a comprehensive research to ensure the toxicity of the sludge and water.
- The Government should revise and upgrade the policy implementation and monitoring system of the oil and gas exploration and exploitation activities in order to protect the people's life, the environment, and the economy..
- Based on Indonesia's experiences on previous natural disasters and this man-made mishap, the government should develop a comprehensive disaster policy and build its institutional capacity to cope with those unexpected problems.

Lessons learnt

Handling the Eruption

- The continuous and uncertain status of this particular disaster requires the phases of handling the disaster to be simultaneously conducted. The rehabilitation and reconstruction phases have to be done in the same time when the mud still continues to erupt and give impacts to the surrounding. In this kind of condition, the disaster management has to be supported not only with a sufficient amount of fund, but also skillful, competent, and dedicated people which could work under uncertainty situation. The government needs to make a comprehensive assessment in order to develop a comprehensive and systematic strategy in managing the eruption.
- Moreover, the government should develop disaster regulation(s) or procedure(s) that can be followed by government institutions in handling disasters on this order. When the mud erupted, the government gave all responsibility to the company to handle things. It did not effectively evaluate the magnitude of the disaster. Furthermore the audit showed that the slow reactive actions from the government in fact caused additional losses.

Auditing the Handling of the Eruption

- BPK-RI hired environmental and regional-economic experts to assist the audit team in analyzing the environmental and economy impacts of the eruption. However, it could not discharge the responsibility of BPK-RI to draw audit conclusions. For future audits, BPK-RI needs to have a panel of experts to ensure the rightness and the sufficiency of the methodology and assumptions used by the experts in an audit project including the validity of the data and information. Furthermore, BPK-RI needs auditors with environmental expertise to anticipate the increasing demand of audit with environmental perspectives from the stakeholders. Continuous professional educations for auditors were needed to cope with the most recent environmental issues.

- Auditing comprehensive activities for mitigating the impacts of the eruption needed a lot of resources. Therefore, BPK-RI should select the key activities that provide the highest impact to the environment, society and economy. BPK-RI has to develop and increase the institutional capability to anticipate more complicated audit tasks.

Conclusion

Defective policies and deficient implementation of the policies have created opportunities for conflict of interest to flourish. This, in turn, has impaired the governance as shown by inconclusive actions by the government towards the private sector linked to the disaster.

In the future, BPK should be more concerned with the environmental perspectives in conducting any audit. In doing this, BPK should be equipped by sophisticated and applicable methodologies and supported by highly competent auditors with environmental expertise.

The government should re-orient their strategies to overcome the disaster impacts comprehensively, as recommended by BPK.

A. The Volume of the eruption, Inundated area, and the extent of the pond

	Month	Volume of the eruption (M3/day)	Inundated area (Ha)	The extent of the Pond (Ha)
0	29 May (Beginning)	5,000.00	0	0
1	June	25,000.00	110.84	109.00
2	July	30,000.00	178.89	151.32
3	August	50,000.00	349.76	150.00
4	September	50,000.00	349.76	251.90
5	October	120,000.00	349.76	251.90
6	November	150,000.00	390.07	251.90
7	December	150,000.00	390.07	251.90
8	January	150,000.00	450.00	251.90
9	February	170,000.00	470.00	251.90

B. The Location of the Pond, Capacity, and Volume

Ponds	Village	Area (Ha)	Capacity (m3)	Volume (Estimation) (m3)	Volume (%)
<i>Pond A</i>	Renokenongo	23	920,000	920,000	100
<i>Pond B</i>	Renokenongo	6.5	260,000	247,000	95
<i>Pond C-1</i>	Kedungbendo	3	60,000	57,000	95
<i>Pond C-2</i>	Jatirejo	6.5	130,000	123,500	95
<i>Pond Snubbing</i>	BJP-1 (Siring)	35.4	2,124,000	2,017,800	95
<i>Pond Jatirejo</i>	Jatirejo	46.5	2,790,000	2,650,500	95
<i>Pond 1</i>	Jatirejo	5.5	330,000	313,500	95
<i>Pond 2</i>	Jatirejo	5.5	330,000	313,500	95
<i>Pond 3</i>	Jatirejo	20	800,000	640,000	80
<i>Pond 4</i>	Jatirejo	10	400,000	320,000	80
<i>Pond 5</i>	Mindi Pejarakan Kedungcangkring Besuki	90	3,600,000	1,800,000	50
Total		251.9	11,744,000	9,402,800	80,06
The Capacity of the Pond available to be used				2,341,200	19,94

As of 11 December 2006 (National Team's Progress Report)

The volume of Goods and Services transported through Sidoarjo

Year	Volume of Good(s)/Service(s) in one year					
	Train		Electricity***	Toll Road****	Container*****	Gas*****
	Goods*	People**				
2000	1,022,648	5,210,605	70 - 150	N.A	786,113	140
2001	1,038,356	4,470,393	70 - 150	63,853,536	825,418	140
2002	966,919	4,033,857	70 - 150	67,085,217	866,689	140
2003	1,007,632	3,894,687	70 - 150	63,338,174	910,024	140
2004	1,030,987	4,673,624	70 - 150	62,816,463	955,525	140
2005	999,376	5,328,886	70 - 150	63,268,772	1,003,301	140
2006	876,509	5,872,841	70 - 150	N.A	1,053,466	140

* Only for the refined fuel oil (Kilo Liter/year)

** Assumption 45% total PT. KAI Surabaya (base 2006)

*** Kilo Volt

**** Vehicles/year

***** in teus (twenty equivalent Units). From many sources with the assumption 5% increase every year (Base 2006)

***** MMScfd

A. The villages and The Productive Land that have already covered by the mud/villages

No	Village	Area (Ha)		
		Rice Field	Sugar Cane	Crops Planted
1.	Siring	22.25	0	0
2.	Renokenongo	77.35	7.79	0
3.	Jatirejo	29.60	5.63	0
4.	Mindi	10.00	17.30	0
5.	Sentul	25.00	0	0
6.	Besuki	79.00	3.00	0
7.	Pejarakan	36.00	17.60	0
8.	Kedungcangkring	27.00	12.70	0
9.	Ketapang	0	0	2
	Total	306.20	64.02	2

B. The Drowned Infrastructures

No	Infrastructure	Village	Unit
1.	Houses	Siring	395
		Jatiredjo	858
		Renokenongo	1,007
		Kedungbendo	7,066
		Ketapang	1,100
		Total	10,426
2.	School		18
3.	Government Office		2
4.	Manufactures		23
5.	Mosque		15

C. The Victims/refugees of the Eruptions

No	Village	The Number	
		Family	Person
I	The First Batch (before the blast of the pipe line)		
1	Renokenongo	496	1,823
2	Siring	799	2,606
3	Jatiredjo	872	3,388
4	Kedungbendo	758	2,904
5	Besuki	189	782
6	Pejarakan	9	46
	Total	3,123	11,549
II	The Second Batch (after the blast of the pipe line)		
1.	Perum Citra Pesona	10	36
2.	Renokenongo	782	2,752
3.	Perum TAS	2,132	7,164
4.	Kedungbendo (outside the Perum TAS)	846	3,454
5.	Pejarakan	78	300
6.	Besuki	10	60
7.	Kedungcangkring	149	576
8.	Renokenongo	25	79
9.	Ketapang	93	347
	Total	4,125	14,768

D. The Realization of the compensation for the refugees before the blast of the gas pipe (US\$ Thousand)

No.	Village	Housing/renting (US\$ thousand)	Moving (US\$ thousand)	Living Allowance (US\$ thousand)	Adm. Bank (US\$ thousand)	Total (US\$ thousand)
1.	Besuki	99	10	99	2	210
2.	Jatirejo	455	46	530	9	1,039
3.	Kedungbendo	382	40	489	10	921
4.	Pejarakan	5	0	2	0	8
5.	Renokenongo	259	26	329	5	618
6.	Siring	351	42	357	6	756
7	Jatirejo/Ponpes	-	-	4	-	4
	Total	1,550	164	1,811	32	3,557

E. The Realization of the compensation for the refugees After the blast of the gas pipe (US\$ Thousand)

No.	Villages	Family	Person	Housing/ renting (US\$ thousand)	Living Allowance (US\$ thousand)	Total (US\$ thousand)
1	Kedungbendo (Perum TAS I)	33	114	21	0.2	20.9
2	Kedungbendo (Perum TAS I)	21	78	14	0.2	13.7
3	Ketapang	93	344	64	0.9	65.1
4	Kedungbendo (Perum TAS I)	41	164	23	4.3	27.1
5	Kedungbendo (Perum TAS I)	58	226	34	6.0	40.1
6	Kedungbendo (Perum TAS I)	39	146	20	2.5	23.0
7	Kedungbendo (Perum TAS I)	125	490	68	12.1	80.3
	Total	410	1,562	244	26.4	270.1

A. Direct Economic Cost¹⁾ 2006–2015 (US\$ Thousand)

No.	Cost Component	2006	2007-2015 ¹⁾	Total
1	The Lost of Asset	131,467	1,729,972	1,861,439
2	The Lost of Income	16,736	215,547	232,283
Total		148,203	1,945,519	2,093,722

1) 15 % Discount Factors.

B. Indirect Economic Cost¹⁾ 2006–20015 (US\$ Thousand)

No.	Cost Component	Cost	%
1	The Decrease of the value of the asset	459,696.84	58.96
2	The decrease the bus income	1.50	0.19
3	The Decrease of the Income of Small Bus	0.23	0.03
4	The Decrease of the income of the truck	1.20	0.15
5	The increase of the cost for private transportation	5.70	0.73
6	The Decrease of the hotel income	5.57	0.71
6	The Decrease of Restourant Income	1.53	0.20
7	The Decrease of the Trade income	2.21	0.28
8	The decrease of the fish Pond owner income	288,890.53	37.05
9	The Increase of the cost to maintain the Porong River	13.20	1.69
Total		748,618.51	100

1) 15% Discount Factor

C. The Economic Cost for Recovering the People in Inundated Area¹⁾, 2006–2015 (US\$ Thousand)

No	Cost Component	Cost	%
1	The Increase of the cost to recover the area	281,017	47.68
2	The increase the cost to recover the business	89,452	0.02
3	The increase the cost to recover the public infrastructure	218,917	37.14
Total		589,385	100

¹⁾ 15% Discount Factor

D. The proportion of the Economic Cost Charge¹⁾, 2006–2015 (US\$ Thousand)

No	Sector	conclusive ²⁾		Non-conclusive ²⁾	
		Value	%	Value	%
1	Government	247,368	7,14	268,421	7.31
2	State-owned Enterprise	22,105	0,64	106,316	2.89
3	Private Company	102,105	2,95	206,421	5.62
4	People	3,091,158	89,27	3,091,789	84.18
TOTAL		3,462,737	100	3,672,947	100

¹⁾ 15% Discount Factor

²⁾ Conclusive and inclusive : definite and indefinite Indirect cost,

**E. Prediction of the cost for replacement based on the components (financial cost)
(US\$ Thousand)**

No	Cost Component <i>(at the end of January 2007)</i>	The prediction value	
		US\$	%
1	The expenditure for land and building :		
	1.1.Land	127,091	24.6
	1.2.Building	108,012	20.9
	1.3.Total	235,102	45.5
2	The cost to replace the wage of the drowned companies' employees	901	0.2
3	The cost for housing and moving:	-	
	3.1. To Contract the house	1,665	0.3
	3.2. Moving	174	0.0
	3.3. Total	1,839	0.4
4	The cost for social welfare	5,611	1.1
5	The cost for replacing the productive land	47,711	9.2
6	Estimation of the cost of the company	30,865	6.0
7	The cost to replace the loss because of the infrastructure disfunction	9,140	1.8
	Total 4,5,6,7	93,327	18.1
8	Handling the Mud Cost:	-	
	8.1. To Stop the Eruption	84,175	16.3
	8.2. Surface Management	99,675	19.3
	8.3. Social	1,272	0.2
	8.4. Total	185,122	35.8
TOTAL		516,291	100

SAI's Experience on Domestic Environmental Issues (Lesotho)

Theme: Audits of Domestic Environmental Issues

Author: Office of the Auditor General of Lesotho

1. INTRODUCTION

The office of the Auditor General (OAG) is a Supreme Audit Institution (SAI) in Lesotho and the primary responsibility for Audit of government of Lesotho is vested in this statutory office. Section 117 of the constitution of Lesotho, Audit Act of 1973 and Statutory Bodies Act of 1973 set out the Auditor General's mandate requiring full audit of all accounts relating to the consolidated fund of Lesotho, other accounts and public stores for the purpose of providing an overall opinion on the accounts.

It is the responsibility of the OAG to provide independent assurance, information and advice to Parliament on the proper accounting for public expenditures, revenues and assets including compliance with applicable laws and regulations and on the economy, efficiency and effectiveness of the use of resources.

1.1 THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

Lesotho like all other countries is committed to preserving the heritage, biodiversity and life-supporting ecosystem. Conservation is accordingly a key aspect of all land development plans in Lesotho while effective environmental management aims at ensuring the sustainability of natural resources. Section 36 of the Constitution of Lesotho stipulates the country's commitment towards the environment and sustainable development. The Environmental Act of 2001 constitutes the legal framework through which the environmental challenges could be addressed.

2. ENVIRONMENTAL AUDITING AND THE ROLE OF THE OFFICE OF THE AUDITOR GENERAL

In this regard and according to International Congress of Supreme Audit Institutions (INCOSAI) held in 1995 OAG had to carry out Regularity and Performance Audits of activities with an environmental perspective. Regularity Audit is concerned with the disclosure of environmentally related items such as assets, liabilities and costs as well as the systems supporting them; and also measures instituted to enforce environmental legislation and to comply with accords.

On the other hand Performance Audit is concerned with how government monitors compliance with environmental laws; performance of Government programmes; environmental management systems and evaluations of proposed environmental policies and programmes.

2.1 ENVIRONMENTAL AUDIT TRAINING

It was after attending Environmental Audit Workshop held in Tanzania in 1999 that the OAG started undertaking the Environmental Audits. There were other workshops under SADCOSAI¹AFROSAI-E² held in South Africa in 2003 and Kenya in 2004. OAG

¹ Southern African development Community Organisation of Supreme Audit Institutions.

had five of its staff members attending these workshops of which four were Performance Auditors while one was from Regularity Auditing.

These workshops highlighted the significance of the environment to mankind and hence the need for its conservation for sustainable development. They also provided auditors with skills to ensure that Government entities whose activities affect the environment in one way or another are audited to ensure compliance with laws, rules and regulations as well as accountability in the use of the environment by such bodies.

3. ENVIRONMENTAL AUDITS (EA) UNDERTAKEN BY OAG

Due to the pressure of work and shortage of staff in the Regularity Audit Departments, it has not been easy to train more auditors on EA hence no EA has been carried out. On the contrary, Performance Audit Department has been able to conduct EA, trained other staff members on EA, supervised and monitored related work in the department.

Performance audit was first introduced and incorporated into the functions of the OAG in 1988. Since the current legislation is not specific about Performance Audits, the OAG has been undertaking these audits under Section 7 on Special Audits in the Audit Act of 1973.

The OAG has an establishment of 161 positions of which 134 are audit positions and 27 for support staff. Performance Audit Department which is basically the one carrying out environmental audits has at the moment 12 Auditors in post who can independently undertake Environmental Audits with minimal supervision.

3.1 STRATEGIC PLAN ON ENVIRONMENTAL AUDITING

A strategic plan on EA was first developed in 1999 in consideration of the major environmental problems in the country and was improved in 2003 and 2004 after the subsequent workshops. Some of the environmental audits undertaken in pursuance of the problems highlighted in the strategic plan are as follows:

i) Maintenance and repair of rural roads by the Department of Rural Roads (DRR)—Ministry of Works and Transport.

There was a public outcry that roads were not rehabilitated timeously and were therefore in a bad condition especially after heavy rains that wash away the soil and create dongas. The main audit was to establish why maintenance, repair and upgrading of roads took longer periods than planned and hence more costs incurred due to more land degradation. Three districts in the south and northern regions and two in the eastern region of the country were visited. The audit covered financial years 1999 to 2002 and was completed in 2004.

It was discovered that the department of Rural Roads was not upgrading and maintaining roads efficiently and the factors that influenced that were that routine works which were supposed to be done annually were not carried out hence deterioration of roads. The other factors were related to lack of communication, inadequate equipment and human resources especially engineers whose responsibilities among include road maintenance.

² African Organisation of Supreme Audit Institutions.

The recommendations made were that all maintenance or upgrading projects should be allocated to private contractors. This would help to avoid delays caused by lengthy tendering procedures when procuring materials.

DRR also should consider assigning and ensuring that force account teams (Department' employees) monitor private contractors, and not carry out major construction works. This would reduce the costs especially on the part of DRR.

ii) Management of Medical Waste in the Queen Elizabeth II Hospital—Ministry of Health and Social Welfare.

The main audit was conducted at the Queen Elizabeth II hospital which is the main and referral hospital. It also offers specialised services which are not provided in other Government hospitals and health centres, and as such it generates the biggest volume of medical waste compared to other hospitals.

The audit covered financial years 2000 to 2003. The audit was completed in 2004 and its focus was on generation and disposal of waste by the hospital. The procedures followed when handling waste and the problems encountered were established. Generation areas visited in the hospital were Laboratory, Laundry, Mortuary, Dental, Out-Patient, Pharmacy and stores. Treatment areas visited were the incinerator, Municipal skip and the dumping site.

The auditors familiarized themselves with the procedures followed when handling waste and the problems encountered in the process. It was therefore discovered that waste was not managed properly as prescribed by World Health Organization (WHO) guidelines. For example waste was not segregated and this practice exposed the staff and the public to infectious diseases. This was so because waste which was supposed to be incinerated was wrongfully dumped by the municipality in the landfill.

It was recommended that the hospital authorities should ensure that at all stages of waste generation/handling up to disposal; should conform to the guidelines as stipulated by WHO.

iii) Maintenance of the infrastructure for use in the water supply by Water and Sewerage Authority (WASA).

The main focus of the audit was the efficiency and effectiveness with which WASA maintains the infrastructure used for supply of water in the urban areas. Three district representing central, southern and northern regions were visited. They are Maseru, Mafeteng and Leribe respectively. The financial years under review were 1999/2000 to 2001/2002 and the audit was completed in 2004.

The audit discovered that infrastructure such as equipment and machinery used to extract water from the raw water sources; the network of pipes used for drawing water from rivers, through production plant to the services reservoirs and to customers were not maintained.

It was recommended that WASA should consider producing the maintenance procedure manual that will guide the inspection and servicing of infrastructure

before problems could be experienced. Again the authority should embark on preventative maintenance to avoid breakages and to increase the lifespan. of the equipment.

iv) Management of soil erosion by the Department of Soil and Water Conservation in the Ministry of Forestry and Conservation

The main audit was carried out to find out why measures put in place to prevent soil erosion by the ministry were not effective as it was evident that soil erosion and land degradation were still on the increase. The scope of audit covered the period from 2003/04 to 2006/07.

The audit revealed that information dissemination to the public at large on proper land use practices that would prevent soil erosion was not effective as people continued with improper land use practices. It was not possible to take corrective action against perpetrators as there was no penalty clause in the relevant legislation therefore people continued with improper land use practices which resulted in soil erosion.

It was recommended that information unit at the department re-schedule the radio and television programs to appropriate times when the majority of target group will be able to listen. It was also recommended that the public gatherings be held more often to disseminate information on proper land use practices. The department should advise the minister to make amendment in relation to penalty clauses in the relevant legislation so that perpetrators could be dealt with accordingly.

4. METHODOLOGY

In Performance Auditing the methodology commonly used is conducting interviews with stakeholders, reviewing all important and necessary documentation and making site visits for physical observation. When conducting these Environmental Audits the same methods were used for collecting data.

5. EXPERIENCES

In all audited entities the common problem which hindered the quality of audits was non availability of the records to verify some of the findings.

Some of the legislations that were in place were old and did not specifically address the prevailing problem areas especially on penalties due to non-compliance with the law. In cases where they were specific, the charges or penalties were so insignificant that the perpetrators still continued with improper practices.

The Country had for the first time the Environmental Act in 2001. It is in this Act that some of the issues were addressed for the first time when a great damage had already occurred.

WAY FORWARD

The OAG intends to build knowledge and capacity amongst staff members on environmental auditing. This will enable auditors to conduct audits not only on domestic issues but on global and regional environmental issues.

With the assistance of AFROSAI-E Secretariat the office will be able to participate in the regional training and collaborative environmental audits.

Result of the Performance Audits to the Secretariat of the Environment (SEAM) on the Control, Management, Authorizations and the Effective Protection of the Natural Resources of the Alto Paraguay (Years 2001 to 2006) (Paraguay)

Theme: Audits of Domestic Environmental Issues

Author: General Controllershship of the Republic of Paraguay

General Direction of Control of the Natural Resources and Environment

Result of the performance audits to the Secretariat of the Environment (SEAM) on the control, management, authorizations and the effective protection of the Natural Resources of the Alto Paraguay (years 2001 to 2006).

Background

This extensive audit was carried out to the Secretariat of the Environment (SEAM) and other governmental offices like the National Forest Service, National Institute of Rural Development, Government of Alto Paraguay and Municipalities of the area.

The reason of the audit was, firstly in August 2006th, the publications in the written press about extensive deforestation in the Alto Paraguay district.

In addition, the Secretariat of the Environment (SEAM) requested the General Controllershship of the Republic of Paraguay an environmental audit in the Department of the Alto Paraguay district, with special emphasis in the verification "in situ", in order to verify its administration in control of the natural resources and conservation strategies in this region of the nation.

In the present work, it's shows the special examination of regularity results of the chapter concerning to the Management of the Secretariat of the Environment.

This work is part of a series of audits made on wild life protected areas of Paraguay. Since 1997 we performed nine specials exams that include protected areas in their analysis, three of them were fulfillment of recommendations, this areas are: Kõi and Chororí Hills Natural Monument, San Rafael National Park, Defensores del Chaco National Park, Ybyturusu Natural Resources Protected Area, Médanos del Chaco National Park, Cerro Cora National Park, Negro River National Park, Cabrera Timane Natural reserve and Chovoreca Natural Monument.

Audit planning

The objective of the special examination was to evaluate the performance, between 2001 and 2006, of the Secretariat of the Environment, National Forest Service, National Institute of Rural Development, Government of Alto Paraguay and Municipalities of the area, in the fulfillment of the environmental laws and normative of rural development and sustainable use of the natural resources in the Department of Alto Paraguay district.

The approaches that base the conclusions and recommendations were mainly of legal character.

Also, the works were developed according to the Norms of Audit of the International Organization of Supreme Audit Institutions (INTOSAI), as they were applicable.

Methodology

The obtaining of documents and relevant information was made through notes to the entity audited, field work was carried out in the SEAM offices. We were also carried out interviews with authorities and taken charge officials.

LANSAT satellites images of the region corresponding to years 2002 and 2004 were reviewed and evaluated.

For the fixation of approaches, were took basically the legal concepts.

Audit's Limitations

There were important restrictions as far as the difficulty of the Secretariat of the Environment in providing the documents and relevant information, due to the nonexistence and/or to the disorder and dispersion of them. In such conditions we had a considerable delay in the answers to the requirements of the audit team.

Also, the accomplishment of the verification "in situ" was not possible, firstly because the inclemency of the weather in the area that produced floods that left impassable ways, and later on to budgetary problems of the SAI of Paraguayan.

Findings, Conclusions and Recommendations

In the period audit, at the Secretariat of the Environment (SEAM) were registered 226 files of devolvement projects to be made in the Alto Paraguay districts, that enter to the SEAM for their evaluation within the frame of the Law N° 294/93 "Evaluation of Environmental Impact". The SEAM required environmental impact study to 119 projects of the 226 previous evaluation of the possible impacts, between them 118 were projects that included deforestation in their plans.

The Secretariat of the Environment (SEAM) didn't have an Environmental Policy until 2005. That even subsequent to implementation of the National Environmental Policy, the SEAM, did not recommend to the producers any alternative of sustainable and environmentally friendly development production, even with the knowledge that the Alto Paraguay region is the last best conservation region of the country, it had a saline soil with accelerated processes of desertification and had one of the richest biodiversity opportunities for sustainable use of this resources.

The SEAM has not either considered integrally the hidrogeographic aspect within the frame of the Law N° 294/93 "Evaluation of Environmental Impact", in relation to the productive projects in the Alto Paraguay, that affect the water resources.

The Law N° 422/73 "Of Forest" also prohibits the forest devastation and the irrational use of forest products. Against this background, the administrative act that authorizes the deforestation is not legal. In this activity there is loss of biodiversity, destruction of the habitat of several wild species, fragmentation of the ecosystem, and exhibition of the soil to the erosion and in some cases until desertification processes of grounds caused by the devastation in places with elevated risk of salty increase processes.

The SEAM must offer alternatives of sustainable use of the forests; for it, it was recommended that only approve plans of sustainable and compatible use with the forest.

It was observed that the Secretariat of the Environment does not count with a data base of environmental quantification of the region in order to quantify the loss of the environmental patrimony and to consider the socioeconomic meaning of the activities of authorized devolvement projects by the SEAM.

It was recommended to the SEAM to elaborate the Terms of Reference that define techniques for estimation of the environmental patrimony and the natural resources. In addition it must coordinate with the Central Bank of Paraguay (BCP) the inclusion of the environmental assets within the national accounts that the BCP handles, of such way to define the plan of environmental countable accounts.

The audit find that the SEAM had regulations, like the Resolution SEAM N° 1133/04 “Regulation of the emission of environmental license of the Law of Evaluation of Environmental Impact”, with opposite dispositions to legislations of superior rank like being the Decree N° 13.418/01 “Procedure of Evaluation of Environmental Impact for the plans of forest managements and plans of change of soil use” and the Decree N° 13,202/01 “Which create the Biosphere Reserve of the Chaco, located in the Department of Alto Paraguay and the Department of Boqueron”.

With regard to the Protected Areas prevailed by the Law N° 352/94 “Of Protected Wild Areas”, the Secretariat of the Environment sent documentations of five Protected Wild Areas.

The findings were that only two National Parks, the Defensores del Chaco National Park and the Médanos del Chaco National Park, had their own infrastructure and park’s keepers personnel, but in both case were insufficient for the conservation and management objective of the protected areas.

The Chovoreca Hill Natural Monument and the Cabrera Timane Natural Reserve, doesn’t have own infrastructure, neither no assigned personnel, and nor judicial mensuration. Just the Defensores del Chaco National Park had an approved Management Plan that is a legal requirement of the Law, every protected area need to have one.

It is essential that the Protected Wild Areas have a Management Plan, since are necessary for their correct administration. These documents straight to the actions and activities that are made in each Protected Area, for better administration and conservation; in addition, in the Management Plan identified the risks and threats that each Protected Wild Area has and the actions that are due to make to diminish those risks.

In that context it was recommended to the SEAM to elaborate and to implement a Management Plan for each Protected Wild Area of the Department of the Alto Paraguay.

The Negro River National Park is administered under a program of the United Nations named project GEF/PNUD 98/G33 “Initiative for the Protection of Wild Areas of Paraguay”, but we found that the National Park had great inconvenient to fulfill the objective of conservation of ecosystems of the protected area.

One greater problem was the definition of its limits, since the National Park was created by Decree in the 2001 with a surface of 281,630 hectares, later, in the 2004 was modified again by Decree of the Executive authority to 123,786 hectares. The Law N° 352/94 “Of Protected Wild Areas” does not allow the reduction of a Protected Wild Area by Decree, it has to be by Law, being created a controversy at Governmental level, the result of this process was that the National Park did not have own infrastructure, park keepers, official mensuration, and nor management plan approved by the SEAM.

In addition, the audit found that a small portion of its south west limit of the Negro River National Park has a deforestation act made by an private land keeper for cattle devolvement plan. After investigation we found that the deforestation processes had the corresponding Environmental License approved by the Secretariat of the Environment. This finding was possible thanks to the comparison of LANSAT satellite images of the years 2002 and 2004 that the audit team had access.

In 2001, the Paraguayan Government through the Decree N° 13,202 “Which create the Biosphere Reserve of the Chaco, located in the Department of Alto Paraguay and the Department of Boqueron”, creates the Reserve of the Biosphere of the Chaco with an area of 4.707.250 hectares. The area includes all previously mentioned Protected Wild Areas.

In addition, all the properties to the National Armed Forces, are constituted in Protected Wild Areas, jointly with the properties of the Indigenous Communities. To be effective this mandate, the Secretariat of the Environment had to make contact with the Armed Forces Ministry and the Institute of Natives affairs (INDI) in order to coordinate tasks to give fulfillment to the Decree N° 13.202. The Audit stated that the SEAM has not approached, nor notified to the affected ones on the creation of the Reserve of the Biosphere with the intention of assuring as Protected Natural Reserves those areas that has to be under control of the SEAM.

In the case of wild life use, the SEAM affirms not to have emitted, in the audit's period, any authorizations of use of these resources. Nevertheless it authorized 118 deforestations for cattle activities. The audit considered that when the SEAM licensing these activities, was approved the use of the forest resource and to the destruction of the natural habitat of diverse species of flora and wild fauna that were not considered and nor quantified, constituting a biological and financial lost for the Paraguayan government.

The SEAM has elaborated different lists for endangered wild species, but it does not have discriminated a specific list of species susceptible to be appropriate for any type of use or affectation, but that through Resolution SEAM 59/04 tries to establish that the species susceptible to be appropriate are all the species that are not protected.

This situation contradicts the legal norm. The use of the species of the wild fauna and flora will be able to be authorized within the framework of the listing demanded by Law. That constitutes substantial part of the System of Protection and Conservation of the Wild Life.

The SEAM, when allowing the appropriation of the species not including in the protected lists of species, is allowing, in fact, the possible use of species still not described by science, of whose Biology it is not known, putting in serious risk the natural genetic patrimony of the country.

It was recommended to the Secretariat of the Environment to elaborate a list of species susceptible to be appropriate in sustainable use programs, on the basis of the scientific knowledge, that allows a minimum security of which their use is sustainable and it does not harm the survivable of the species in time.

Impacts and Results

The Secretariat of the Environment has emitted a Resolution by which it forces all the productive projects which could affect the wild life, that need Environmental License to have previous opinion of the Direction of Wild Life of the SEAM, through Environmental Studies of Impact process (Law N° 294/93), in order to evaluate if the activity will damage significantly or not to the resource and to have a scientific technical criteria in which to base its decisions.

The SEAM already has approved the Management Plan of the Medanos del Chaco National Park, has begun the judicial mensuration of the Negro River National Park, Chovoreca Hill Natural Monument and the Cabrera Timane Natural Reserve. Also they have already designated parks keepers for these areas although in insufficient number.

The SEAM has re elaborated a new list of endangered species, but not one of usable species under sustainable use programs.

It is in study of the Public Ministry the beginning of legal actions against the SEAM for the authorize deforestation no allowed by the Law.

Challenges faced in the audit

One of the problems we found in the audit was the access to documentation and relevant information requests to the Secretariat of the Environment. Usually we had the answer in a delay way. The cause was the disinterestedness of many directors of the SEAM in the delivery of information and documents.

Also, because of not being able to make a verification “in situ” of the audited area, firstly by climatic causes and later on by lack of budget of the SAI, it was decided, successfully, the study of the situation of the Alto Paraguay through LANSAT satellite images of years 2002 and 2004, facilitated by the Secretariat of the Environment. Through this, we could evaluate the advance of the deforestation of the Chaco and also could be detected the deforestation of a small portion of a National Park.

Learned lessons

Between the learned lessons the following ones are indicated:

The inspection of field “in situ” is very important. This audit could have thrown greater results and impact if the work “in situ” had been made.

The knowledge of the environmental legislation is fundamental for a suitable interpretation of the environmental management.

It is important that the Government of Paraguay quantifies the natural resources and includes them in the national accounts with the purpose of being able to include the evaluation of the socio economic impact of the environmental activity. This audit could have major impact if we could quantify the natural resources lost.

The findings and the result of this Audit were possible to the joint work of multi disciplinary auditors, between who were lawyers, forest engineers, biologists, chemistries and countable professional.

This type of audits is an important tool of management for the audits entities, since it detected and evaluated risks and it recommended actions for the improvement in the governmental management.

The Environmental Impact of Water in Khartoum State (Sudan)

Theme: Audits of Domestic Environmental Issues

Author: National Audit Chamber of the Republic of Sudan

Preamble

The National Audit Chamber is the supreme audit institution that supervises the financial and accounting performance of the country.

The Constitution as well as the Law maintains that this Institution is an independent body under the direct supervision of the National Assembly and the Presidency of the Republic.

The National Audit Chamber shall assume auditing of the accounts of the National Executive, The National Legislature, The National Judiciary and the accounts of Northern States, public institutions, corporations, companies and any other institutions as may be determined by law.

Article 11 of the Interim Constitution of the Republic of Sudan 2005 clearly states that:

1. The people of Sudan shall have the right to a clean and diverse environment; the State and the citizens have the duty to preserve and promote the country's biodiversity.
2. The State shall not pursue any policy, or take or permit any action, which may adversely affect the existence of any species of animal or vegetative life, their natural or adopted habitat.
3. The State shall promote, through legislation, sustainable utilization of natural resources and best practices with respect to their management.

In order to carry out its duties as regards environmental auditing, the Chamber has restructured itself by creating a special department designed for environmental audit. This newly created department, making use of the directives issued by the INTOSAI and the SAIS who have adequate experience in this field, was able to start performing a number of environmental audit, in some fields that affect the environment like violations in using insecticides, pesticides and water pollution.

It goes without saying that, the question of environment has become one of the most important issues that receives an increasing world-wide concern. The regional and international relations in the field of environment are considered by far one of the strongest relations that gather and unite governments and peoples through a number of organizations and international treaties.

Taking into consideration the absolute importance of maintaining a safe, clean and diverse environment and the great role that it plays in its developmental

policies, the Government of Sudan has given the utmost care and concern to the environment and environmental issues in the country. This growing concern has ensued the environmental incidents that have inflicted the country like desertification, drought waves and energy problems.

The report that has been prepared and which shows the results of auditing the environment impact of water in Khartoum State covers:

1. Potable water used for drinking.
2. Sewage water drainage.

The auditing procedures were carried out in accordance with the environment auditing standards along with field surveys, interviews and technical specialists' studies.

First: Potable Water Used for Drinking

The total production of potable water in the State amounts to 950,000 m³ per day according to the following details:

- 350,000 m³ produced by the Nile water stations (7 stations).
- 600,000 m³ produced by underground water wells (1238 wells).

However, the water transmission grid currently in use in Khartoum State is composed of obsolete Asbestos pipes. And despite the fact that this grid is cracked in most parts of it, moss-covered and weedy, yet no replacement, renewal or even rehabilitation works have been done to it for a quite long period of time. Thus, this tumbledown grid is always exposed to blockages and breakages resulting in water leaks that cause adverse environmental impacts like mosquitoes reproduction and hence the spread of Malaria, water pollution which causes diarrhea and many other diseases.

Moreover, the produced potable water is by no means enough to meet the increasing needs of the inhabitants of the State.

The Future Reform Plan in The State Includes

1. Establishing new water stations to increase the daily production of potable water in order to solve the increasing deficit resulting from the increasing number of the inhabitants and hence the growing demand for potable water. These new stations are expected to provide about 665,000 m³ per day.
2. Changing the old transmission grid with a new one using pipes made of high density polythene material known as HDPE.
3. Until the construction works in 1 & 2 above are completed, the operational failures of the existing pipe grid will be periodically maintained through the existing partnership between Khartoum State Water Corporation and Khartoum Void of Malaria Project. This partnership emerged in the beginning of 2000.

And since its inception in the year 2000 until the end of the year 2004, this partnership was able to reduce the number of broken pipes from 9741 to 2030 achieving successful maintenance operations of 79%

Second:—Sewage Water Drainage

Sewage drainage was first used in Sudan in 1950s in the middle of Khartoum. In 1960s AL-Amarat area (1st and 2nd class) were added to the grid. By so doing, an area of 1170 hectare with a total length of 1600 meters was covered and hence a total number of 80.000 persons from the inhabitants of the State availed of this system.

Two stations were used to treat the sewage water and then use the treated water in agriculture. These two stations are:

- A) Soba station (south Khartoum).
- B) AL-Haj Yousof station.

A_ Soba Station

Soba station was primarily designed to treat 3.2 million gallons of sewage water. However, the increase in population has resulted in raising the sewage water to 4 million gallons. This in turn has resulted in:

1. Decreasing the productivity of the treatment station.
2. Disposing of excess sewage water arbitrarily outdoors led to the formation of swamps and marshlands which in turn increased mosquitoes reproduction in the area.
3. Leakag of sewage water into the Blue Nile riverbed.
4. Due to the high increase in the number of buildings and houses in all directions of the city, the treatment basins have become in the middle of the residential districts.

In order to eliminate/avoid these negative outcomes, a new treatment station to the south of the old one is now under construction. An area of 5.000 feddan to the north east of Soba valley has been chosen to be cultivated by using the treated water from this new station. This sewage water will also be used, after being treated, in AL-Yarmouk Factory Farms as it will be free of any industrial waste.

B_ AL-Haj Yousof Station

The auditing team's field visit to the location of the old station revealed the following facts:

1. The numerous breakdowns in the station as well as the pipes that transmit sewage water to the treatment basins.
2. Sewage water is drained into the basins in order to be treated by natural factors like the wind, the sun heat and/or the Nile herbs. However, this procedure results in the emission of very offensive smells that contaminate the weather in the neighbouring residential areas.
3. The work in the hydrolysis laboratory of the station stopped long time ago.
4. Some of the staff members in the company admitted that the sewage water in the area contains industrial waste, the matter that might cause some hygienic hazards.

A new station to the north of the old one is built and about to be completed. This new station is specifically designed to :

1. Treat the stinky water in a much faster way to avoid the emission of offensive smells by using advanced technical and practical methods.
2. Make use of the treated water in agriculture.

Both the old station as well as the new one are serving the industrial area in Bahri and the residential areas in Kobar and Kafouri.

It has been observed by the auditing team that the grid serving the residential areas in Khartoum and Bahri is very poor in terms of both effectiveness and coverage and that the remaining residential areas throughout the State are using ordinary latrines. And no doubt that the use of such latrines enhances the possibilities of pollution/contamination of both the Nile as well as the underground water.

The Difficulties Facing Environment Auditing

As a matter of fact there are so many difficulties and obstacles encountering environmental auditing out of which we mention, for example and not limitation, the followings:

1. Managers and executives are still not willing to give the concept of environmental auditing the appreciation and importance that it really deserves and matches with the development in the environmental impacts.
2. The financial accounts pertaining to the environmental auditing are not clear. Moreover, there are great difficulties in extracting these accounts in default of any report and scientific and practical studies that will guide the auditor to understand the impacts both financially and operationally and consequently extract the required results in accordance with the international auditing standards.
3. The lack of specialized departments concerned with the environmental impact in the governmental institutions wastes exerted efforts and renders the impact lacking in referentiality.
4. There are no financial statements for the environmental impact the subject matter of this report.
5. Revenues depend on the subsidies provided by the government and other related parties together with what is paid by citizens in return for the service provided.
6. Operational expenditures are scattered and spread apart over the different chapters of the general budget in a way that makes it quite difficult to group them in the form of accurate and correct statements.
7. The lack of environmental awareness campaigns in secondary schools and universities.
And furthermore, these campaigns have no real influence in the national media.
8. Environmental violation cases brought to the courts of law are very scarce despite the fact that they are crystalclear and self-evident.
9. Although the laws and regulations of environment have covered almost every aspect concerning the environmental impact, yet a lot of these laws and regulations have not been activated. And even those activated ones were not enforced in the same strict manner that matches the severity of penalties and sanctions specified for environmental violations.

Auditing Recommendations

1. Activating the laws and regulations of environment seriously and more earnestly in all aspects of impact and in particular those pertaining to violations.
2. Setting a government strategy to finance the environmental impacts and seeking to increase its sources of finance from the related institutions.
3. Establishing environment monitoring units in the different departments to supervise and detect any environmental impact in the concerned institution taking into consideration the importance of avoiding any possible contradictions in competences and duties.
4. Establishing specialized departments in each and every ministry, governmental department and public corporation to monitor environmental impact. These departments must be financially supported with separate and specific budgets and be obliged by law to prepare their annual accounts showing their activity in environmental impact. Their annual accounts must be completely separate from the general accounts of the entities that they belong to and must also be submitted to the National Audit Chamber.

5. Solving irrigation problems by using treated sewage water owing to its positive qualities in increasing soil fertility. It is also equally important to maintain a drainage system particularly in dry lands.
6. raining workers on how to deal safely with the treated sewage water in order to avoid any possible health hazards. Also directing and obliging them to abide by the instructions and directives of the World Health Organization.
7. Apprising and directing farmers that treated sewage water is not good to irrigate all types of agricultural crops as well as it is by no means safe for drinking neither by man nor by animal.
8. Increasing the production capacity of Soba Laboratory for treating sewage water in order to avoid the different environmental problems. It is also important to provide the station with a specialized and well-equipped chemical laboratory in order to carry out the necessary studies and periodical follow-up to the chemical changes that might occur to the soil irrigated with treated sewage water.
9. The administration of Khartoum State Water Corporation should provide all the required maintenance equipment and instruct its maintenance workers crew to inspect and monitor the residential areas for detecting any crack or leakage in the grid and fix it on the spot.
10. Supporting and motivating scientific researches morally and financially in order to come out with feasible solutions to environmental problems, means and ways to avert dangers and alternative courses of action to help protect and maintain the natural environment balance.

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 District (Tanzania)

Theme: Audits of Domestic Environmental Issues

Author: James Pilly, Gregory Teu and Carl Ake Gerden, Office of the Controller and Auditor General of the United Republic of Tanzania

ACRONYMS

BAWASA	– Babati Water and Sewerage Authority
BDC	– Babati District Council
CBO	– Community Based Organization
DMD	– Disaster Management Department
LAMP	– Land Management Programme
MDA	– Ministries Departments and Agencies
MRS	– Manyara Regional Secretariat
NAO	– National Audit Office
NGO	– Non-Governmental Organization
NOG	– National Operational Guidelines for Disaster Management
PMO	– Prime Minister's Office
PORALG	– President's Office Regional and Local Government Authorities
TANROADS	– Tanzania National Roads Agency

1.0 Introduction

The challenge

Babati District in Manyara Region has experienced devastating floods many times. The floods caused homes to be washed away, people drowning and displaced, impassable roads, water supply cut off, and many economic and social activities disrupted.

Not only did the District suffer, but also the region, the whole nation and even some neighbouring countries since Babati is a junction and crucial centre through which roads to Burundi, Rwanda, Zaire and even Uganda pass.

Forecast changes in climate and rainfall patterns are expected to lead to an increased risk of flooding. Existing flood defences would become more and more overwhelmed and floods would occur at an increasing frequency. The challenge to the concerned authorities is to prepare flood defences to protect life, property and sustain economic and social activities. The performance audit report of the National Audit Office of Tanzania (NAOT) presented in this paper aimed at contributing to meeting such a challenge.

The Performance Audit Report in the Tanzanian environmental and NAOT context

According to the Tanzanian National Environmental Policy, six major categories of environmental problems in the country have been identified. These problems include:

- land degradation;
- lack of accessible, good quality water;
- pollution;
- loss of wild life habitats and biodiversity; and
- deterioration of aquatic systems and deforestation.

The performance audit report **Floods disaster** in Babati Town, which is directly related to the problem of land degradation and deforestation. It may be noted that this was the first performance audit report ever of NAOT to be laid on the table of Parliament. The report is thus a step in the process of establishing capacity to conduct performance audit not only as regards environmental matters but also in other areas of national interest.

To make it easier for the reader to comprehend the relationship between key sites mentioned in the following text, please refer to **Annex 1**. As well, the reader can consult the System Graph in **Annex 2** regarding the key actors in Disaster Management in Tanzania. Among other things, Annex 1 depicts the Kiongozi Channel from the Kigongoni Outlet to the Mrara Bridge. This Channel is of utmost importance for avoiding floods through Babati town.

2.0 Background and audit planning

2.1 The importance of dealing with disasters

In a Vulnerability Assessment Survey conducted by the Prime Minister's Office for the period of 1991 – 2001 floods were one of the big four disasters as regards frequency. The others were epidemics, pests and drought. Some towns in Tanzania, for example Dar es Salaam and Mwanza, experience floods almost every rainy season.

The performance audit conducted focused on floods as an issue of Disaster Prevention and Mitigation and used the Babati Town floods as a case study.

The floods in Babati Town served as a practical example of how the government's prevention of disasters functions.

2.2 Purpose and scope

The purpose of the performance audit was to report if the Central Government and the Local Government have managed the flood disasters (i.e. Prevention, Rehabilitation, Preparedness and Responses) according to political decisions made.

When conducting the audit, we visited the Prime Minister's Office – Disasters Management Department, the Manyara Regional Secretariat, the Arusha Regional Secretariat, Babati District and Town Councils, TANROADS-Manyara, TANROADS-Arusha, TANROADS-HQ, and Babati Water and Sewerage Authority (BAWASA).

These offices were chosen because of their roles in the management of disasters, in this case, floods. *The Audit focused on the flood events from January, 1990 to December, 2005 in Babati.* In brief, the scope of the audit covers the responsibilities to

be carried out by the head of the PMO-DMD down to and including the focal officers at Manyara regional and Babati district levels in terms of flood prevention and mitigation/rehabilitation. The scope is focusing physical structures to prevent and mitigate floods.

It is acknowledged that Manyara region and the local authorities have tried to decrease siltation of Lake Babati and thereby lower the risk of floods through soil conservation measures around the lake. The more siltation, the more reduction of the lake depth and consequently the higher the risk of water flooding through Babati town. However, the scope of this audit concerns primarily the preventive actions through physical structures to avoid damage caused by floods after heavy rainfall. Obviously, the combined efforts of reducing concentration time of rainfall in relation to the lake and its siltation as well as physical structure of water diversion and minimising soil erosion are needed to prevent and mitigate floods in an optimum way.

2.3 Audit Design

2.3.1 Auditees

The audit focused on five auditees, which were responsible for disaster management as mandated by the Disaster Relief Coordination Act No. 9 of 1990. The five auditees are Prime Minister's Office – Disaster Management Department (PMO – DMD), Manyara Regional Secretariat, Babati Town Council, Babati District Council and TANROADS-Manyara.

2.3.2 Audit questions

The audit provides the results from applying the following seven audit questions:

1. Are adequate preventive structures in place?
2. Is there an appropriate drainage system regarding flood water?
3. Are residences located in threatened areas? If so, what measures have been taken to reduce damages or put preventive structures?
4. Is the Regional Secretariat mobilizing specific funds for floods prevention?
5. Does the Regional Secretariat have an anti-flood program?
6. Has the PMO- DMD got an adequate monitoring system for flood prevention at Babati and elsewhere in the country?
7. Has the PMO – DMD promoted/arranged seminars/workshops/courses or other events that directly aim at improving flood management (disaster management) in Babati?

2.4 Methodology

2.4.1 Method and implementation

The audit involved extensive discussions and document review in the Prime Minister's Office – Disasters Management Department and with Manyara Regional Secretariat, Babati District Council and Babati Town Council officials.

The material obtained covered views from a variety of sources including; TANROADS Manyara and TANROADS Arusha¹, Arusha Regional Secretariat, BAWASA, Babati

¹ The Audit team visited the two regions of Manyara and Arusha since before 2000 Manyara region was part of Arusha region.

District Officers responsible for Water and Livestock Development, Works, and Natural Resources and Tourism.

Discussions were also held with the representatives from the Non-Governmental Organizations situated at Babati such as FIDE and FARM AFRICA and the common people at Babati.

Several documents were reviewed, including:

- Disaster Relief Coordination Act No. 9 of 1990;
- National Disaster Management Policy of May 2004;
- National Operational Guidelines for Disaster Management;
- Wild Lake Report;
- Disaster Management & Early Warning Systems by Intermaecos;
- Vulnerability Assessment Report by the PMO- Disaster Management Department; and
- Land Management Program Report – BABATI by LAMP.

2.5 Findings

2.5.1 Introduction

We present our findings as answers to the audit questions discussed in paragraph 2.3.2.

2.5.2 Audit Findings²

The major findings were as follows:

(i) Continued risks for further preventable damage from floods in Babati

We found that, the risk is very high for possible future floods to cause further damage. This is due to the overall absence of strategic disaster management planning and actions. This is inter alia manifested by:

- lack of preventive and maintenance actions to address deteriorating flood prevention and mitigating structures
- inappropriate location of residential areas

(ii) Regional and Local Authorities without Fundamental Preparedness

The Manyara Regional Secretariat, Babati Town and District Councils do not have fundamental preparedness in handling disasters:

- There was no Regional Disaster Committee³ and strategic plan on how they can mobilize or solicit funds necessary for flood prevention or disasters management in general.
- There was insufficient coordination by focal officers. The focal officers have not produced the required pre-disaster plan.

² Sites mentioned can be found in the orientation maps in Annexes 3 and 4.

³ The Regional Disaster Committee was established in early 2007.

(iii) *Insufficient support from the PMO-DMD*

The insufficient activities of the local government did not receive the attention of the PMO – DMD, which is by law supposed to perform an oversight function.

- The Manyara Regional Secretariat and Babati Councils did not form disaster management committees in accordance with the guidelines of the PMO-DMD.
- A necessary budget for DMD monitoring flood related activities has never been put into place.

(iv) *Inadequate town planning*

- The Town Planning has not been forward looking with regards to floods. Some of the residence and business activities have been located at low lying areas.
- Plots have been located in areas, which were supposed to be reserved for water passage

(v) *Inadequate maintenance of existing road structures and possible room for improvement*

- The Ministry of Works (MoW)/TANROADS have for 15 years not taken actions to increase the capacity of water discharge by building bigger culverts at the Kigongoni river embankment, hence there is a risk that the embankment acts like a dam and the Lake water floods through the town.
- TANROADS has not attended sufficiently to the preventive structures at Kiongozi Bridge along the Minjingu – Dodoma trunk road. The trunk road was cut off during the floods of 1998 and the gabions were severely damaged. The rehabilitation of the gabions was not undertaken until 2005. Seven years lapsed before TANROADS and the Ministry of Works took any action. That is a long time considering the (inter)national importance of the trunk road.

2.5.3 *Conclusions*

- According to the government policy, the regional secretariat should be a link between national and district levels. One main conclusion in this study is that this has not been effective.
- The regional secretariat and the district and town councils in Babati have not taken sufficient proactive actions regarding the physical structures of flood prevention and mitigation.
- Disaster Management Department of the PMO lacks proactive approach regarding floods.

In spite of experiences from previous floods, the Disaster Management Department at the Prime Minister's Office, the regional and local authorities seem not prepared for another flood but rather react after floods have occurred. There are no continuous risk assessments and plans to mitigate such floods.

In the light of the requirements/expectations expressed in the laws, regulations and policies, there is ample room for improvements, as regards preventive investments and maintenance of existing structures, which would give high value for money, reduce human suffering, and be of great importance for the economy of the Babati and Manyara region and, in respect of transport, to neighbouring countries.

- Our general conclusion on the role of PMO-DMD is that this department should improve on executing a proactive national role in follow-up, record-keeping and facilitation as regards flood prevention in relation to regional and local authorities as prescribed in the country's laws and policies.
- Performance Audit aims at establishing Economy, Efficiency and Effectiveness of government operations in reaching objectives set by Parliament. Our general conclusion is that the actions, and lack of action, of the concerned authorities at local, regional, and national level regarding flood preparedness do not score well in terms of these indicators of good governance. The lack of actions for many years in prevention and mitigation of the Babati floods portrays negligence by the accountable authorities. Our conclusion should be seen against the fact that the desired preventive actions do not require any heavy investments. Lack of resources cannot in this case be used as an excuse or reason for not taking appropriate action to maintain, rehabilitate and improve flood defences. The changes in rainfall pattern in this country calls for urgent improvements in flood preparedness by all concerned MDAs.

2.6 Recommendations

(i) The grass barrier

To Babati District and Town Council

Babati Town and District Councils should monitor and control growth of the grass barrier without allowing cattle grazing in the prohibited area around the Lake Babati in order to avoid a grass barrier preventing flow of water into the Kigongoni outlet.

(ii) The Kigongoni embankment

To TANROADS HQ

TANROADS should ensure that the on-going engineering design will result into a discharge capacity of culverts at the Kigongoni embankment that will adequately accommodate enough water flow to avoid Lake water flooding through Babati town. The estimated discharge capacity should take into account the fact that the flood risk may increase with time due to siltation of the Lake.

To TANROADS Manyara

To decrease the risk of floods through Babati town, TANROADS Manyara should as a short term measure replace the small culverts in the Kigongoni embankment with bigger ones. Such action would significantly reduce the risk of the embankment acting as a dam.

(iii) The Earth Embankment and the Artificial Waterfalls

To the Manyara Region and Babati Councils

Considering the investments made, the huge gully formed, the lowering of the channel bed at the embankment, and the need to avoid further excavation of easily erodible soil, we would like to recommend the concerned authorities to consult soil conservation experts on alternative ways forward. We can see the following as possible further actions:

- Establish a canal with strong embankment from the place of the former earth embankment to the new huge gully and construct a waterfall at the gully head to

prevent further increase of the gully as well as structures to promote siltation of the gully.

- Declare the area from the Kigongoni embankment to the end of the gullies with waterfalls a prohibited area from cultivation, grazing, brick making etc and plant a large number of trees and other forms of soil retaining vegetation to prevent further erosion.

(iv) Kiongozi Bridge

To TANROADS Manyara Region

TANROADS should ensure that rehabilitation works on flood mitigation structures is done much earlier to prevent roads from probable closure due to further potential damage by future floods.

TANROADS Manyara should consult experienced Bridge Engineers/Soil Engineers when considering the further designing of the retaining wall to give it optimum structure and the necessary dimensions for preventing road bank from damage in the most favourable way.

(v) Design of the rehabilitation of the trunk roads

To TANROADS HQs, Dar es Salaam

The experiences from previous floods should be communicated sufficiently to the consultancy firm that is doing the design for the rehabilitation of the Dodoma – Babati road and the Singida – Babati – Minjingu road. The aim should be to ascertain that hydrological calculations regarding the run-off from the watershed areas surrounding the sensitive discharge points of Kigongoni Outlet and Kiongozi Bridge take past flood events into account. In this context, realignment of the bridge to a less erosion-prone future site should be considered.

(vi) Residential and Business Location of Babati Town

To Babati Town Council

Town planners in Babati Town Council should take into account the flood risks when allocating land. In addition, efforts should be made to ensure that preventive structures/measures are installed in flood prone areas which have been allocated for various purposes.

(vii) Pre-disaster planning and funds for flood management

To Manyara Region and Babati Councils

The regional and district authorities should include disaster/flood management expenditure projections in their annual budgets.

The regional and district authorities should ensure that civil society and focal officers at respective levels play their roles in anti-flood programmes.

To PMO-DMD

PMO-DMD should execute its oversight role to ensure that the regional and district authorities play their roles in pre-disaster planning.

(viii) Training, action plans and the role of PMO-Disaster Management Department

To PMO-DMD

- The PMO-DMD should play its monitoring role to ensure that training given to Local Authorities give a relevant impact on flood prevention and mitigation activities.
- PMO-DMD should carry out or coordinate research relevant to floods, formulate flood prevention plans, review regularly and coordinate flood prevention measures.
- The PMO-DMD should soonest develop a register of floods in Tanzania, where floods are systematically recorded and conduct proactive analysis of flood risks for flood prone and economically important areas. Such a register would be the base for developing a strategic preventive approach regarding floods. Disaster Management Department should get its preparedness priorities for floods for the nation as a whole in place.

2.7 Impact and results

The MDAs directly concerned with the audit were given the opportunity to correct factual errors in the draft report. The meetings with Manyara Regional Secretariat, Babati Town and District Councils, TANROADS Manyara and TANROADS HQs and the Disaster Management Department in the Prime Minister's Office were very constructive. Some of the auditees, notably Manyara Region and Babati Councils and TANROADS, started to take action along the lines of our recommendations.

For example, the Manyara regional secretariat designed an action plan and started soliciting funds from the PMO for rehabilitation of areas affected by the floods as well as flood prone zones. Flood hazard is now seen as a priority issue and has been incorporated in the annual plan and budget for the coming financial year. TANROADS called the consultants for the rehabilitation of the trunk roads to ascertain sufficient consideration to the run-off from the catchment areas in road and bridge design, and, most important, considered giving top priority to increasing the discharge capacity of the Kigongoni outlet.

2.8 Challenges and barriers

The challenges faced during this audit were as follows:

Limited in-house capacity to carry out performance audit. This was overcome by the use of external consultants in coaching and training of our performance auditors.

The auditees viewed the auditors as partners and wanted to involve us in the regional disaster management team with a view of solving the problems related to floods disaster. However, we explained that auditors are supposed to be independent and not involve themselves in implementation.

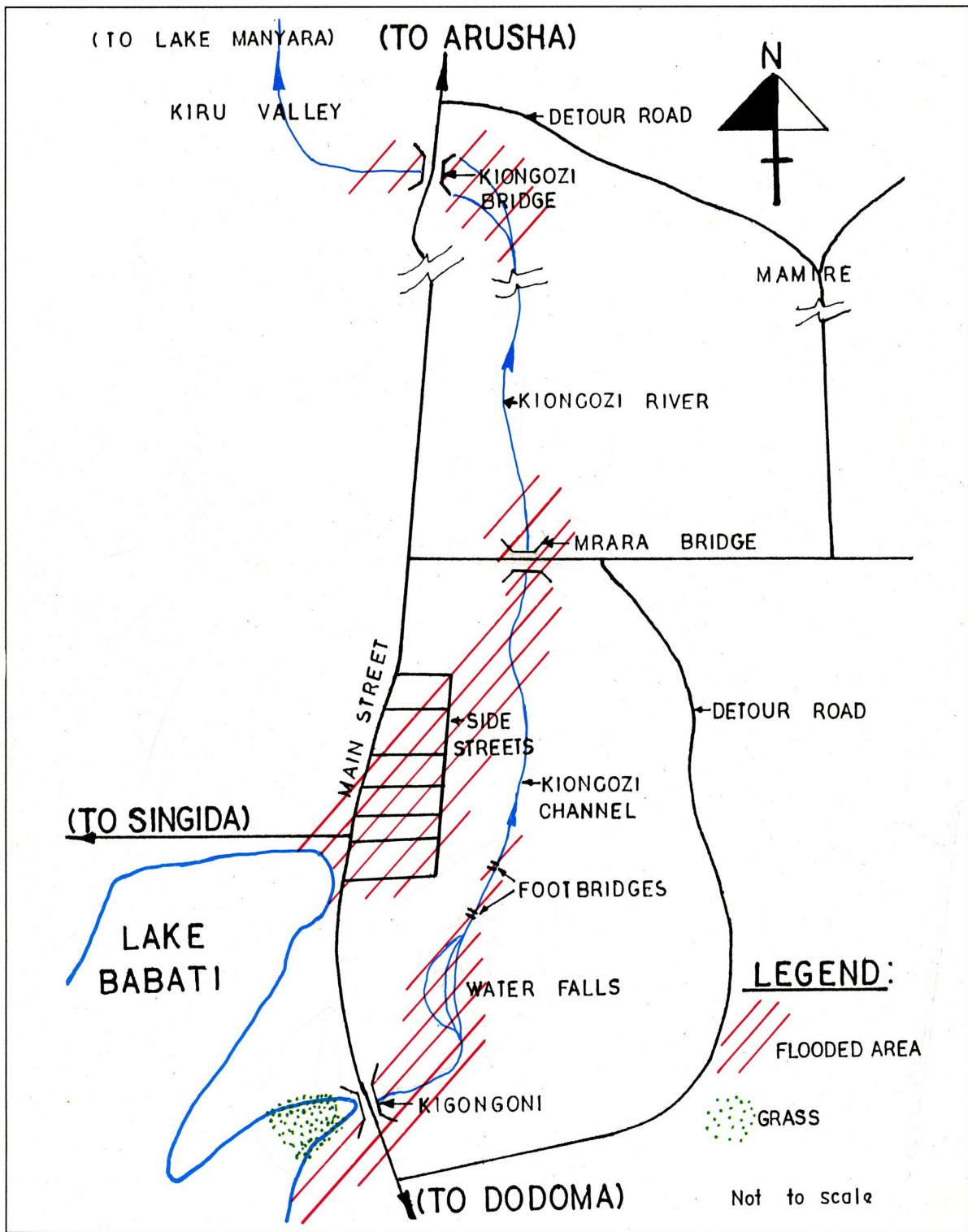
The auditees challenged our focus on physical structures. Why don't you also look into causes of soil erosion and conservation activities that take place around Lake Babati? We answered that we were not aiming at such a far-reaching and complex audit which would take a lot of time and resources. A more limited scope could still produce fruitful recommendations.

3.0 Lessons learned

We did not use the INTOSAI WGEA guidance documents during the course of the audit.

The following were the major lessons learned:

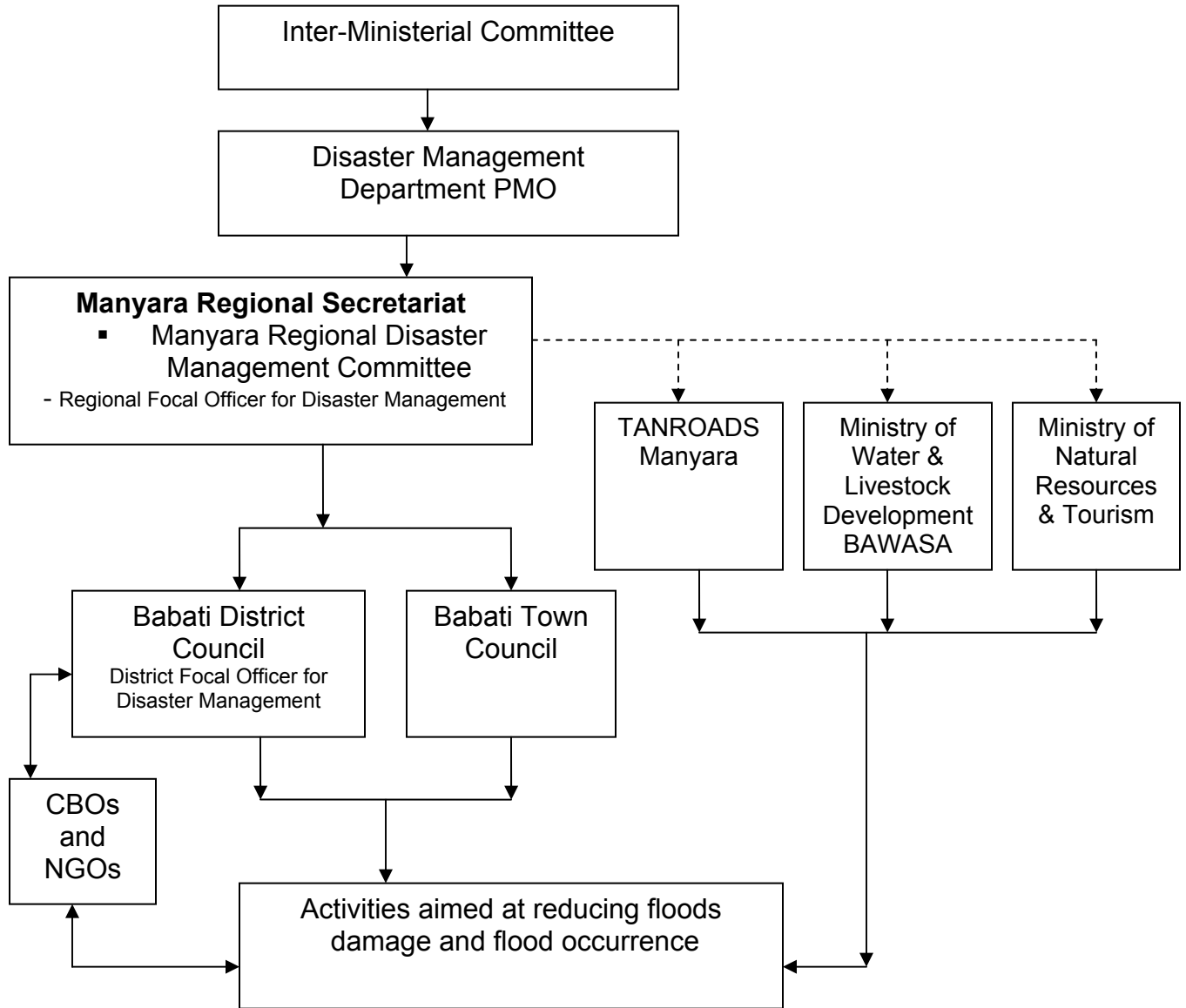
- The Performance Audit report contains some 30 pictures. Pictures from floods in 1990, and 1998 are used for comparison with pictures taken in 2005. The pictures proved very convincing and useful eye-opener in discussions with the auditees for verification of lack of action and the need for a preventive approach to flood/disaster management. Our report illustrated clearly that “A stitch in time saves nine” (*“Usipoziba ufa, utajenga ukuta”*).
- Auditors can play an active role in alerting and challenging the government’s priorities in dealing with various environmental challenges and point out the need for developing a proactive strategy.
- To stick to our approach of focusing on physical structures proved fruitful, not least considering the quick response and action by the auditees. In retrospect, we feel that a wider scope would have not been cost-effective. With all due respect to the important more long term and socially complex soil conservation issues (among them cattle grazing) around the Lake Babati, which influence the risk of floods, we think that our more limited scope gave value for audit money.



Annex 2

Key Players and Main Activities

To facilitate the whole action of dealing with floods, there is a number of key players, who are accountable according to the National Disaster Management Policy and who are supposed to perform the main activities as mentioned in the system graph below:



Photographs



Figure 1: Lake Babati flooding through Babati town in April, 1990.



Figure 2: This picture, probably taken in 2004, shows that the original retaining wall is not there. The water has eroded the Arusha – Babati trunk road to the right of the right abutment of the Kiongozi Bridge.



Figure 3: After the water had washed away the earth embankment, the water started creating a gully. The picture is taken upstream. The demolished embankment is behind the bush to the right in the picture.



Figure 4: The same, long gully formation from the opposite vantage point in 1998.



Figure 5: The same gully from the same vantage point as the previous picture. However, this picture was taken in February 2005, seven years later. The water has continued to erode and enlarge the gully considerably.

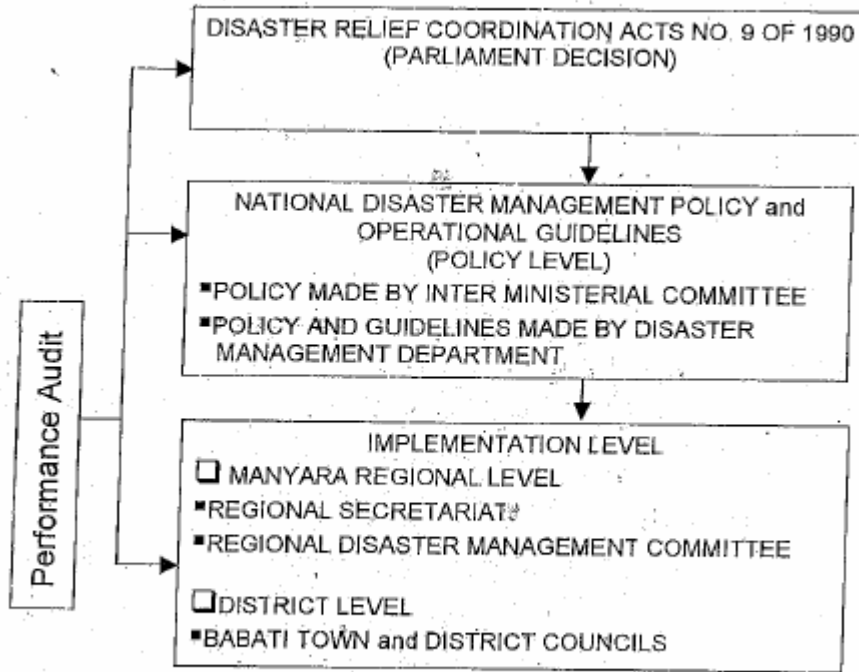


Figure 3.1: Description of the Audit Area

Audit on Environmental Impact Assessment (Tunisia)

Theme: Audits of Domestic Environmental Issues

Author: Alya Baratli, Cour des Comptes Tunisie

The economic and social development in Tunisia suffered throughout the four last decades from a certain number of insufficiencies:

First, the imbalance between the resources of water, the arable lands and the population, added to the difficulties of managing these resources within the limits which their conservation imposes.

Then, the insufficient controlled urban growth led to sanitary problems and to the degradation of the urban environment due to the difficulties to treat with the efficiency needed the problems of worn water and domestic wastes.

Lastly, an economic expansion not very concerned of its effects on environment giving place to industrial pollution which generates harmful effects on public health.

These harmful effects highlighted the danger to consider the development without taking into account the nature and the man. To have underestimated the narrow interdependence of ecosystems and to have often privileged the economic interests, many vital sectors such as fishing, agriculture, resources of water were at least affected and in general the natural inheritance degraded.

Thus, only a real policy of integration of the parameter environment in the national strategies of development can safeguard the great ecological balances, because it would be to fear that the cost of rehabilitation of the degraded environment and the consolidation of the weakened natural resources escape from the financial capacity of the country.

For this purpose structures in charge of implementation of the policy of sustainable development were installed as well as a legal frame work which is constantly consolidated by the international conventions and protocols taken by the international community and/or the countries of the Mediterranean area.

With regard to environmental impact assessment, which is an essential aspect of environmental activities the public authority moved in the institutional framework to protect the environment around competent agencies, such as the national agency of the environment protection (N.A.E.P), fitted with specialized officers in environment impact assessment).

In this case, the legal frame work tended to establish a distinction between the expected environment impact of economic projects prior to their exploitation and the assessment of the environmental impact of the economic entities which are in the process of exploitation.

Vis-à-vis the growing interest that takes the environment protection in the development economic policies and the importance of the credits allocated, it was necessary to find standards and bases which make possible to make sure that the institutions discharge their environment responsibilities.

More over the need on having an exhaustive image of the results and objectives of their missions was made more and more feel. All these facts supported the need for controlling the activities in the environmental matter, by the court of the accounts.

I- Control in the area of Environment impact assessment

The court of accounts undertook a mission of control of the national agency of the environmental protection principal actor in the prevention, the fight against pollution in all areas (air, sea, ground). Its missions as stated by the legal text

- To fight against all the forms of environmental pollution
- To examine the various files of investment of any project contributing to the control of pollution and environmental protection
- To ensure the control and the follow up of the pollutant emissions and the installations of treatment of these rejections
- To promote any action of training, education, study and research in the matter of fighting against pollution and environment protection.

This assignment was of a capital importance for the court of accounts because of the important role of the agency in the field of pollution prevention and environment impact assessment. And for an institution which is in phase of experimenting environmental audit the control of the agency would be very profitable even for the auditors because of the concentration of the environmental programs and specialists in that field.

The checking covered the main fields of the agency actions which are prevention and control pollution. The criteria used in these cases were essentially criteria from authorized sources, clear, explicit and precise. The majority of them were in the legal requirements or in the internal regulation of the agency.

A- Pollution prevention (preventive environment impact assessment)

The environmental impact is the direct introductions of any contaminated material whether biological, chemical or physical in the environment. The environment impact studies constitute an important tool held by the agency in order to prevent pollution and to reduce impacts on the environment resulting from human activities in the fields of industry, agriculture and trade. According to the applicable regulation the projects are obligatorily subjected to these studies in order to obtain a permit and prior to the exploitation whereas other projects are subjected to the respect of requirement forms. The promoter can obtain a permit only after having been informed of non objection of the agency.

The N.A.E.P checks the studies and particularly the compatibility of the project of the requirements of the environment protection. The studies tend to assess the short and medium term effects of direct and indirect pollution impact of environment of each industrial, agricultural or commercial project which activity is source of pollution and degradation of environment.

In the field of screening studies by the agencies the objectives can be summarized as follows:

- Checking the completion of the data base of the agency on projects that are in the process of completion and that data base is credible and updated
- Checking that all economic projects and units and expansions are subjected to the E.I.S
- Establish a uniform methodology for examining studies and in addition to the existence of indicators and basis to monitor this examination.

- Compare the time that took the operation of checking studies by the agencies and comparing them with the dead line fixed , so as not constitute a barrier to investment
- The study includes all the facts such as the detailed description of the project, the analysis of the site and its natural, social, economic and human surroundings and the analysis of the expected complications and effects on the environment the procedures that will be taken by the promoter to take environment concerns into account and the assessment of costs to carry out the corrective measures.
- Check up the project follow up after its approval by the agency and establishment of an efficient system to ensure this mission and especially the completion of the measures that should be taken in order to reduce the distortion effects on environment
- Verify the achievement and respect by promoters of the procedures and measures contained in the study and check that the measures are adopted in the period prescribed
- The following insufficiencies were raised:
 - Absence of follow up of the projects which have obtained a favorable opinion on the basis of the E.I.S. This follow up is essential to however make sure that the promoter carried out indeed the measurements envisaged in his E.I.S.
 - The terms of reference for different sectors are not updated in function particular of several years of experience.
 - In the same way the N.A.E.P gains to develop guides of evaluation of different sectors of activities in order to improve the quality of the technical examination of the E.I.S.
 - Sometimes, it is not possible on the level of the environment. of specific projects to consider the cumulated potential effects of the total programs of which these projects form part.
 - There is a bad comprehension and a weak awakening of the procedure of E.I.S on behalf of the authorities entitled to give authorizations and even of the promoters. These insufficiencies are perceptible through the non-observance by the promoters of the preliminary opinion of the agency which are subjected to it the studies for projects under development.
 - Going beyond the prescribed time of instruction of the files by the agency which is considered as an implicit agreement of this one.
 - Absence of follow up by the agency of the achievements of the projects subjected to a requirement forms.

These observations were followed by recommendations which hereafter the most important of them:

- It is required to ensure that the protection measures recommended in the E.I.S are implemented and to set up a system of follow of the E.I.S that have received the opinion of the N.A.E.P;

- Develop guides of evaluation for different sectors to supplement the already existing guides
- To ensure the follow up of the realization of the projected submitted for prior approval of the schedules of conditions.

B-fighting against pollution (therapeutic environment impact assessment)

To ensure this assignment, the policy pursued by the agency since its creation is to control the polluting entities by operating systematic inspections and identifying all the production entities in the whole territory that are in the process of exploitation. The main objectives in this area were to identify the effectiveness of the procedures set up in this field and to assess the efficiency of the actions taken by the agency:

- check that the agency has a strategy that enable to achieve tagged operations of control
- check that there is a data house including all economic units
- check that the data contains pertinent information and it is exhaustive and updated (the unit activity, the history of control vents, the size of the unit, equipments for waste and emanation treatment ,previous operations of control, the degree of contamination of the activity of the unit ...)
- ensure that the agency controls periodically the main polluting
- ensure that the agency decides to control an entity according to clear indicators and predetermined procedures(period between two controls, degree of pollution, results of the previous controls...)
- ensure that the expert of the agency measure the environment impact according to approved standards)
- Verify the efficiency in matter of reducing pollution of the contract programs concluded with the polluting entities after a control by the expert of the agency.

The exam of this mission raised the following insufficiencies:

- Absence of cartography of the production entities
- Lack of programming and absence of targeting action of control
- Lack of qualification of the expert-controllers of the agency as regards environmental audit and impact assessment
- Absence of data about the previous controls to ensure efficiently the action of control and for a better management of the activity and for better targeting and diversifying the actions of control.
- The agency do not control the emanation in atmosphere of economic units due to lack of establishing the correspondent standards

The agency has among its means of action the contract programs concluded with the polluting units. In this case the following observations were raised

- 33% of the control pollution companies are not exploited.
- 48% of the companies which contracted programs do not pour water in conformity with the standards

- It was impossible to evaluate the projects of control atmospheric pollution due to the lack of standards to the emission and atmospheric emanation.
- 38% of waste recycling units are not exploited

To conclude, the court of accounts, encountered some difficulties upon the completion of this assignment. The main obstacles were the absence in some cases of norms and standards in the area of environment impact assessment, the difficulty to determine the expected impact on environment of the projects due to the lack of competence and training in that field this besides the difficulty in assessing the cost of environmental effects of negative influences and particularly social ones. The court faced also a lack of data and information system on the environment and the difficulty of providing information that enable a comparison between the economic returns of the project and the cost of removing of environmental impacts.

Medical Waste (Uganda)

Theme: Audits of Domestic Environmental Issues

Author: Office of the Auditor of General of Uganda

1. Introduction

The environmental issue has become a world –wide concern in the last decades being the focus of discussions in a variety of forums both at national and international levels. Because environmental problems are rooted in economic and social policies, they occur at all levels from local to global, and success requires action by many players over long periods of time. The government is responsible for dealing with these problems and working towards solutions. Accordingly the government has tried to address this over the years by creating policies, and programs enacting environmental legislation, and through international institutions and treaties, laws and regulations and expenditures.

Although it is not the Auditor Generals function to question policy, it is however his responsibility to investigate the effect of policy and the management measures that lead to policy decisions. In this way the Auditor General can help the Government do a better job. Addressing environmental matters falls squarely within the above mandate more precisely because of the following reasons:-

- The Government spends significant public resources on managing environmental problems; the Auditor General needs to hold the government accountable for prudent financial management, reporting, and results.
- The Government has signed numerous international agreements and enacted domestic laws and regulations; the Auditor General needs to hold the government accountable for compliance.
- Government in its financial statements must account for environmental costs and liabilities created by its land holdings and operations – accounting standards require that there should be adherence to proper accounting practices.

Accordingly, this office has embarked on carrying out environmental audits in addition to the usual financial audits it has been carrying out. The audits will be carried out on any of the environmental issues facing the country and world at large (including waste management, water and air pollution, forest loss, land degradation or impaired ecosystems). As a pilot environmental audit, a decision was made to audit waste management with particular emphasis on Medical waste generated by government hospitals. Two hospitals: Masaka and Jinja were audited. Waste that is not managed properly affects not only human health but the other aspects of the environment like water, air and biological diversity.

The purpose of this management report/environmental audit report was therefore to make known the findings of the audit regarding the handling, storage, disposal, and transportation of medical waste. The report was not intended to be exhaustive. In line with audits of this nature, the intention was to provide the reader with a general understanding of the current situation with regard to medical waste and in particular, the adequacy of the management

measures with regard to the risks and applicable legislation, regulations and procedures associated therewith.

2. Audit Objectives

The following were the audit objectives:-

- To ascertain whether the Hospitals Waste management system complies with international environmental treaty obligations, national environmental laws and regulations and government policies and programs.
- To ascertain whether the Hospitals Waste management system is economical, efficient and effective.
- Make a report of the findings to Parliament

3. Audit Findings

3.1 Lack of Medical Waste Policies and Strategies:-

It was noted that there is no comprehensive Medical Waste management policy both at national and individual hospital level. Such a policy would, as a matter of best management practice guide all the concerned parties (individual hospitals, and staff employed by them) as to what course of action to take on issues related to management of medical waste. The policy would address issues like: identification of all the stages of the waste stream; measures to be undertaken to ensure waste prevention; the different types of waste and how to handle each type; segregation of waste; compliance with existing laws and regulations as well as a clear definition of principles to be followed. In addition, the policy would identify all the possible risks related with medical waste management and give guidance on how to manage those risks.

It was further noted that although a Draft National Hospital policy is available, the environmental section of the policy (which will also contain issues related with medical waste management) has not yet been compiled.

3.2 Lack of Awareness of the Legislation in Place

It has been noted that there is a lack of awareness by the concerned hospital staffs of the legislation relating to Medical waste. For example although there are the National Environment (waste management) regulations 1999, issued by NEMA, none of the hospitals audited was aware of these regulations. This implies that any adherence to the regulations in place is coincidental rather than planned. It is important that all staff are made aware of all the stipulated regulations to be followed while handling all types of waste so as to ensure compliance with the same.

3.3 Lack of Standards

It was noted in the National Environmental action Plan for Uganda (dated June 1995) that Uganda had not yet developed any national environmental standards in many areas of concern yet standards play a crucial role in environmental management. This has been the case until the issuance by the Ministry of Health of the Standards for Injection Safety and

Health Care Waste Management practices in July 2004. However, by the time of audit in December 2004 the Hospitals had not yet been availed with those standards implying that they had not yet started enforcing the standards developed. It is important that the standards are circulated to all parties concerned to enable their appropriate enforcement.

3.4 Waste Management Records are Limited, Incomplete and almost Non-existent

It was noted that there are no waste management records maintained by each of the hospitals audited. As such there is no way in which one can ascertain the quantities of waste generated by the hospital and whether it has all been disposed of in the recommended way. It should be remembered that the generator of waste bears all the responsibility of destroying it. The hospitals therefore are always faced with a risk of being penalised by the responsible regulatory body (NEMA) for failure to dispose off all the waste they generate since they have no records to show that they have appropriately disposed off all what has been generated (e.g. records in form of waste manifests/ledgers, etc).

3.5 Monitoring

The National Environment Management Authority (NEMA) is a body that was established by an Act of parliament as the principal agency in charge of coordination, monitoring and supervision of all environmental management issues in the country. This it does in coordination with the district Environmental officers resident in every district in the country. However it was noted that both hospitals had not received any monitoring visits either directly by NEMA or by the District Environment Officers. It was explained that NEMA was largely relying on a system of 'self compliance' by the concerned bodies since it can not monitor each and every institution in the country due to several technical reasons. The hospitals audited have therefore not received the necessary technical guidance that would be derived from the monitoring visits to enable them take corrective or preventative action where possible.

3.6 Incinerators

It was noted that incinerators at both hospitals are out-of-date with no mechanical refuse feeding or dust-catching devices. Although it is a requirement under regulation 13 of the National Environment (waste management) Regulations 1999 to obtain a licence for operating a waste treatment/disposal facility from NEMA, no operational licences were availed for verification. In their current state (refer to photographs below), the incinerators can not burn up to the required temperatures resulting in noxious fumes, smoke and incomplete burning of waste (especially sharps/needles and glasses). In addition, there are no operational instructions given to the operators of the incinerators (who are contracted). This obviously poses a health risk.



Fig.1: Opening to the incinerator
(Masaka Hospital)



Fig.2: Spillage of waste behind the incinerator
-Broken glasses and half-burnt needles

The incinerator - not buried. (**Jinja Hospital**)



Fig.3: Incinerator entrance-steps
(**Masaka Hospital**)



Fig.4: Incinerator as seen from behind
un-burnt waste mixed with burnt waste
(**Jinja Hospital**)

It was also noted at the Jinja Children's hospital that a shallow burning pit was being used as an 'incinerator' (**Refer to photo 5 below**) since the main incinerator is located about a kilometre away at the main hospital premises.



Fig.5: Pit used for burning medical waste at the children's hospital – Jinja. (Note the unrestricted access)

This is not only a violation of the laws in place but also a threat to the people and the environment at large.

3.7 No Strict Internal Medical Waste Control Systems

It was noted that there are no documented internal medical waste control systems in any of the hospitals audited. All staff interviewed acknowledged the fact that there were no written uniform guidelines by the hospital management regarding the management of waste. Such a system would guide staff on issues like waste segregation, storage, transporting, and disposal and also allocate responsibilities to specific staff members regarding their respective roles concerning the management of medical waste. It was therefore noted in some instances that medical waste (including sharps and used gauze) would not be separated from the general waste that would eventually be transported to the general landfill sites controlled by the municipal authorities. This poses a serious threat of harm to the communities nearby. (Refer to photos showing people scavenging the landfill site and animals grazing on the same site where the un-separated waste is dumped)



Fig.2: People scavenging waste at the municipal dumping site (Masaka).

3.8 Lack of a Waste Recycling System

It was noted that the system of waste recycling was not encouraged in both hospitals. This would reduce the volume of waste and hence the amount of land available for landfill sites. It is recommended that management should try to identify the waste types that could be recycled so as to reduce on the quantities of waste to be generated and dumped at the landfill sites.

4. Recommendations

4.1 Environmental Awareness

In order to create environmental awareness amongst staffs of the hospitals in the country it is recommended that the Ministry of Health (MoH) should play a leading role in emphasising the importance of observing environmentally sound practices and in particular in management of medical waste. Through its routine health education campaigns in the country, it should incorporate environmental issues so as to increase environmental awareness. MoH should encourage all hospitals in the country to access and adhere to the environmental regulations in place. Since it (the Ministry) is charged with the responsibility of developing and running all government hospitals and health training institutions it follows that the same institutions should

be operated/run following laid down laws and regulations that will not adversely affect the health of the population.

4.2 Risk Evaluation

In order to mitigate the risks associated with medical waste, it is important that management should always try to identify and evaluate the nature of the risks involved and then try to devise ways and means of managing those risks. Currently there have not been any attempts to identify the risks posed by medical waste a fact which contributes to it being not given the attention it deserves.

4.3 Policies and Strategies

As already pointed out, a draft National Hospital Policy is available. It is important that the environmental sections of the policy are drafted which will address issues to do with medical waste management. The individual hospitals can then base on this national policy to make their own policies to be followed by staff in the respective hospitals.

4.4 Internal Waste Management Systems

It is important that management of the individual hospitals set up strict internal waste management systems with clear duties and responsibilities to all concerned. This way, it will always be possible to identify which individual has failed to perform his or her assigned responsibilities.

4.5 Increased Monitoring

Increasing monitoring by the ministry staff, NEMA staff and the district environmental officers can also help in guiding management of individual hospitals in areas they are found to be lacking. The interaction between the monitoring staff and hospital staff will also increase environmental awareness and possibly lead to adherence to environmental laws and regulations, thus contributing to conservation of our environment.

SAI'S APPROACHES TO AND EMERGING TOPICS IN ENVIRONMENTAL AUDITING

Cross-portfolio Performance Audit of Green Office Procurement in Australian Government Agencies (Australia)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Author: Australian National Audit Office

Background

1. The Australian Government has indicated that it aims to be at the forefront in environmental purchasing practice through:

- buying goods and services that seek to minimise possible environmental impacts;
- working with industry to encourage continuous reduction in the adverse environmental impact of goods and services; and
- assessing the environmental impact of goods and services against informed and internationally recognised standards and methods.¹

2. Procurement of goods and services by Australian Government agencies was valued at over \$17 billion in 2003–04². This makes the Australian Government a significant purchaser of a range of goods and services, from office supplies through to building management services. The impact of government procurement practices can include greenhouse gas emissions from energy consumption in buildings and vehicles, waste to landfill from paper, equipment and office refurbishments as well as the over consumption of scarce natural resources such as fresh water. For the purposes of the audit, the Australian National Audit Office (ANAO) considered green procurement to be procurement activity that takes into account environmental impacts.

3. The Australian Government has introduced (or agreed with the States and Territories) a range of policy measures to improve energy efficiency in buildings, reduce vehicle emissions and packaging waste and report on aspects of sustainability in its own operations. The National Strategy for Ecologically Sustainable Development provides broad strategic directions and framework for governments to direct policy and decision-making. The Strategy facilitates a coordinated and co-operative approach to ecologically sustainable development (ESD) and encourages long-term benefits for Australia over short-term gains. A range of guidance on good practice has also been provided through the Greening of Government website and specific publications such as the Environmental Purchasing Guide.

4. The objective of the audit was to assess and report on the progress being made by agencies subject to the *Financial Management & Accountability Act 1997* and entities subject to the *Commonwealth Authorities & Companies Act 1997*:

- in realising value for money from the procurement process, with a specific focus on buildings, services and products using whole of life cycle assessments; and

¹ Greening of Government website <<http://www.deh.gov.au/industry/agency-performance/purchasing/policy.html>>

² The \$17 billion figure is sourced from Finance database on contracts. It includes information from FMA Act agencies but there is no aggregate information on the value of purchasing contracts from CAC Act entities.

- in the consideration and management of environmental impacts in specifications and contracts.
5. The emphasis of the audit was on green office procurement and sustainable business practices and the value for money within this context. As such, the audit report provides a status report on the implementation of ESD within the office environment of the Australian Government.

Methodology

6. The audit used a survey approach in conjunction with selected audit investigations to obtain information across 71 agencies and entities selected on the basis of materiality in procurement and coverage across large, medium and small organisations. The agencies selected represented approximately 35 per cent of all government bodies and over 95 per cent of all procurement spending noted on the Department of Finance and Administration (Finance) database on contracts.

7. The audit considered the procurement practices of government agencies in the following areas:

- agency awareness of and compliance with Australian government policies and guidance, particularly in relation to whole of life cycle assessments and mandatory energy policies;
- an assessment of how useful central agency guidance has been;
- the implementation and impact of EMSs;
- the quality of reports to Ministers and Parliament on green procurement issues;
- actual practices in energy and water efficiency and conservation, the procurement of equipment and services, waste management and office vehicles; and
- an assessment of barriers to the implementation of green procurement.

8. An overview of some of the organisations included in the audit is set out below in table 1.2.

Table 1

Examples of agencies included in the audit by size

	Examples of organisations	Suppliers (Expenses from ordinary activities) \$'000 ³	Environmental Management System (EMS)	Total Energy Use (Giga Joules) ⁴
Large organisations (25)	Centrelink	646 092	Yes – one EMS covering 0.25 per cent of Centrelink office sites and 1 per cent of full time equivalent staff, a corporate EMS is under development	449 116
	Defence	5 302 089	Yes – covers approximately 2 per cent of sites plans to have EMS covering all major sites by 2008	16 506 172
	Australian Tax Office	753 106	Yes – covers the 35 major sites	329 843
Medium organisations (19)	Health Insurance Commission	204 698	No EMS – Plans to implement by mid 2006	96 190
	Dept of the Prime Minister and Cabinet	20 158	No EMS – Plans to implement in early 2007	9 391
	Civil Aviation Safety Authority	34 954	No EMS – no plans for implementation	14 795
Small organisations (27)	Australian Public Service Commission	14 026	Yes – one EMS covering 16 per cent of sites	2 142
	Great Barrier Reef Marine Park Authority	10 734	No EMS – plans to implement in 2006	11 667
	Australian Sports Drug Agency	3 978	No EMS – no plans to implement	1 568

Source: ANAO survey of green office procurement

Audit methodology and structure

9. The audit was undertaken using a combination of: a survey and a validation of a sample of 12 Australian government agencies, a series of case studies on green procurement issues and statistical information gathered from Finance and the Department of the Environment and Water Resources.

10. The audit surveyed most materially significant agencies as well as a representative selection of other medium and smaller sized agencies. Some agencies were not included because:

³ Extracted from Departmental Annual Reports 2003-04 (Suppliers; Expenses from ordinary activities)

⁴ Extracted from Energy Use in Australian Government Operations 2003-04.

- the agency had already been covered in a recently tabled audit or had been included in an audit on procurement currently in progress;
- the agency had been restructured or was now being incorporated into a department;
- the agency was a specialist agency not typical of office administration; or
- the agency was a trust fund or tribunal with no significant office environment.

11. Where agencies such as Defence and the Australian Customs Service had a mix of office and other activities that are difficult to separate, the audit sought to focus on materially significant areas with large office components. In Defence, the audit included all major office sites as well as Defence Establishments (for energy use).

12. A sample of total agency responses was validated through an examination of 12 government agencies, representing 17 per cent of responses. In addition to the survey response, contracts and tenders were reviewed in a selection of the larger agencies, and interviews were conducted with relevant officers and contractors. This additional information was used to develop a more complete and accurate understanding of the office procurement processes in agencies.

13. The survey was developed in consultation with the Department of the Environment and Water Resources and Finance. The survey questions were tested with seven agencies, prior to the survey, to ensure questions were technically accurate and answerable. These agencies were also surveyed. The ANAO also consulted with the Office of Sustainability in the Chief Minister's Department of the Australian Capital Territory (ACT) because of the significance of Australian Government practices in this area to the ACT. The survey format was designed, conducted and collated by ORIMA Research Pty Ltd.

Key findings

Chief Executive Instructions (CEIs) and internal policies

14. CEIs and internal policies can provide the priority and impetus relating to the standards expected of Australian Government officers when making decisions for procurement of goods and services. They provide important agency-specific support for the whole of government Commonwealth Procurement Guidelines (CPGs). From the ANAO survey, most respondents (92 per cent) stated that they had high-level documentation in their CEIs or internal policies relating to value for money in procurement. While whole of life cycle costing principle is integral to the CPGs, half of respondents indicated that they did not have instructions or internal policies in relation to whole of life cycle costing.

15. In addition, less than half of respondents had references to minimising environmental impacts and compliance with government policies and targets. This is an important reporting requirement for Australian Government agencies under the *Environment Protection and Biodiversity Conservation Act 1999*.

16. The ANAO appreciates the need to avoid CEIs or internal policies becoming too large and unwieldy. However, 25 per cent of respondents commented that green procurement policy was not sufficiently clear or precise in terms of what is required. Some 10 per cent of respondents also considered that green office procurement was not a priority in their agency. Clear internal guidance on these matters would assist in providing leadership and giving higher priority to important compliance issues in Australian Government bodies and assist with its integration into operational decision making.

Guidance to agencies

17. The audit examined the extent to which guidance from the Greening of Government website and other specific guidance (such as in relation to Finance procurement advice) had been beneficial to procurement practice. From the ANAO survey, the majority of respondents (68 per cent) considered that current guidance useful. However, over a quarter of respondents did not find the guidance useful (27 per cent).⁵ Some 38 per cent of respondents also found identifying 'green' products or 'green' suppliers difficult and time-consuming. Expanding purchasing guidance to provide further information on suitable products that would meet the requirements of the CPGs and have environmental attributes (such as being produced with lower greenhouse gas emissions or cleaner production methods) would assist Australian Government bodies in this area.

18. From the survey responses there was clearly a considerable interest in the Greening of Government Website and most respondents had used the material in addition to the CPGs. The main criticism from respondents was that the information on the Greening of Government website was hard to locate or access. A number of respondents commented about the need to consolidate environmental purchasing information into a single 'one-stop-shop' with clear links between the Department of the Environment and Water Resources and Finance websites.

Environmental Management Systems

19. The Government's policy in relation to Environmental Management Systems (EMS) is that agencies and entities were encouraged to develop and implement an EMS based on the internationally recognised ISO 14001 or an equivalent standard by December 2002 and accredit at least one of their larger sites to ISO 14001 or an equivalent standard before December 2003. Secretaries and Chief Executives were to report by March 2002 to their Ministers (copied to the Minister for the Environment) if there were particular circumstances such as the costs of taking up the actions significantly outweighed the benefits.

20. The ANAO survey indicated that 32 respondents (45 per cent of respondents) had an EMS in place. Only seven respondents (10 per cent) indicated that they had an EMS certified to ISO 14001. Only one agency had been sufficiently 'encouraged' to advise their Minister (copied to the Minister for the Environment) if there were particular circumstances preventing action in this area. The survey indicated that 39 agencies had not followed this policy requirement. Where respondents had implemented an EMS there was a significantly better environmental performance. Those respondents with an EMS: identified less barriers to green procurement, set more environmental targets, had undertaken more energy and water saving initiatives, had a greater knowledge of the waste produced and were more active in recycling. These findings demonstrate some of the benefits in having an EMS, and some examples of good practice in relation to energy performance targets are outlined in this report.

Reporting

21. Under section 516A of the *Environment Protection and Biodiversity Conservation Act 1999* Australian Government agencies are required to 'report on the effect of their actions on the environment and identify any measures to minimise the impact of these actions on the environment'. Less than half of the 71 survey respondents (41 per cent) indicated that they had reported the effect of their procurement actions on the environment. Given that the Australian Government spent \$17 billion on procurement in 2003–04, this should logically be an area for inclusion in the reporting from larger agencies in particular. In addition, some 80

⁵ Five per cent of respondents did not comment on this question. The lack of response generally reflected a new person taking over the position or the absence of a person with enough familiarity with the guidelines to meaningfully comment.

per cent of respondents identified measures they were taking to minimise the impact of their actions on the environment. Reporting on environmental performance is likely to improve in some Australian Government bodies in the future with 11 respondents indicating that they were planning a triple bottom line report within the next three years. Currently only two agencies produce triple bottom line reports. Such a report aims to provide more detailed information on the social, economic and environmental performance of the organisation.

Office stationery

22. In providing a diverse office environment for some 131 000 employees, the Australian Government consumes a significant amount of paper, stationery supplies and information and communications technology equipment. The government procures over \$20 million of paper each year. From the ANAO survey, 42 per cent of respondents stated that they use recycled products. Some 21 per cent also indicated that they use environmentally friendly products such as 'environment choice'. Almost 30 per cent of respondents indicated that they use environmentally accredited suppliers. This 'supply-chain' management approach to purchasing is an important mechanism to encourage more sustainable practices in the market place. However, the tensions between sustainable business practices and value for money are illustrated through the result that paper with a recycled content cost respondents, on average, 12.4 per cent more per ream.

Office equipment

23. Office equipment accounts for an estimated 15 per cent of the Australian Government's tenant light and power consumption giving rise to about 60 000 tonnes of carbon dioxide equivalent greenhouse gas emissions. The ANAO survey found that in relation to specifications or tenders for the procurement of office equipment such as photocopiers and printers:

- 63 per cent of respondents gave higher consideration to multifunctional devices over single function machines;
- 61 per cent of respondents used whole of life cycle costing assessments as standard procedure;
- 55 per cent of respondents required energy management options to be activated on their computers; and
- 83 per cent of respondents had energy management options on office equipment that enabled office equipment to power down during non-use periods.

24. While energy efficiency has significantly improved for office equipment over time, all FMA Act agencies and CAC Act entities should ensure that purchasing decisions meet government policy requirements in this area – particularly in terms of applying whole of life cycle costing and the active application of energy management options.

25. From the ANAO survey, only 24 per cent of respondents specify in their information and communication technology (ICT) purchasing contracts provisions for the recycling or reuse of computers. Computers can contain lead, cadmium, mercury and brominated flame retardants in the plastics which are a known health hazard. Evidence from a variety of studies indicates that in 2005, some 731 500 computers will go to landfill and this will involve 19 751 tonnes of material and some 7 400 tonnes of hazardous waste. However, the number of computers becoming obsolete annually in Australia will continue to grow every year, to the

point where in ten years, 1.77 million personal computers will require end-of-life management every year.⁶

26. Advice from respondents during the course of the audit indicated that Australian Government computers are either leased from private sector providers or in the case of a small number of agencies, owned by the agency itself. Advice from respondents and providers is that obsolete computers are usually auctioned or provided to not-for profit organisations at the end of their economic life. In the longer term, computer and ICT waste is likely to be a major environmental problem. To address this issue, the ANAO has suggested that product stewardship guidelines and specifications be introduced to reduce the potential waste stream in this area.

Motor Vehicles

27. The Australian Government has set a target that requires the Government fleet to contain at least 28 per cent of vehicles in the top half of an emissions rating system—the Green Vehicle Guide (GVG) by December 2005. The target was voluntary but was aimed at the entire Commonwealth fleet, although it did not include the Department of Defence's (Defence) commercial fleet of fit for purpose and passenger vehicles (5 761 vehicles). Since the introduction of the policy, the number of vehicles in the Australian Government Fleet has reduced from 8 000 to 7 311 (June 2005). An analysis of passenger vehicle greenhouse gas emissions indicates that since 1997–98, Australian Government fleet emissions have decreased 17.3 per cent, which is in line with a similar drop in fleet numbers.

28. Since the target was introduced, the proportion of vehicles achieving the GVG target (that is the objective of the policy) has decreased from 17.9 per cent to 12.5 per cent, as at June 2005. Consequently, it is unlikely that the GVG target has had any significant impact to date and the 2005 target is unlikely to be met. The Australian Taxation Office (ATO) is an exception and is one of the very few agencies with large fleets that are likely to meet the target set for 2005.

29. Some of the main reasons for the lack of success were:

- financial discounts of up to 30 per cent for larger, less fuel-efficient motor vehicles;
- the voluntary nature of compliance with the target: and
- a limited range of medium sized motor vehicles over 2 litres available for lease.

30. The fleet target is planned for review in December 2005. The ANAO has suggested that agencies review the energy efficiency of their fleets and consider measures to improve their GVG scores in future lease contracts. A range of measures to reduce greenhouse gas emissions, such as emissions offsets programs that are already being implemented by a small number of Australian Government agencies, could be considered. These programs offset emissions through tree planting or investment in other projects that reduce greenhouse gas emissions.

Water efficiency

31. With water restrictions in place throughout much of Australia during 2005, Government agencies should be aware of their water consumption and the need for conservation measures. While there is currently no policy requirement, it is clearly an area where agencies can potentially lead by example to reduce consumption and lower their costs and impact on the environment.

⁶ Meinhart Infrastructure & Environment Pty Ltd report for multimedia Victoria (March 2004); Electronic Waste Recycling Development Strategy for Victoria.

32. The ANAO survey found that most agencies had done little to reduce water consumption although a number of respondents had taken positive steps such as flow reduction measures (30 per cent), leak detection (35 per cent) and installing water metering (28 per cent). More positively, 59 per cent of agencies had installed water efficient dishwashers. While measuring actual water use remains an issue, research for the Department of the Environment and Heritage has estimated water use of Commonwealth bodies at approximately 19 100 ML/year and potential savings of 2 300 ML/per annum could be achieved if more agencies introduced water saving measures. If achieved, this would have the added bonus of providing financial savings of \$5.28 million per annum, although these savings would accrue throughout the supply chain (that is building owners and service providers as well as tenants).

Waste minimisation

33. The ANAO survey identified some of the good practices being implemented by a small number of agencies in terms of reusing materials, reducing the waste stream and lowering cost overheads in office refurbishments. From the ANAO survey, only 12 agencies indicated that they conducted whole of life cycle costing assessment as a standard procedure when entering into contracts for office refurbishments. However, Defence and DIMIA have actively sought to achieve best practice in the recycling of building and demolition with over 90 per cent being achieved in two large building demolitions.

34. In more general waste management, the survey indicated that, 65 per cent of agencies were able to report on their waste management costs. The median cost of office waste management was \$43.50 per person in 2003–04. For many agencies, there was little or no information available on their waste costs or volumes and this remains a key constraint for progress in terms of more sustainable business practices in this area.

35. Nevertheless, all agencies surveyed stated that they recycled their paper waste and there were high levels of recycling of toner cartridges. However, agencies recycle very little of their co-mingled and green waste. Only 16 of the 71 agencies could specify any actions being undertaken to assist the Government to meet its commitments to reduce packaging waste. As a minimum, agencies should consider inserting clauses in purchasing contracts to reduce packaging waste. This would assist the Australian Government in complying with its commitments to reduce waste under the National Packaging Covenant.

Whole of Government energy reporting

36. The Australian Government has had a long-standing policy to improve energy performance in Australian Government operations. The goal of the Australian Government's energy policy is to improve energy efficiency, and consequently, reduce the environmental impact of Government operations, and by so doing, lead by example.⁷

37. Since the introduction of energy efficiency measures, there is evidence to suggest that the energy intensity of Australian Government operations has improved substantially as agencies have undertaken a range of energy conservation measures. In terms of energy consumption for tenant light and power (which accounts for some 14 per cent of total energy consumption in the Australian Government):

- compliance has improved from 35 per cent of agencies complying with the Government's energy target⁸ in 1999–00 to 58 per cent of agencies in 2003–04; and

⁷ Department of the Environment & Heritage; Energy Use in the Australian Government's Operations; 2003-04 page 455.

⁸ The Government energy target for tenant light and power is 10,000 mega joules (MJ) per person

- average energy use per person has improved from 11 758 MJ/person in 1999–00 to 8 643 MJ/person in 2003–04.

38. As the largest energy-consuming agency, Defence has taken significant steps to improve its total energy use. While energy performance on Defence Establishments (which includes military bases and barracks) has improved from 1999–00 to 2002–03, it deteriorated in 2003–04 by almost 6 per cent. This is largely because of increasing Defence requirements, increases in personnel and improvements or expansion to Defence facilities. However, there are still substantial energy conservation measures outstanding from an earlier energy efficiency program. It would be highly desirable to offset increases in energy use with sub-metering and energy conservation measures in all major sites as soon as practicable.

39. In terms of the accuracy of the aggregate Australian Government energy use, the ANAO found that energy efficiency has improved over time and substantial savings have been achieved because of the policy. However, the 15 per cent improvement noted in the 2003–04 report did not take into account that Defence reclassified the majority of its diesel and petrol consumption into ‘Defence Operations’; a category not included in aggregate government energy consumption reductions. This was done by Defence to provide a more accurate classification of their energy use but was not taken into account by the Department of the Environment and Heritage () in reporting the reduction in total energy consumption for 2003–04. Consequently, the ANAO considers that the published reductions in energy consumption should be adjusted by some 44 per cent (1997–98 to 2003–04). In other words, the total savings achieved have been closer to nine per cent than the reported 15 per cent. has advised that greater emphasis will be given to energy intensity measures in future reports.

Energy efficiency initiatives in Australian Government agencies

40. Compliance with energy management requirements has been variable across the Australian Government. The ANAO identified that most respondents were undertaking some energy efficiency initiatives. However, this was not reflected in any depth across the range of total office spaces occupied by respondents. An analysis of responses indicated that 20 per cent of office tenancies had been energy audited and only 21 per cent of office tenancies had energy efficient lighting installed.

41. Respondents that had undertaken energy efficiency initiatives had improved their energy intensity significantly. Respondents with energy plans achieved reductions in energy consumption of 20 per cent as opposed to the 9 per cent achieved by agencies without these plans. Agencies that have undertaken energy audits, in at least one office space, achieved a 19 per cent reduction in energy consumption as opposed to the 10 per cent achieved for those that did not. Considerable gains were found by agencies that introduced timer switches on heating and lighting (32 per cent reduction in energy use compared to 2 per cent for those who had not taken this action) and in sensor switches (25 per cent reduction in energy use compared to 7 per cent for those who had not taken this action).

Overall audit conclusion

42. The audit has identified a small number of better practice examples of green office procurement across the Australian Government. However, overall there were significant shortcomings identified in terms of the application of whole of life cycle costing and in the management of the environmental impacts of procurement decisions. Compliance with Australian Government policy requirements has improved over time in areas such as energy efficiency in buildings with important greenhouse gas emissions and cost savings being achieved.

43. While green procurement in areas such as purchasing recycled paper can cost more, financial savings of almost \$10 million per annum could be achieved if agencies were more proactive in energy and water conservation in particular. However, it is noteworthy that over a quarter of surveyed agencies indicated to the ANAO that agency budgetary constraints or processes do not allow green office procurement even though this might produce longer-term financial savings for the agency.

44. Australian Government agencies as a whole have been successful in meeting the Government's expectations in improving energy efficiency in office buildings. Centrelink has been a leading agency in this regard. Agencies are well placed to meet future energy efficiency requirements. The actions taken by agencies such as Defence and DIMIA in the recycling of building and demolition waste have also been good practice.

45. However, performance in managing motor vehicle emissions, reducing or recycling general office waste and conserving water has been variable and in the majority of cases, poor. Implementing EMSs (one of the key management controls designed to improve environmental performance) has been slow and few agencies have met the timetable originally envisaged by the Government. In addition, the audit has highlighted the absence of specific requirements in areas such as waste management and water conservation and shortcomings in agencies meeting the Government's stated objective to be at the forefront of environmental purchasing practices. As a consequence, sustainable development has not, as yet, been fully integrated into Australian Government operations.

46. Because of the scale of Australian Government operations, even small improvements in these areas are likely to have positive environmental impacts. The ANAO has made 16 recommendations that have been designed to enhance the performance of Australian Government agencies in green office procurement and sustainable development practices. The final recommendation aims to strengthen the sustainability framework for Australian Government operations through measures such as promoting best practice green office procurement and the measurement and mandatory reporting on progress towards sustainability targets.

Agencies' response

47. 43 agencies or entities responded to the audit. Generally, agencies and entities agreed with or were generally supportive of the recommendations. Qualifications were made by a small number of agencies to particular recommendations. In these cases, the qualifications related to a perceived need for further guidance, the relative size of an agency or to resource constraints. Two agencies disagreed with some parts of recommendations, (the Department of Defence and the Department of Health and Ageing). This was because of possible future changes in government policy (in one case) or conflicting administrative requirements or processes.

48. The lead agency responsible for much of the policy concerning green office procurement, the Department of the Environment and Water Resources commended the ANAO for the work done on this audit. The Department considered that the audit report will assist them in their work of encouraging agencies to improve their environmental performance. The documented cost savings and performance benefits from initiatives pursued by agencies audited will also be of value to those still considering further actions.

49. The Department noted that while they generally support the recommendations, their capacity to achieve improvements in the environmental performance of other agencies was limited. Resources available for this work needed to be used strategically. The department considered that environmental purchasing (and a commitment to improved environmental

performance generally), needed to become standard practice across the Australian Government. While there is a strategic role for the Department in that process, primary responsibility for performance needs to rest with government agencies themselves. To this end, the department proposed to develop a new policy framework for agency environmental performance in 2006, which will assist in setting priorities for future agency action. As part of this, the Department will develop a new website to allow content from the department and from other agencies to be presented as a one stop shop for the public sector.⁹

Developments since the audit

50. The audit report was reviewed by the House of Representatives Committee on the Environment and the recommendations were strongly supported in their report. The report of the Joint Committee on Corporations & Financial Services (June 2006) also recommended that the Australian Government establish voluntary sustainability reporting targets for government agencies, voluntary targets for procurement in areas such as water, waste, energy, vehicles, equipment and consumables and a requirement for each agency to disclose such targets and to detail progress towards achieving these in its annual report.

51. The Australia Government has released a new strategy for agencies to achieve energy intensity portfolio targets by the 2011–2012 financial year. These are 7,500 Megajoules (MJ)/person/annum for office tenant light & power and 400 MJ/m²/annum for office central services. Minimum energy performance standards (generally 4.5 stars on the Australian Building Greenhouse Rating or equivalent scheme) in contracts, leases and other relevant documentation for new buildings, major refurbishments and new leases over 2,000 m².

52. A significant review of ICT waste has been undertaken by the Department of the Environment and Water Resources and a new National Action Plan for Education for Sustainable Development is currently being drafted. The National Action Plan aims to provide national leadership in sustainable development by promoting through education and learning, a stronger approach to sustainable development across government at all levels and throughout the community.

53. The ANAO itself has introduced a waste recycling scheme that to date has reduced waste to landfill by some 83 per cent. We now recycle toner cartridges, fluorescent tubes, paper and consumables as well as organic waste. (Net savings of about \$1,000 pa). We have introduced and up dated our environmental management system, improved monitoring and strengthened our reporting on sustainable practices in our annual report. All this has been done for minimal cost and effort in an organisation of 300 people.

54. The key government-wide factors influencing success in sustainable development practices were:

- legislation and policy requirements for agencies;
- leadership (and recognition of corporate social responsibility) by top agency Executive; and
- financial savings.

55. The critical organisational drivers were:

- targets that provide quantitative measures of what is intended to be achieved,
- commitment from all senior managers to the targets,

⁹ Responses from the Department of the Environment and Heritage, the Department of Finance and Administration and the Department of Defence

- Environmental Management Systems that provide the systemic capacity to measure performance, and
- measurement and reporting of actual performance against expectations.

56. A follow up cross Portfolio audit on Green Office Procurement is planned to commence in 2008.

State of Environment in Bhutan (Bhutan)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Author: Royal Audit Authority of Bhutan

Bhutan's Development Philosophy

Gross National Happiness

4 Pillars of GNH:

- i. Promotion of equitable and sustainable socio-economic development,
- ii. Preservation and promotion of cultural values,
- iii. Establishment of good governance, and
- iv. Conservation of the natural environment

Major Environmental Concern of Bhutan

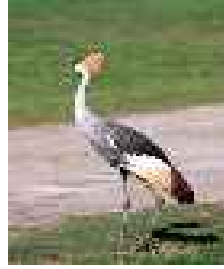
Increasing Population

- Increase use of land for agricultural production
- Increase demand for livestock products
- Demand for fodder, grazing, firewood, non-wood forest products and building materials
- Increase in road networks
- Increase in mining & industrialization
- Improper Urban Development

Current Environmental Status

- 72.50% of Bhutan under Forest Cover
- 26.23% under protected areas (9 Parks, Reserves and Sanctuaries)
- Biodiversity includes 7000 vascular plants, 700 birds and 250 Mammals
- Unique & endangered species include Golden Languor, Snow Leopard, Takin, White Rhino, Musk Deer and Black Necked Crane.





General Government Environmental Policies

- Ensuring sustainable use of Natural Resources
- Preparation of Master Plans for different sectors
- Use of Economic Incentives
- Community and NGOs involvement
- National Environment Commission
- Bhutan Trust Fund
- Nature Conservation Division

Draft Constitution of the Kingdom of Bhutan

- Minimum 60% of Bhutan's total land to be maintained under forest cover for all time;
- Intergenerational equity benefiting
- present and future generations.

The Middle Path (Achieving Sustainable Development)

1. Expanding Hydropower
2. Increasing Agricultural self sufficiency
3. Expanding Industrial Base

Legal Framework

1. Environmental Assessment Act 2000
2. Strategic Environmental Assessment 2002
3. Forest Act 1969
4. Forest & Nature Conservation Act 1995
5. Mines & Minerals Act 1999
6. Sectoral Guidelines
7. Environmental Codes of Practices

Bhutan in International Arena (Environment)

- Signatory to 10 Multilateral Agreements
- Party to the convention on Biological Diversity
- United Nations Framework Convention on Climate Change
- 2004 Champion of Earth from UNEP
- 2 awards for Restoring Ozone Layer from UNEP in 2007.

RAA Initiatives in Environmental Auditing

- More than 30 auditors trained in EA
- Auditors trained through short term training
- MSc in EIA, EMS and EA
- Efforts made to look into Environmental Aspects in all normal audits
- Separate EA Section to be opened in 10th Five Year Plan (2008–2013)

4th E Integration (Canada)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Author: Adrienne Scott and Nikoo Boroumand, Office of the Auditor General of Canada

Introduction

The Office of the Auditor General (OAG) of Canada has been conducting audits of environmental and sustainable development issues since the 1980s. Changes to the *Auditor General Act* in 1995 created the position of Commissioner of the Environment and Sustainable Development (CESD). The CESD heads up a large team of auditors dedicated to auditing and reporting on environmental issues to Canada's Parliament. This group generally takes an issue-based approach and its audits may cover several federal entities.¹

The *Auditor General Act* also assigns a specific duty to the Office as a whole regarding the environment and sustainable development. The Auditor General, in reporting to the House of Commons, has a duty to bring to the attention of the House of Commons significant cases where money has been expended without due regard to the environment. This goes beyond the traditional focus on economy, efficiency, and effectiveness, and is referred to as the "4th E."² This paper describes recent initiatives taken by the Office to encourage auditors across the Office to consider environmental issues more systematically as they plan and conduct performance audits. These initiatives include:

- creation of an environmental specialist position to work with teams outside of the CESD
- development and implementation of a new practice guide
- enhanced training and awareness³

The Office has also devoted more energy to identifying and auditing environmental risks facing federal Crown corporations.

Commitments outlined in the OAG's Sustainable Development Strategies (2003–2006 and 2007–2009) have driven much of the renewed focus on 4th E issues. As noted by Assistant Auditor General Rick Smith:

¹ Examples of issues audited by CESD include invasive species, climate change, arctic environmental commitments, pesticides, the Great Lakes, and federal-provincial agreements. CESD reports are available on the OAG of Canada's Web site: www.oag-bvg.gc.ca.

² The amendments to the *Auditor General Act* formally expanded the overall mandate of the Office to include environmental and sustainable development issues. As amended in 1995, section 7(2)(f) of the Act directs the Auditor General to call attention to any case in which it has been observed that "money has been expended without due regard to the environmental effects of those expenditures in the context of sustainable development." Other changes included the creation of an environmental petitions process for members of the public and the requirement that certain federal departments and agencies each submit a Sustainable Development Strategy to Parliament starting in 1997, and update the strategy every three years.

³ These initiatives are intended to complement and support the OAG's performance audit and long-range planning policies. For example, the Office's performance audit manual advises auditors to consider environmental issues when they plan and scope their audits. Auditors are advised that their survey report should include, among other things, "environmental issues considered and reasons for their inclusion or exclusion in the proposed audit scope" (*Performance Audit Manual*, s. 4.21).

In the past few years, we have come to recognize that we needed to take some further steps to ensure that the environmental consequences of the federal government's activities are considered *systematically* as we plan and conduct our audits...In particular, we recognized the need to more actively engage and support audit teams across the office, above and beyond the Commissioner's environmental team.⁴

Recent Initiatives

Dedicated environmental specialist

In 2004, the OAG of Canada created a new full-time environmental specialist position to serve as a focal point for advancing environment and sustainable development auditing in the Office. The specialist assists all teams outside of the CESD. He or she has several responsibilities:

- to act as a source of environmental advice and expertise to audit teams during all phases of an audit
- to develop formal guidance and tools to assist auditors to identify and assess environmental risks and monitor their use
- to promote awareness of environment and sustainable development issues through training and other means

Further information about the environmental specialist is provided throughout this paper.

Creating an environmental practice guide for performance audits

The OAG of Canada launched the *4th E Practice Guide: Integrating Environmental Considerations Into Performance Audit Work* in early 2006. It is designed to help auditors who lack environmental expertise to identify and assess the significance of environmental risks in two contexts:

1. long-range planning for entities and functional areas
2. scoping of an individual performance audit (survey phase)

The guide features screening tools, checklists, and guidance for assessing the significance of environment risks. Appendices provide information on activities that may cause environmental effects on different components of the environment (air, land, freshwater, etc.). Consultation and sign-off by the environmental specialist is part of the methodology outlined in the guide. The guide was a work in progress for several years. Shortly after the creation of the environmental specialist position, it was approved for pilot testing with several audit teams. Input from teams led to significant changes to make it less onerous and more user-friendly for non-environmental specialists. It was approved for Office-wide distribution and is posted on the OAG's internal intranet site. It is also available on the OAG's Web site.

The figure in Appendix B illustrates the OAG's methodology to ensure consideration of environmental issues by its auditors.

The following is an overview of the guide and how it works.

⁴ "Audit of Environmental and Sustainable Development Issues," *International Journal of Government Auditing*, October 2006, at p. 9.

Section 1: Identifying environmental risks as part of long-range audit planning

At the OAG of Canada, the assessment of an entity's major risks is the starting point for effective long-term audit planning. This is referred to as one-pass planning. As part of this process, auditors consider environmental risks along with other business risks. Section 1 of the *4th E Practice Guide* contains the Entity Environmental Risk Profile for One-Pass Planning, the main tool designed to assist teams to identify strategic, high-level environmental risks for their entity or functional area and assess their importance. (The risk profile form is contained in Appendix A of this document).

To identify environmental risks as part of one-pass planning, auditors complete the risk profile form in four steps:

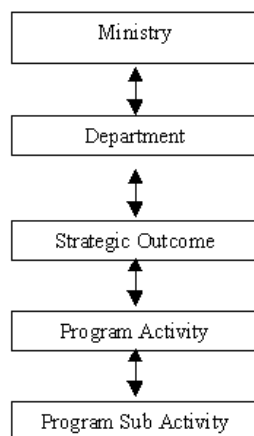
1. Identify an entity's activities.
2. Identify their potential associated environmental effects.
3. Assess the risks associated with the potential effects to determine if they are significant.
4. Determine the level of entity influence on the activity being assessed.

Step 1. Auditors identify activities supporting an entity's strategic outcomes

This part of the risk profile form reflects the Canadian government's program activity framework (see figure below).⁵

Auditors complete the risk profile form by listing an entity's program activities and sub-activities by strategic outcome. They then identify key related policies, plans, projects, or operations for each of them. Audit teams are encouraged to stick to a high level and focus on major elements only.

Elements of the Program Activity Architecture



Step 2. Auditors identify potential environmental effects for each of the entity's program sub-activities. If there are several key activities under them (such as major policies, programs, projects, or operational activities), they should be pulled out and evaluated separately.

⁵ The Program Activity Architecture (PAA) structure was developed by the Treasury Board of Canada. More information on the PAA is available on the Treasury Board's Web site: http://www.tbs-sct.gc.ca/emis-sigd/General_FAQs_e.asp

Environmental effects can arise in two ways: (1) directly through the operations of the federal government; or (2) through the government's exercise of its mandate and its control and influence on others.

The risk profile shares many similarities with environmental assessment screening tools or matrices. The tool identifies and describes a series of potential environmental effects by focusing on different components of the environment, such as air, water, land, and natural resources, as well as specific activities known to have an environmental impact (for example, hazardous materials and environmental emergencies). The auditor marks off the potential environmental effects that he or she believes are associated with the program or activities being analyzed.

Step 3. If an auditor identifies some potential environment effects, he or she needs to determine if the level of risk is significant. This assessment is based on the likelihood of a scenario occurring and the severity of its impacts or consequences. Auditors are also directed to consider risks associated with missed opportunities.

Step 4. Auditors identify the level of entity influence on the activity being assessed as high (the entity has direct responsibility within its mandate for this activity), medium (the entity has shared responsibility for this activity), or low (the entity is involved but has limited responsibility for this activity).

Appendix C presents the guidance provided in the practice guide to help auditors assess the level of environmental risk when they complete the risk profile.

Success to date: Some audit teams have been applying the methodology in the guide as part of their one-pass planning exercise and in many cases, the guide has helped teams to identify environmental risks that may have otherwise been overlooked. In some instances, these risks have been determined to be significant and have been reflected in entity one-pass plans.

One positive example is the one-pass plan for the federal department, Correctional Services Canada (CSC). CSC is responsible for administering court-imposed sentences of offenders imprisoned for two years or more. On any given day, CSC is responsible for approximately 12,000 offenders in federal custody. It has two main program activities: care and custody and rehabilitation and case management.⁶

Through applying the entity environmental risk profile, the audit team identified potential environmental effects to air, water, land, and natural resources, among others, due to the provision of institutional and accommodation services for care and custody. The team considered the environmental implications of activities such as food services; fuel storage; laundry services; the operation of water treatment, sewage, and heating plants; as well as the heating, cooling, and lighting of buildings.

The auditors went on to determine whether these risks were significant by assessing the likelihood of these potential effects and their severity. Some of the factors they considered included CSC's greenhouse gas emissions. CSC accounts for a significant percentage of federal greenhouse gas emissions.⁷

The completion of the risk profile led the audit team to determine that there are significant environmental risks and CSC has a high level of influence on these risks. Environmental issues are reflected in the CSC's one-pass plan as a line of enquiry for a proposed audit.

⁶ CSC Report on Plans and Priorities 2005–2006.

⁷ Government of Canada, *Annual Report on Emissions Reductions From Federal Operations*, October 2004.

Section 2: Considering environmental effects during the survey phase of a performance audit

The second section of the practice guide is designed to assist teams to identify environmental and sustainable development issues in a different context: during the survey phase of a performance audit. At this point, the audit topic has been selected but matters of potential significance need to be identified and the scope of the audit must be determined. During this phase of an audit, teams are encouraged to use the guide to uncover any potential environmental issues connected to their audit topic. This inquiry is restricted to audits where the central focus is not already an environmental or sustainable development issue. It is applicable to entity, program, government-wide, and sectoral audits.

Teams identify and evaluate environmental risks associated with their audit topic by completing the Environmental Risk Screening Tool.⁸ The tool has two parts.

Part 1. The first part contains a series of prompts to help teams identify quickly whether environmental issues can reasonably be linked to their audit topic. Depending on their responses to part 1, they may not have to proceed to part 2.

They are asked to answer a series of questions. For example: does the audit topic cover activities or programs related to loans, grants, or any other kinds of funding or financial assistance? This kind of query is relevant from an environmental perspective because activities or initiatives that benefit from these funding activities may have an environmental impact.

Consideration of environmental effects from government operations is also embedded in the screening tool. To determine if these issues are relevant, the screening tool asks: are government operations a significant focus of the audit topic?

The environmental impact from federal operations is not insignificant. The federal government is the largest single enterprise in Canada, employs the most people, and is the largest landowner. It is also one of the largest purchasers of goods and services, spending a reported \$13 billion each year.⁹

Some parts of the tool address authorities that require the government to pay “due regard” to the environment. For example, under a federal Cabinet directive, federal departments are expected to assess the potential environmental impact of new policies, plans, or programs that are bound for Cabinet or ministerial approval. To this end, the screening tool asks audit teams whether the audit topic involves new initiatives of this kind.

Other questions in the screening tool refer to departmental obligations established under the *Auditor General Act*. These include the requirement that departments and agencies prepare and table sustainable development strategies in the House of Commons and respond to environmental petitions from residents of Canada. The screening tool asks auditors if the entity being audited has made any commitments in its strategy or responded to environmental petitions that are related to the audit topic

Aside from the series of prompts in the screening tool, teams are also expected to try to identify potential environment effects that might be linked to their audit topic. The guide

⁸ The screening tool starts on page 21 of the *4th E Practice Guide*, available on-line at http://www.oag-bvg.gc.ca/domino/other.nsf/html/99cam_e.html.

⁹ Government of Canada, *A Guide to Green Government*, 1995; See also Chapter 6 of the 2005 Report of the Commissioner of the Environment and Sustainable Development, at p. 1.

contains a detailed appendix that provides information on the kinds of activities that generate environmental effects. These environmental effects can result from the control and influence an entity exercises through delivery of its mandate (via policies, programs, and other activities). They can also arise directly or indirectly from federal government operations. This appendix also provides examples of environmental effects that can occur for different components of the environment: air, land, freshwater, etc.

At the end of part 1 of the screening tool, auditors are asked to proceed to part 2 if they identified potential environmental issues or risks through the initial screen. If not, they do not proceed to part 2 of the tool and arrange to meet with the environmental specialist to discuss their conclusions. They can then proceed to document their consideration of environmental issues in their audit project files.

Part 2. Part 2 of the screening tool contains more detailed prompts and questions to allow teams to consider potential environmental issues in more depth and consider and assess their significance. Again, as with Part 1, environmental specialist review is part of the process.

Success to date: One example of how environmental issues can be revealed by employing the screening tool involved a recent audit of the Yukon government. The Yukon territory is located in the far northwestern part of Canada and the OAG of Canada is the designated auditor for the territory. The audit focused on the Yukon Department of Highways and Public Works.¹⁰ During the survey phase, OAG of Canada auditors applied the 4th E Practice Guide screening tool. The use of the guide, coupled with consultation with the environmental specialist, led the team to include environment and sustainable development issues within the scope of their performance audit.

After initially applying the screening tool for their audit topic (transportation and property management), the audit team concluded that they did not identify any significant environmental risks or impacts. The environmental specialist directed the audit team to an appendix within the guide that provides an extensive list of activities and their potential impact on different parts of the environment. The auditors identified transportation infrastructure projects as involving activities that can cause effects on water and land, among other things. They were also able to identify some effects that could be associated with building projects.

Other issues that were brought to the auditors' attention by the specialist, and thereafter incorporated into the audit scope, were compliance with environmental legislation and environmental assessment requirements, as well as the need to consider environmental risks in project planning and implementation. Environmental issues were incorporated into the audit scope and eventually became the subject of a recommendation to the Yukon Department of Highways and Public Works.

This example also demonstrates how the environmental specialist supports audit teams to consider and integrate the 4th E.

Enhancing training and awareness

The environmental specialist is responsible for designing and providing environment and sustainable development training at the OAG of Canada. Two core courses are offered by the Office in this area:

- “Integrating the 4th E,” a new one-day course that focuses on the practice guide

¹⁰ The OAG of Canada recently began conducting performance audits of territorial government entities.

- “Fundamentals of Environment and Sustainable Development,” a one-day overview course on environmental and sustainable development issues and the federal government

The OAG also offers a special module on environment and sustainable development as part of its introductory course on performance auditing. OAG auditors also receive information on the 4th *E Practice Guide* during office symposia, meetings, etc.

“Integrating the 4th E” course

To support the integration of the 4th E by auditors, the OAG of Canada identified the need for a course devoted to the new practice guide. The course was developed and piloted by the environmental specialist in the fall of 2006.

The following are the course objectives.

At the end of this course participants will be able to:

- understand and apply the Office's new methodology for integrating environmental and sustainable development issues into a one-pass plan and the survey phase of an individual performance audit
- appreciate how environmental and sustainable development risks may be relevant for non-environmental audit topics by learning how to identify these risks and assess their significance

The course is intended to provide auditors with practical experience in applying the guide based on “learning by doing.” Students are encouraged to think about how various government activities directly and indirectly generate environmental effects. As the practice guide methodology is based on identifying and assessing environmental risk, this course includes a short review of risk assessment processes along with a mock exercise to apply the concepts in an environmental context. Examples of how the guide’s screening tools have been applied by audit teams are provided. Emphasis is placed on hands-on exercises based on fictional and real case studies.

The course is mandatory for audit project leaders and is offered by the office in English and French.

“Fundamentals of Environment and Sustainable Development” course

This one-day course is available to financial and performance auditors in the Office. It is intended to raise awareness of environment and sustainable development issues and challenges facing Canada and the world and demonstrate how these issues are relevant to them as auditors at the OAG.

Auditors also learn about:

- the federal government’s environment and sustainable development mandate and its governance and management challenges in this area
- federal policies and approaches to address the environment and sustainable development
- environmental impacts arising from federal operations
- various Office initiatives to improve integration of 4th E issues into audit practice

Students are given some hands-on experience through a case study on federal contaminated sites. They are asked to identify potential matters of significance and

develop lines of enquiry for an audit on this subject. The connection between environmental and financial risks is demonstrated by examining the liabilities arising from these sites and how they have been booked by the federal government.

Discussion

The 1995 amendments to the *Auditor General Act* formally embedded environment and sustainable development into the mandate of the OAG of Canada.

In the early years following the changes to the Act, the Office focused most of its energy on establishing the CESD and a core group of environmental auditors. The group now numbers more than 40 people.

Encouraging consideration of environmental issues (the 4th E) throughout the Office as a whole has posed different challenges. Many of these are similar to those faced by other audit offices that are trying to focus more attention on auditing in this area. These challenges include the complexity of environmental and sustainability issues and the fact that most auditors are being asked to consider these issues without the benefit of specialized knowledge or expertise.

Here are some reflections on what we have learned so far.

Start by focusing on the environmental dimension of sustainable development. To date, the Office's focus has been on environmental sustainability. Reinforcing consideration of the environment goes some way to addressing sustainable development as it focuses on integrated decision-making and asking the question: have environmental consequences been taken into account? This has proved to be a challenge in its own right. Making the leap to addressing sustainable development more broadly—giving teams the tools and guidance so that they can easily consider and address the interrelated issues of economic, environmental and social concerns in tandem—is more difficult. It is the logical next step but we are not there yet.

Changing audit policies is not enough. In the case of the Office, integration of the 4th E started with changes to performance audit policies and our Quality Management Framework. Through the policies, auditors are directed to consider environmental risks. While this is a step in the right direction, non-specialist audit teams need to have access to, and be encouraged to take advantage of, a suite of resources. The core elements of this support include: dedicated environmental specialists, a practice guide with screening tools, and increased training and support. Experience to date shows that each of these areas adds value and is an essential building block for encouraging audit coverage in this area.

Keep it simple. Try to design guidance and tools that are not overly complex or onerous for audit teams. There is a tendency for specialists to want to include everything in audit guidance. Our audit guide went through several iterations until we found the right balance. Providing screening tools that prompt auditors to consider key issues without spending several days to do so is critical.

Don't reinvent the wheel. There are several precedents that you can look to as you are developing your guidance and risk identification tools. Environmental assessment tools may be particularly helpful.

Test your audit guidance and training before you roll them out. We piloted the practice guide and our new training courses. Getting concrete feedback from teams led to key improvements and modifications.

Define goals and objectives with concrete targets. Committing to goals and timelines goes a long way toward ensuring that continued commitment and energy is devoted to expanding audit coverage of environment and sustainable development issues over the long-term. Auditor offices can articulate these commitments in corporate business plans or even public accountability documents (for example, Reports on Plans and Priorities (RPPs)). The OAG of Canada reinforces action through a Sustainable Development Strategy that it tables in the House of Commons. The Office has committed to additional measures in its latest strategy (see Next Steps below).

The environment needs to be embedded in an office's corporate culture. The environment should be valued on the same plane as other traditional considerations such as economy, efficiency, and effectiveness rather than being treated as an add-on or afterthought. This is especially relevant for the OAG of Canada. Leadership by senior management is crucial.

Be patient! It is perhaps trite, but expanding audit coverage of environment and sustainable development issues doesn't happen overnight. The experience at the OAG, especially since 2000, demonstrates that integrating the 4th E takes time. The whole picture needs to be considered, from resourcing, to office policies, to training, to expert support, to assessing performance, and making improvements.

Next Steps

The long-term goal for the OAG of Canada is improved audit coverage of environment and sustainable development issues. Despite some uneven use of the guide in 2006, the Office intends to be vigilant and continue its efforts to ingrain consideration of environmental issues into its overall performance audit practice. In its new Sustainable Development Strategy,¹¹ the OAG pledges to have 100% of audit teams conducting long-range plans and individual performance audits apply the guide. An office-wide Practice Advisory has been issued to inform auditors of this commitment and, audit teams are now required to demonstrate that they have completed the Environmental Risk Screening Tool from the guide.¹² Further resources are being committed by the Office to staff a small team of specialists to provide support and advice to auditors who are not part of the Commissioner's group of environmental auditors. Training will continue and the office may extend mandatory training on the new practice guide to senior staff who plan and direct audits.

The OAG's audit mandate provides an opportunity to make a tangible difference in relation to environment and sustainable development in Canada. As noted by Sheila Fraser, the Auditor General of Canada:

Our office has an important role to play in helping to ensure that the federal government's policies, programs and activities foster sustainable development ... We audit most areas of the Government of Canada. We are thus in a good position to inform parliamentarians and Canadians about whether departments and agencies are considering the environmental consequences of their activities appropriately. We also make recommendations for improvement. This is where we can make the biggest difference for Canada's sustainable development prospects.¹³

¹¹ The Office's new Sustainable Development Strategy extends from 2007 to 2009.

¹² Audit teams will be required to attach a copy of the completed screening tool with their survey report.

¹³ Excerpt from the message of the Auditor General of Canada, Sustainable Development Strategy of the Auditor General of Canada 2003–2006.

Resources

The Office's *4th E Practice Guide* and its Sustainable Development Strategy (2007–2009) are available on the OAG of Canada Web site.

4th E Practice Guide: Integrating Environmental Considerations Into Performance Audit Work

http://www.oag-bvg.gc.ca/domino/other.nsf/html/99cam_e.html

Sustainable Development Strategy (2007–2009):

<http://www.oag-bvg.gc.ca/domino/other.nsf/html/200612sdse.html>

For further information, please contact the OAG's Environmental Specialist, Adrienne Scott, at (613) 995-3708 or adrienne.scott@oag-bvg.gc.ca.

Appendix A—Entity Environmental Risk Profile for One-Pass Planning (excerpted from the 4th E Practice Guide)

Name: Date: Entity:			Potential Environmental Impact													Risk Analysis											
			Air		Water			Land			Hazardous Materials		Environmental Emergencies		Natural Resources (Extraction and Consumption)			Severity of Potential Impact *	Likelihood of Occurrence **	Significant Environmental Risk	Degree of Entity Influence ***						
Strategic Outcome	Program Activity	Program Sub-activity	Key Policies, Programs, Projects, Operations	Climate change	Air quality (smog, ozone depletion, acid rain, etc.)	Surface water (marine and freshwater)	Groundwater / drinking water	Biodiversity (marine and freshwater)	Habitat	Agricultural land / soil	Contaminated sites	Habitat	Biodiversity (flora and fauna)	Toxic substances / hazardous waste	New substances / organisms	Land-based	Shipping-related	Land use	Energy	Water	Marine resources	Materials (timber, minerals, etc.)	Waste	High (H) Medium (M) Low (L)	High (H) Medium (M) Low (L)	Yes/ No	High (H) Medium (M) Low (L)

Comments: (including remarks on the ratings assigned and any links to the entity's sustainable development strategy)	
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*** Severity of Potential Impact**

High—Serious or potential long-term impact on the environment.
 Medium—Moderate or widespread impact.
 Low—No lasting or only low-level impact.

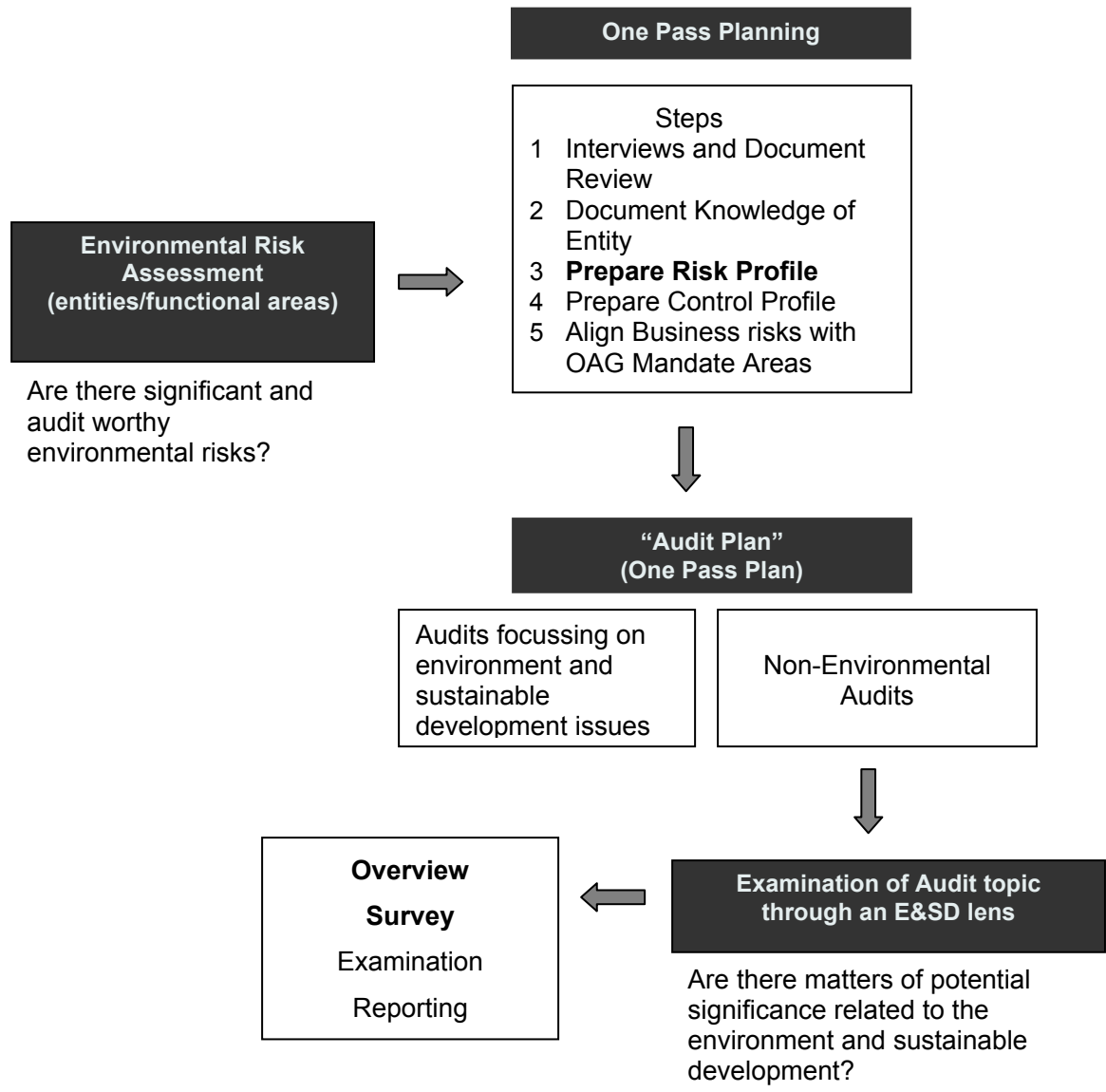
**** Likelihood of Occurrence**

High—Effect is occurring or is imminent.
 Medium—Effect is likely to occur at some time.
 Low—Effect may occur but only under exceptional circumstances.

***** Degree of Entity Influence**

High—Direct responsibility within its mandate.
 Medium—Shared responsibility.
 Low—Limited responsibility.

Appendix B - The OAG of Canada’s methodology to ensure consideration of environmental issues



Appendix C—Guidance on assessing the level of environmental risk (excerpted from the 4th E Practice Guide)

Factors to consider when assessing the level of effect	
Characteristic	Description
Magnitude	Level of effect: number or volume affected
Location	Where the effect occurs
Scale	Local, regional, national, or global
Timing	During construction or operation, or during migration: seasonal factors, immediate or delayed effects
Duration	Short-, medium-, or long-term: intermittent or continuous
Reversible or irreversible	Extent of recovery and length of time required
Ecological context	Percent of population affected, size of population, number of generations to recovery, implications for other environmental components and the food chain
Socio-economic context	Socio-economic and health effects derived from environmental effects

To assess severity of the effect, use the following definitions and enter the rating on the worksheet:

- **High**—Serious environmental effect and impairment of ecosystem function. Potentially long-term impact on the environment.
- **Medium**—Moderate effect on biological or physical environment. Impact over the medium term or widespread impact.
- **Low**—No lasting effect. Low-level impact on biological or physical environment.

Likelihood

To determine the likelihood or probability of the environmental effect, use the following definitions and enter the rating on the worksheet.

- **High**—Effect is occurring or is imminent.
- **Medium**—Effect is likely to occur at some time.
- **Low**—Effect may occur but only under exceptional circumstances.

Rating overall risk and significance

The overall risk rating is the product of the two factors you have just rated—severity and likelihood/probability. Plot the intersection of the ratings as shown in the following table.

Any effect that yields a risk rating in the darkest boxes of the table should be considered significant, and would warrant further consideration and analysis in the one-pass planning process.

Significance Classification Table

Severity of Potential Effect	High	H/L	H/M	H/H
	Medium	M/L	M/M	M/H
	Low	L/L	L/M	L/H
		Low	Medium	High
Likelihood of Potential Effect				

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Methodology Of Audit Of Contraloría (Mac) And Its Application In The Environmental Audits / La Metodología de la Contraloría (MAC) y su Aplicación en las Auditorías Ambientales (Chile)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

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Spanish version follows

1. Introduction

The environmental subject in the course of the years has been acquiring greater relevance and is being known in greater depth by the citizenship and the nongovernmental organisms. As it was perceived that they could make be worth its rights, they exerted greater pressure on the public authorities, which influenced in the work of the SAI when receiving a greater number of presentations or reclamations against the public sectorial organizations that must make the control of the activities that can generate problems in environment.

The General Controller of the Republic of Chile, is an constitutional Institution, independent rank of all the Ministries, authorities and offices of the State, which in agreement with its Statutory law must guard by the regularity of the operations; the legality of the acts of the administration and the fulfillment of the public function.

As a result of that, and having as a primary target, to guard so that the mentioned organizations fulfill their roll, being protected environment or executing its activities without affecting it, it is that this SAI had to prioritize and to choose what areas or matters were due to review analyzing the own functions of this Supervise Organization and the contribution that could be done indirectly in the protection of environment.

For achieve that goal the SAI extending the examined matters, considering the participation of the Regional's SAI's, those that in addition have been become qualified in different matters such as Systems from Environmental Management, (ISO 14,000) and on the dangerous remainders and the norm that regulates it (1), which entered use at the year 2006, whose fulfillment must be verified by the Ministry of Health.

The different controls that took place, as much had relation with function of control that the public organisms carried out on the activities of the public or deprived organizations, that could affect or affected environment, like for example: the disposition of domiciliary and industrial remainders; the short one of native forest;

1) Supreme Decree N° 148/2003. Sanitary Regulation On Dangerous Remainders.

Agreement RAMSAR; the Protocol of Montreal; the generation of remainders or use of equipment that uses radioactive elements. Like also with other aspects related to the development of its own activities like beings public or deprived: the generation of hospitable remainders; the sulfuric acid transport from and towards mining companies; the dangerous remainders generated in laboratories of agricultural experimental stations; the administration of protected wild areas, and agreements or international treaties.

2. METHODOLOGY OF AUDIT OF CONTRALORÍA (MAC) AND ITS APPLICATION IN THE ENVIRONMENTAL AUDITS

In a beginning, the subject to control was decided according to the existing environmental risk, nevertheless, as of the year 2006, to define that services to review, no longer this risk is only considered, but it is used the Methodology of Audit of the Contraloría (MAC), which systematizes and standardizes the processes.

In general, MAC can be applied in any audit to control the activities of the State, which takes place by means of an analysis of the global risk of the specific organization and of the selected matter. For that MAC consider from the beginning and during the development of the work, teams of diverse disciplines professionals with experience in the matters to examine, as much at level of executives, supervisors, like land auditors. This allows a uniform work, in teams, and coordinated, from the planning to the delivery of the final report, and the single criterion of some people does not have left the workings that are executed.

This methodology although is flexible, takes into account the expert judgment strongly, has a systemic approach and considers risks, processes and controls; with an integration of the teams of work, supported strongly by computational equipment, with Notes Database, where they are among others: supports to the legal and technical norm; technical guides, and the forms that are due to be completing as the work is developed, Base to which all the professionals have access, supporting its work with an Interactive Manual. The system counts also, with sites that allow all the actors to interact remotely and in line.

All the methodology, takes from a beginning to an analysis of the material resources and professionals, to take knowledge from the service to audit, executing previous rises of processes of the organization and their functions, taking knowledge from its structure, determining the existing internal control for each one of the relevant processes, having to make the audit tests finally and an evaluation of the made work, to see if the objectives were fulfilled. The work end with an final report to the respective authority.

2. 1. ADVANTAGES OF THE USE OF MAC.

Among other advantages it is possible to be mentioned the following ones:

2.1.1 It is possible to better know and in greater depth the sectorial services to examine, since a greater emphasis in the knowledge of the business or the organization occurs, in the surroundings in which it develops and as it affects in the development of their activities. Like also its policies, its controls and legal and technical norms that regulates it.

2.1.2 It allows carrying out a program of work with more specific matters to audit, analyzing the processes, determining itself with greater exactitude the possible problems or errors and their impacts. When considering in the audit risks evaluation and the activities of the examined organizations, this one goes or focuses towards the greater problems than it has the institution, or by errors or because the controls are not sufficient.

2.1.3 It promotes the teams work from the beginning, to the elaboration of the final report, since there is a greater participation of all the levels of professionals, from the superior executive to the civil employee who makes the land work directly, with a greater interchange of knowledge on the subjects in examination.

3. ENVIRONMENTAL AUDIT

According to the faculties of the Chilean SAI, the object of this audit is to evaluate the fulfillment of the roll of environmental control average that must exert the public organizations to which the law has ordered this function.

Respect to the environmental audits, although in general terms the methodology is the same one that the remaining audits, is necessary to consider that the works are different, in special in the study of the matter and the land work, like for example: in the case of the control of programs; of the projects submissible the System of Evaluation of Environmental Impact (SEIA) or in the international treaties.

4. AUDITS MADE WITH THE METHODOLOGY OF AUDIT OF THE CONTROLLER (MAC)

4.1 TANK OF TOXIC REMAINDERS "RELAVES"

4.1.1. Antecedents.

The country at the year 2005 had 665 well's of "relave", of which approximately 50% were abandon. The environmental liabilities are constituted by abandon or paralyzed mining tasks, including their remainders, that constitute a significant risk for the life, the health of the people and environment.

In that consideration it was decided to analyze in the Metropolitan Region the inspection carried out the year 2005 by the Regional Direction Center, of the National Service of Geology and Mining, SERNAGEOMIN, entity that makes this work in the relave's tanks of the V, VIth and Metropolitan regions.

4.1.2. Methodology.

The internal control of the process of control of the relave's tanks was evaluated, the risks and carried out controls, verified the existence of endorsement of the land controls and the approval of the projects of construction and operation of such, like also if the planning of the control of the mentioned Regional's Direction were made. Finally were verified the works and information that on the matter had developed the Unit of Internal Audit of the Service.

4.1.3. Findings.

Of the examination that took place in the SERNAGEOMIN, which concluded that the internal control was effective, despite, was recommended that:

- A Computational Information system will be elaborated on line, at national level, with the antecedents of all the mining tasks, their main characteristics, the conducted control, the periodic reports that must send by the users about the operation and taken care of tanks. Like also as of the applied fines, and its payment. Information to which they can accede, as much the central level of SERNAGEOMIN, like also its Regional's Direction.
- Also, it was recommended that the organization implements an Functions and Procedures Manuals in order to prevent errors, to fortify the internal control of the Institution and to optimize the assigned resources.

4.1.4. Impact of the recommendations.

The organization distributed instructions for the elaboration of Functions and the Procedures Manual that considers the aspects observed.

4.2. DECLARATION OF ENVIRONMENTAL IMPACT

4.2.1. Antecedents.

The country since 1994 counts on the Law of Bases of Environment, which considers that the holder of a project or activity, or public or deprived, susceptible to cause environmental impact

in anyone of its phases, will have to present a Study or Declaration of Environmental Impact prior to his execution to the National Commission of Environment (CONAMA).

Several situations were observed by the SAI, that indicated deficiencies on the part of the supervise organisms as far as the pursuit of the commitments of the holders of the projects; as also with respect to the interpretation of the Law of Bases of Environment and its Regulation, and specifically as far as which the sectorial organisms in charge to express an opinion, with respect to if the holder had to present his project or activity as Study or like Declaration, in some cases did not justify their decision even though the norm demanded it.

Examination, included the approved interregional Declarations of Environmental Impact between years 2004 to 2006.

4.2.2. Methodology.

The risks, the processes and the controls associated to the System of Evaluation of Environmental Impact SEIA were identified and evaluated, where the Studies and Declarations already mentioned enter, verifying that the approval of the projects was carried out according to the legal norm that regulates them. It was also verified, the observance and fulfillment demanded in the approving Resolutions of the Environmental Qualification of the project of the Plan of Environmental Pursuit.

Finally, the land examination of a mining project of deposit of sterile was planned, that was in execution. For which, the monitoring of the quality of the water, the relocation of the fauna, was verified and the existence of sectorial environmental permissions.

4.2.3. Findings.

Were the following observations:

- In the review of the antecedents during the admissibility test that must make the CONAMA, certainty of the revision of legality was not left that must make the Legal Unit respect to the projects or activities, before entering study.
- One does not settle down in the approving resolutions of the environmental qualification the opportunity and the obligatory nature of the shipment to the competent sectorial services of the monitorings demanded like part of the commitments acquired by the holder of the project or activity.
- Delay in the authorization of approval of increase of terms in the evaluation process exists of the Declarations of Environmental Impact, which could diminish in the measurement that is used the electronic signature.
- Lack of cards of control for the land control, of way to assure that no important or relevant factor is omitted during the process of pursuit and control.

4.2.4. Impact of the recommendations.

With respect to the intervention of the Legal Unit in the test of admissibility of the projects and the implementation of the electronic signature the recommendation was considered by the CONAMA.

About the files of pursuit and control, it is in study on line implementing a system by project, that would allow to plan the activities, to handle information of conducted visits, to carry out analysis of data and tendencies, among other antecedents. Also, in he same module it is considered that the result of the monitorings can be taken and thus to be able to review the fulfillment of the commitments of the holders.

4.3. PLAN OF ACTION OF THE NATIONAL STRATEGY OF BIODIVERSITY

4.3.1. Antecedents.

By means of Supreme Decree N° 1963, of 1994, of the Ministry of Foreign Affairs the Agreement was promulgated On Biological Diversity, adopted in June of 1992 in Rio de Janeiro. For the fulfillment of the objectives established in this Agreement it was approved the “Project of Strategy of Biodiversity” and the “Plan of Action Country of the National Strategy of Biodiversity”, in the short term (year 2005 to the 2006); medium term (year 2007 to 2010) and length term (year 2011 to 2015),, where Strategic Axes, Specific Lines and Actions are indicated. Settling down for years 2005 and 2006 management goals related to the incorporation of prioritized sites and the Footpath of Chile.

It was Committing 55 actions to March of 2006, between different public organisms.

4.3.2. Methodology.

Processes of internal control were evaluated, in the National Commission of Environment,— CONAMA—respect to the originating bottoms of their own budget, like of international organisms, assigned to the different organizations in charge to execute the strategies and the surrender of the bottoms, to consider that these areas were those of greater risk, verifying itself the accomplishment of the activities jeopardizes.

4.3.3. Findings.

Were the following observations:

- Of the actions it jeopardize in the Plan of Action Country of the National strategy of Biodiversity, had been fulfilled at the date of the control a 74.6%. A 12.7% were in execution process and equal percentage was unfulfilled.
- Nevertheless, one determined that some actions were reformulated and/or modified without the approval of in charge organization for it.
- Some advance of the actions had not inquired and in the case of which they communicated, the National Commission of Environment, CONAMA, did not have faculties to verify the veracity of the given antecedents.
- The CONAMA does not take a separated registry of the resources destined to the Strategy, are they of the CONAMA, donations and/or contributions of other institutions, with which it does not have an effective pursuit and control of the availabilities and the expenses authorized.
- Breach in the downtimes of information and accountability, problem that is increased by the fact that the CONAMA does not have formal procedures for reception and approval of technical reports, nor for the accountability.

4.3.4. Impact of the recommendations.

The writing into internal administrative procedures of the Department of Protection of Natural Resources inquired that will also order and regulate the different acts, settling down the control of the funds destined to the Strategy and its respective accountability in the terms been suitable with the executors.

Explanations with respect to the lack of registry of the funds of international organisms occurred, being indicated that an information system will be developed destined to make its pursuit to the equal one like the one of the projects.

5. CONCLUSIONS

The results of the works, made with the methodology MAC, have taken to an analysis in greater depth of the subjects boarded, verifying that the main risks visualized by the Chilean SAI in the control workings, that say relation with environmental subjects, are those of lack of control and the effects produced by actions or omissions that the diverse human activities, as much public as prevailed generate in environment.

The impacts that have been generated with the information, in general, with exception of the results of the Program of Degraded Ground Recovery, and of the supervise of the Control of the Disposition of Domiciliary, Industrial and Hospitable Reminders, have not influenced in the policies of Government, nevertheless, have had repercussion in fundamental changes respect of processes or activities that carry out the supervise organizations.

As far as the faculties that the Chilean SAI has, although it only allows it to carry out regularity audits and that supervise driving contributes indirectly to the protection of environment, the effects are seen in the short term in some cases. The coordination of organizations related to a same matter is obtained.

The control improves that is incumbent on to the public organizations, since by means of the information of external control to explanations or observations to their procedures are given, by means of the previous control of legality -take of reason- analyzes the legality of the acts of the administration, and by means of the opinions interpretations of the environmental norm are given that must apply the organisms in charge of their fulfillment.

Nevertheless, one of the certain problems is that sometimes the own policies of the Government in environmental matters are not implemented with the waited for rapidity, which prevents the Chilean SAI to be more effective.

La Metodología de la Contraloría (MAC) y su Aplicación en las Auditorías Ambientales (Chile)

1. Introducción

El tema ambiental en el transcurso de los años ha ido adquiriendo mayor relevancia y está siendo conocido en mayor profundidad por la ciudadanía y por los organismos no gubernamentales. A medida que se percibía que podían hacer valer sus derechos, ejercieron mayor presión sobre las autoridades públicas, lo que influyó en la labor de la Contraloría al recibir un mayor número de presentaciones o reclamos en contra de las entidades públicas sectoriales que deben realizar la fiscalización de las actividades que pueden generar problemas en el medio ambiente.

La Contraloría General de la República de Chile, es una Institución de rango constitucional, independiente de todos los Ministerios, autoridades y oficinas del Estado, la cual de acuerdo con su Ley Orgánica debe velar por la regularidad de las operaciones; la legalidad de los actos de la administración y el cumplimiento de la función pública.

Como consecuencia de lo anterior, y teniendo como objetivo principal, velar por que las entidades mencionadas precedentemente cumplan su rol, protegiendo el medio ambiente o ejecutando sus actividades sin afectarlo, es que esta Contraloría debió priorizar y elegir que áreas o materias se debían revisar analizando las funciones propias de esta Entidad Fiscalizadora y el aporte que se podía hacer indirectamente en la protección del medio ambiente.

Para ello se fue ampliando las materias examinadas, considerando la participación de las Contralorías Regionales, las que además se han ido capacitando en diferentes materias tales como Sistemas de Gestión Ambiental, (ISO 14.000) y sobre los residuos peligrosos y la normativa que lo regula¹, la cual entró en vigencia el año 2006, cuyo cumplimiento debe ser verificado por el Ministerio de Salud.

Los diferentes controles que se efectuaron, tenían relación tanto con la función de fiscalización que los organismos públicos llevaban a cabo sobre las actividades de las entidades públicas o privadas que podían afectar o afectaban al medio ambiente, como por ejemplo: la disposición de residuos domiciliarios e industriales; la corta de bosque nativo; el Convenio RAMSAR; el Protocolo de Montreal; la generación de residuos o uso de equipos que utilizan elementos radiactivos. Como también con otros aspectos relacionados con el desarrollo de sus propias actividades como entes públicos o privados: la generación de residuos hospitalarios; el transporte de ácido sulfúrico desde y hacia empresas mineras; los residuos peligrosos generados en laboratorios de estaciones experimentales agrícolas; la administración de áreas silvestres protegidas, y acuerdos o convenios internacionales.

2. METODOLOGÍA DE AUDITORÍA DE LA CONTRALORÍA (MAC) Y SU APLICACIÓN EN LAS AUDITORÍAS AMBIENTALES

En un comienzo, el tema a fiscalizar se decidía de acuerdo al riesgo ambiental existente, sin embargo, a partir del año 2006, para definir que servicios revisar, ya no sólo se estima dicho riesgo, sino que se utiliza la Metodología de Auditoría de la Contraloría (MAC), la cual sistematiza y estandariza los procesos. En general se puede aplicar la MAC en cualquier auditoría para controlar las actividades del Estado, la cual se efectúa mediante un análisis del riesgo global de la entidad y específico de la materia seleccionada. Para lo anterior se consideran desde el inicio y durante todo el desarrollo del trabajo, equipos de profesionales Interdisciplinarios con experiencia en las materias a examinar, tanto a nivel de ejecutivos,

¹ Decreto Supremo N° 148/2003. Reglamento Sanitario Sobre Residuos Peligrosos

supervisores, como auditores de terreno. Esto permite una forma de trabajo uniforme, en equipo, y coordinada, desde la planificación hasta la entrega del informe final, y no quedan al criterio solo de algunas personas las labores que se ejecutan.

Esta metodología si bien es flexible, toma en cuenta fuertemente el juicio experto, tiene un enfoque sistémico y considera riesgos, procesos y controles; con una integración de los equipos de trabajo, apoyada fuertemente por equipamiento computacional, con una Base de Datos Notes, donde se encuentran entre otros: apoyos a la normativa legal y técnica; guías técnicas, y los formularios que se deben ir completando a medida que se desarrolla el trabajo, Base a la cual tienen acceso todos los profesionales, apoyando su trabajo con un Manual de Consulta Interactivo. Se cuenta, así también, con sitios colaborativos que permiten a todos los actores interactuar remotamente y en línea

Toda la metodología, lleva desde un comienzo a un análisis de los recursos materiales y profesionales con que se cuenta, a tomar conocimiento del servicio a auditar, ejecutándose levantamientos previos de procesos de la organización y sus funciones, tomando conocimiento de su estructura, determinándose el control interno existente para cada uno de los procesos relevantes, debiendo realizar finalmente las pruebas de auditoría y una evaluación del trabajo realizado, para ver si se cumplieron los objetivos de la misma y la entrega de observaciones preliminares y de un informe final a la autoridad respectiva.

2. 1. VENTAJAS DE LA UTILIZACION DE LA MAC

Entre otras ventajas se puede mencionar las siguientes:

2.1.1 Se conoce mejor y en mayor profundidad el organismo sectorial a fiscalizar o la actividad a examinar, ya que se da un mayor énfasis en el conocimiento del negocio o de la entidad, en el entorno en el que se desenvuelve y como le afecta en el desarrollo de sus actividades. Como también sus políticas, sus controles y la normativa legal y técnica, general y específica que la regula.

2.1.2 Permite efectuar un programa de trabajo con materias más específicas a auditar, analizándose los procesos, determinándose con mayor exactitud los posibles problemas o errores y sus impactos. Al considerar en la auditoría una evaluación de los riesgos y de las actividades de las entidades examinadas, ésta se dirige o focaliza hacia los mayores problemas que tiene la institución, ya sea por errores o debido a que los controles no son suficientes.

2.1.3 Promueve el trabajo en equipo desde el inicio del mismo, hasta la elaboración del informe final, ya que hay una mayor participación de todos los niveles de profesionales, desde el ejecutivo superior hasta el funcionario que realiza directamente el trabajo de terreno, con un mayor intercambio de conocimientos sobre los temas en examen.

3. AUDITORIA AMBIENTAL

De acuerdo a las facultades de la Contraloría General de la República de Chile, el objeto de esta auditoría es evaluar el cumplimiento del rol de fiscalización medio ambiental que deben ejercer las entidades públicas a las que la ley les ha encargado dicha función.

Respecto de las auditorías ambientales, si bien en términos generales la metodología es la misma que para las restantes auditorías, es necesario considerar que los trabajos son diferentes, en especial en el estudio de la materia y en la labor de terreno, como por ejemplo: en el caso de la fiscalización de programas; de los proyectos sometidos al Sistema de Evaluación de Impacto Ambiental (SEIA) o en los convenios internacionales.

4. UDITORIAS REALIZADAS CON LA METODOLOGIA DE AUDITORIA DE LA CONTRALORIA GENERAL DE LA REPUBLICA (MAC).

4.1 TRANQUES DE RELAVE

4.1.1. Antecedentes.

El país el año 2005 tenía 665 tranques de relave, de los cuales aproximadamente el 50% estaban abandonados.

Los pasivos ambientales están constituidos por faenas mineras abandonadas o paralizadas, incluyendo sus residuos, que constituyen un riesgo significativo para la vida, para la salud de las personas y para el medio ambiente.

En consideración a lo anterior se decidió analizar en la Región Metropolitana la fiscalización llevada a cabo el año 2005 por la Dirección Regional Zona Centro, del Servicio Nacional de Geología y Minería, SERNAGEOMIN, entidad que realiza dicha labor en los tranques de relave de las regiones V, VI y Metropolitana.

4.1.2. Metodología.

Se evaluó el control interno del proceso de fiscalización de los tranques de relave, los riesgos y controles llevados a cabo, se verificó la existencia de respaldo de los controles de terreno y de la aprobación de los proyectos de construcción y operación de los mismos, como también si se realizaba la planificación de la fiscalización de la Dirección Regional mencionada. Finalmente se comprobaron los trabajos e informes que sobre la materia había desarrollado la Unidad de Auditoría Interna del Servicio.

4.1.3. Hallazgos.

Del examen que se efectuó en el SERNAGEOMIN, se concluyó que el control interno era eficaz, no obstante lo cual, se recomendó que:

- Se elaborara un Sistema de Información computacional en línea, a nivel nacional, con los antecedentes de todas las faenas mineras, sus principales características, la fiscalización efectuada, los informes periódicos que deben enviar los usuarios respecto de la operación y mantención de los tranques. Como también de las multas aplicadas y su pago. Información a la cual puedan acceder, tanto el nivel central de SERNAGEOMIN, como también sus Direcciones Regionales.
- Asimismo, se recomendó que la entidad implemente Manuales de Funciones y de Procedimientos a fin de prevenir errores, fortalecer el control interno de la Institución y optimizar los recursos asignados.

4.1.4. Impacto de las recomendaciones.

La entidad impartió instrucciones para la elaboración del Manual de Funciones y Procedimientos que considere los aspectos observados.

4.2. DECLARACION DE IMPACTO AMBIENTAL

4.2.1. Antecedentes.

El país desde 1994 cuenta con la Ley de Bases del Medio Ambiente, la cual considera que el titular de un proyecto o actividad, ya sea público o privado, susceptible de causar impacto ambiental en cualquiera de sus fases, deberá presentar un Estudio o Declaración de Impacto Ambiental con anterioridad a su ejecución a la Comisión Nacional del Medio Ambiente.

Diversas situaciones fueron observadas por la Contraloría, que indicaban falencias por parte de los organismos fiscalizadores en cuanto al seguimiento de los compromisos de los

titulares de los proyectos; como también respecto a la interpretación de la Ley de Bases del Medio Ambiente y su Reglamento, y específicamente en cuanto a que los organismos sectoriales encargados de emitir una opinión, respecto a si debía el titular presentar su proyecto o actividad como Estudio o como Declaración, en algunos casos no justificaban su decisión no obstante que la normativa lo exigía.

El examen, abarcó las Declaraciones de Impacto Ambiental interregionales aprobadas entre los años 2004 a 2006.

4.2.2. Metodología.

Se identificaron y evaluaron los riesgos, los procesos y los controles asociados al Sistema de Evaluación de Impacto Ambiental, SEIA, donde ingresan los Estudios y Declaraciones ya mencionadas, verificándose que la aprobación de los proyectos se llevase a cabo de acuerdo a la normativa legal que los regula. Se comprobó también, el cumplimiento de lo exigido en las Resoluciones aprobatorias de la Calificación Ambiental del proyecto y el acatamiento del Plan de Seguimiento Ambiental. Finalmente, se planificó el examen en terreno de un proyecto minero de depósito de estériles, que se encontraba en ejecución. Para lo cual se verificó el monitoreo de la calidad del agua, la relocalización de la Fauna y existencia de permisos ambientales sectoriales.

4.2.3. Hallazgos.

Se encontraron las siguientes observaciones:

- En la revisión de los antecedentes durante el test de admisibilidad que debe realizar la CONAMA, no se dejó constancia de la revisión de legalidad que debe realizar la Unidad Jurídica respecto de los proyectos o actividades, antes de ingresar a estudio.
- No se establece en las resoluciones aprobatorias de la calificación ambiental la oportunidad y la obligatoriedad del envío a los servicios sectoriales competentes de los monitoreos exigidos como parte de los compromisos adquiridos por el titular del proyecto o actividad.
- Existe demora en la autorización de aprobación de aumento de plazos en el proceso de evaluación de las Declaraciones de Impacto Ambiental, los cuales podrían disminuir en la medida que se utilice la firma electrónica.
- Falta de fichas de chequeo para la fiscalización de terreno, de modo de asegurar que ningún factor importante o relevante sea omitido durante el proceso de seguimiento y fiscalización.

4.2.4. Impacto de las recomendaciones.

Respecto a la intervención de la Unidad Jurídica en el test de admisibilidad de los proyectos y la implementación de la firma electrónica la recomendación fue considerada por la CONAMA.

En cuanto a las fichas de seguimiento y fiscalización, está en estudio implementar un sistema en línea por proyecto, que permitiría planificar las actividades, manejar informes de visitas efectuadas, efectuar análisis de datos y tendencias, entre otros antecedentes. Asimismo, en el mismo módulo se considera que se pueda llevar el resultado de los monitoreos y así poder revisar el cumplimiento de los compromisos de los titulares.

4.3. PLAN DE ACCION DE LA ESTRATEGIA NACIONAL DE BIODIVERSIDAD

4.3.1. Antecedentes.

Mediante Decreto Supremo N° 1963, de 1994, del Ministerio de Relaciones Exteriores se promulgó el Convenio Sobre Diversidad Biológica, adoptado en junio de 1992 en Río de

Janeiro. Para el cumplimiento de los objetivos establecidos en dicho Convenio se aprobó el “Proyecto de Estrategia de Biodiversidad” y el “ Plan de Acción País de la Estrategia Nacional de Biodiversidad” , a corto plazo (año 2005 al 2006); mediano plazo (año 2007 a 2010) y largo plazo (año 2011 a 2015), donde se señalan Ejes Estratégicos, Líneas y Acciones Específicas. Estableciéndose para los años 2005 y 2006 metas de gestión relacionadas con la incorporación de sitios priorizados y el Sendero de Chile. Comprometiéndose 55 acciones a marzo de 2006, entre diferentes organismos públicos.

4.3.2. Metodología.

Se evaluaron procesos de control interno, en la Comisión Nacional del Medio Ambiente, respecto de los fondos provenientes de su propio presupuesto, como de organismos internacionales, asignados a las diferentes entidades encargadas de ejecutar las estrategias y la rendición de los fondos, por considerar que dichas áreas eran las de mayor riesgo, verificándose la realización de las actividades comprometidas.

4.3.3. Hallazgos.

Se encontraron las siguientes observaciones:

- De las acciones comprometidas en el Plan de Acción País de la estrategia Nacional de Biodiversidad, se había cumplido a la fecha de la fiscalización un 74,6 %, un 12,7% estaba en proceso de ejecución e igual porcentaje se encontraba incumplido.
- No obstante lo señalado, se determinó que algunas acciones se reformularon y/o modificaron sin la aprobación de la entidad encargada para ello.
- Algunos estados de avance de las acciones no se habían informado y en el caso de aquellos que se comunicaron, la Comisión Nacional del Medio Ambiente, CONAMA, no tenía facultades para verificar la veracidad de los antecedentes entregados.
- La CONAMA no lleva un registro separado de los recursos destinados a la Estrategia, sean ellos de la CONAMA,, donaciones y/o aportes de otras instituciones, con lo cual no se tiene un efectivo seguimiento y control de las disponibilidades y de los gastos autorizados.
- Incumplimiento en los plazos de entrega de informes y rendición de fondos, problema que se ve incrementado por el hecho de que la CONAMA no tiene procedimientos formales para recepción y aprobación de informes técnicos, ni para la rendición señalada.

4.3.4. Impacto de las recomendaciones.

Se informó la redacción de procedimientos administrativos internos del Departamento de Protección de Recursos Naturales que ordenará y regulará los diferentes actos, estableciéndose también el control de los fondos destinados a la Estrategia y su respectiva rendición en los plazos convenidos con los ejecutores.

Se dieron explicaciones respecto a la falta de registro de los fondos de organismos internacionales, señalándose que se desarrollará un sistema de información destinado a realizar su seguimiento al igual como el de los proyectos.

5. CONCLUSIONES.

Los resultados de los trabajos, realizados con la metodología MAC, han llevado a un análisis en mayor profundidad de los temas abordados, comprobando que los principales riesgos visualizados por la EFS Chilena en las labores de control, que dicen relación con temas ambientales, son los de falta de fiscalización y los efectos producidos por acciones u

omisiones que las diversas actividades humanas, tanto públicas como privadas generan en el medio ambiente.

Los impactos que se han generado con los informes, en general, con excepción de los resultados del Programa de Recuperación de Suelos Degradados, y del control de la Fiscalización de la Disposición de Residuos Domiciliarios, Industriales y Hospitalarios, no han influido en las políticas de Gobierno, sin embargo, han tenido repercusión en cambios fundamentales respecto de procesos o actividades que llevan a cabo las entidades fiscalizadoras.

En cuanto a las facultades que tiene la EFS Chilena, si bien le permite sólo efectuar auditorías de regularidad y que el accionar fiscalizador contribuye indirectamente a la protección del medio ambiente, los efectos se ven en algunos casos a corto plazo. Se logra la coordinación de entidades que están relacionadas con una misma materia.

Se mejora la fiscalización que le compete a las entidades públicas, ya que mediante los informes de control externo se entregan aclaraciones u observaciones a sus procedimientos, mediante el control previo de legalidad -toma de razón- se analiza la juridicidad de los actos de la administración, y mediante los dictámenes se entregan interpretaciones de la normativa ambiental que deben aplicar los organismos encargados de su cumplimiento.

Sin embargo, uno de los problemas determinados es que a veces las políticas propias del Gobierno en materias ambientales no se implementan con la rapidez esperada, lo que impide la EFS Chilena ser más eficaz.

An Effective Coordination Mechanism, a Strong Guarantee for Building and Managing Environmental Auditing (China)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Author: National Audit Office of the People's Republic of China

In recent years, China has been attaching greater importance to the work of environmental protection with a series of laws in this field promulgated, such as *Law of the People's Republic of China on the Prevention and Control of Water Pollution*, *Law of the People's Republic of China on the Environmental Impact Assessment*, and *Law of the People's Republic of China on the Promotion of Clean Production*. Governments at various levels, including competent authorities for environmental protection, have also been increasing their input in environmental protection and meanwhile redoubling their efforts to step up the supervision for the funds concerned in accordance with the law. With the rapid economic growth in China, the issue of environment has been increasingly a focus of social attention and thus it has become more and more important to tighten the supervision through auditing over the funds of environmental protection.

The activities of environmental protection have involved a number of subjects, which by the meantime fall into the scope of audit carried out by various functional departments of the National Audit Office of China (hereinafter as the CNAO), making environmental auditing a cross-sectional activity in China. So it is necessary for the CNAO to establish a special-designed coordination mechanism for environmental auditing, on the basis of taking all environmental auditing assignments and audit priorities into consideration and building up a platform of sharing experience and achievements in auditing in order to promote a better performance of the functional departments of the CNAO to carry out auditing from an environmental perspective.

The auditing business of the CNAO could be mainly classified into four types, namely audit of public finance, monetary audit, audit of state-owned enterprises and economic accountability audit, but the audit work carried out by many of the nine functional departments established accordingly within the CNAO also spans into the area of environmental auditing. For example, Department of Agriculture, Resources and Environmental Audit shall audit over the central financial input dedicated for the eco-environment improvement and control of water pollution; Department of Fixed Assets Investment Audit carries out audit of environmental protection funds under the infrastructure development projects; Department of Foreign Funds Application Audit extends audit on the environmental pollution control projects financed by foreign funds or assistance; Department responsible for state-owned enterprises shall audit the issue of clean production and pollution control in state-owned enterprises; Department competent for economic accountability audit also supervise through auditing the principal leading persons of government departments and of state-owned enterprises as to how they perform their accountabilities in respect of environmental protection.

This framework enjoys certain advantage of bringing the initiative of various functional departments of the CNAO into full play, though a relatively diversified deployment of audit resources and the sluggish information communication could be witnessed in its functioning, making it difficult to reorganize the audit resources for a focused and prioritized approach in performing environmental auditing. Hence in June 2003, the CNAO set up an *ad hoc committee for Coordinating Environmental Auditing* (hereinafter as ad hoc Coordination Committee), presided by a Deputy Auditor General of China and composed of member units like Department of Agriculture, Resources and Environmental Protection, Department of Fixed

Assets Investment, Department of Foreign Funds Application and departments responsible for state-owned enterprises audit and economic accountability audit.

The ad hoc Coordination Committee mainly sees to the research and management of environmental auditing and puts forward relevant instructions accordingly. To be more specifically, the committee shall coordinate and facilitate functional departments concerned to carry out auditing from the environmental perspective, circulate information on the progress of environmental auditing assignments, exchange environmental auditing experience, gather environmental auditing achievements and pool the strength of the CNAO by reorganizing audit resources to execute key environmental auditing assignments. A secretariat is set up under the committee for handling routine communication affairs. Functional departments of the CNAO shall be responsible for auditing work relating to environmental protection under their own jurisdiction and report to the committee about the progress of environmental auditing projects.

Ever since its establishment, the committee has been active in bringing forward its suggestions about how to carry out environmental auditing on an annual basis. Functional departments of the CNAO shall accordingly execute auditing assignments from the environmental perspective. So all in all, environmental auditing has played an increasingly important role in the course of environmental protection through the following measures and actions taken by the committee:

1. **Promulgate *Working Rules of ad hoc Coordination Committee of the CNAO* to affix the responsibilities accordingly to all functional departments under the committee, and set down *Working Program for Environmental Auditing of the CNAO from 2003 to 2007* to make a description about main work targets and priorities during this period.**
2. **Issue and distribute 10-odd newsletters about *Recent Activities and Progress of Environmental Auditing of the CNAO*, giving an introduction about regulatory framework and policies in the field of environmental protection, circulating the information about environmental auditing assignments carried out by functional departments of the CNAO and sharing the good practice, experience and achievements in the execution of environmental auditing assignments.**
3. **Organize environmental Auditing under the framework of the CNAO**
 - 3.1 The committee has organized audits over government investment in eco-environment improvement and pollution control in major watersheds as well as environmental protection funds used in the construction projects. First, audits over eco-environment improvement projects in such fields as converting the farming land for forestry, protecting natural forest resources , preventing and controlling sandstorms, have been carried out and all of the six audit recommendations for improving the policy of converting the farming land for forestry made by the CNAO have been adopted by the central government for a more regulated management in this regard. Second, the committee has organized audits over the funds of preventing and controlling water pollution in four watersheds, looking into the mechanism of controlling total discharge of pollutants and giving assessment on the implementation effectiveness of environmental policy. State Environmental Protection Administration of China has indicated that when the preparation of *11th Five Year Plan for the Prevention and Control of Water Pollution in Major Watersheds*, and the revision of *Law of the People's Republic of China on the Prevention and Control of Water Pollution* is concerned, it will take into serious consideration the suggestions made by the CNAO

with regards to the improvement of plan-preparation and the intensification of supervision. Third, the committee has organized special audit investigations towards the utilization of environmental protection funds in the construction of Qinghai-Tibet Railway. The audit team has conducted a performance audit, based on the *Report of Environmental Impact Assessment* and construction project budget, over the utilization effectiveness of funds and environmental performance after the adoption of environmental protection measures. The competent authorities for the railway construction have endorsed the suggestions made by the CNAO.

- 3.2 The committee has urged auditors, when performing audit over financial revenues and expenditures of state-owned enterprises, to pay special attention to clean production as well as prevention and control of environmental pollution, especially to the excessive emission of pollutants such as waste water, soot and dust discharged in the course of production by obsolete equipments.
- 3.3 The committee has organized audits over phase-out projects of Ozone Depletion Substances (ODS) financed through the assistance of Multilateral Fund of Montreal Protocol and produced performance audit reports thereof. The auditors of the CNAO have received many compliments on the design of audit report pattern and audit methodology from Multilateral Fund of Montreal Protocol and experts of the World Bank and their experience in this regard shall be spread to similar projects in other countries and regions.
- 3.4 The committee is now reorganizing audit resources to conduct audits over the implementation and performance of sewage treatment projects in the grand work of diverting water from the south to the north in China.
- 3.5 The committee has organized the economic accountability audit over the principal leading persons of government departments and of state-owned enterprises in order to explore the evaluation index for environmental auditing and improve the system of evaluation index for economic accountability audit.

Handling of Issues Related to Rape-seed and Bio-diesel Fuel by the Government (Estonia)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Author: National Audit Office of Estonia

Audit focus

The NAOE audited the activities of government bodies aimed at

- increasing the share of bio-fuels in the consumption of vehicle fuels,
- cultivating rape plants needed for the production of bio-diesel fuel
- and promoting the local production of bio-fuels.

I Increasing the share of bio-fuels

The bio-fuels used in transport include mainly liquid and gaseous fuels produced from biomass, including bio-diesel fuel and bio-ethanol.

The Parliament has given the Government a mandate to implement the necessary measures to considerably increase the use of bio-fuels in Estonia. The Long-Term National Development Plan for Fuel and Energy Industry adopted in December 2004 and the Environmental Strategy adopted in October 2005 set the objective of achieving, for bio-fuels, a share of 2 % in vehicle fuels by 2005 and a share of 5.75 % by 2010. Increasing the share of bio-fuels is a priority on the European Union (EU) level as well.

Table 1. National goals for the use of bio-fuels in European Union in 2005

State	Goal, %
Denmark, Luxembourg	0,0
Finland, Ireland	0,1
Great Britain, Malta	0,3
Poland, Hungary	0,5
Greece, Slovenia	0,7
Italy, Cyprus	1,0
Belgium, France, Germany, Latvia, Lithuania, Portugal, Slovak Republic, Estonia, Holland, Spain	2,0
Austria	2,5
Sweden	3,0
Czech Republic (2006)	3,7
EU average	1,4

Reducing the share of fossil fuels does not have merely economic or environmental protection implications, but also serves as an economic policy objective, as the establishment of a new type of fuel increases the security of supply. There are businesses in Estonia (like AS ATKO Grupp) who have announced their intention to start producing bio-diesel fuel from rape-seed oil and using it in their own vehicles.

Bio-fuels have been exempted from excise duty and the EU standards for 5 % and 100 % bio-diesel fuel have been transposed to promote their use. However, this has not been enough to

influence the businesses towards using bio-fuels in vehicles. Many business operators believe that fuels with bio-additives may damage vehicle engines and fuel systems and they doubt whether fuel suppliers are able to ensure that the quality of bio-fuels conforms to the standards. On the Estonian market, there is currently no considerable demand for bio-fuels suitable for use in transport.

The objective set by the Parliament and the Government for 2005 to achieve a share of 2 % of bio-fuels in vehicle fuels was not achieved. None of the filling stations in Estonia was selling bio-fuels. It is not clear whether and how the relevant objective set for 2010 will be accomplished. The objective of starting to use fuels of biological origin in vehicles was set without prior in-depth examination of the expected economic, environmental and social impact of the production and the use of such fuels. Furthermore, it has not been analysed whether it is economically reasonable to produce bio-ethanol in Estonia.

None of the Ministries admitted the responsibility for increasing the use of bio-fuels in transport. Four Ministries have dealt with the issues related to bio-fuels: the Ministry of Environment (ME), the Ministry of Economic Affairs and Communications (MEAC), the Ministry of Agriculture (MA) and the Ministry of Finance (MF). The ME has been responsible for the application of the European Parliament and Council Directive and the MEAC has been responsible for the obligation under the Directive, i.e. setting the objective of increasing the share of bio-fuels in transport. Although it seems that at least two Ministries are responsible for achieving this objective, none of the Ministries has a specific action plan for completing this task. The MEAC and the ME are of the opinion that, in addition to the excise duty exemption already established, the government should take no further active measures to guide the businesses towards decisions which facilitate the objectives set by the government. However, they admit that without such measures the achievement of the objective is doubtful.

In the opinion of the NAOE, the Ministry of Economic Affairs and Communications has failed to take effective measures to promote the use of bio-fuels in transport. The goal to increase the share of bio-fuels in vehicle fuels to 2 % by 2005 was not achieved. The goal was not reached mainly because none of the ministries acquired responsibility for it.

Only two measures were established for increasing the share of bio-fuels in vehicle fuels:

- Exemption from excise duty for bio-fuels
- EU standards for 5 % and 100 % bio-diesel fuel were transposed.

Recommendations to the Government of the Republic

- To designate the Ministry, which would be responsible for increasing the share of bio-fuels in transport, who co-ordinates the activities of government authorities in this field and, where appropriate and initiates the implementation of further measures. It is necessary to designate the responsible entity, since the Parliament and the Government have set an objective for 2010 which cannot be achieved by market mechanisms alone.

to the Minister of Economic Affairs and Communications

- To commission studies for determining the problems related to introducing bio-fuels (including bio-ethanol) in vehicles in Estonia, and for finding the solutions. The studies should include an analysis of the environmental, economic and social impact of producing (also from imported primary products) and using bio-fuels in Estonia.
- To inform the general public of the commissioning and results of such studies. Reliable information on the possible solutions to the technical and financial problems related to

the production and introduction of bio-fuels provides the government agencies with a basis for adopting the decisions necessary for increasing the use of bio-fuels.

- To take measures to apply the standards necessary for extending the use of bio-fuels in transport and to build the capacities of laboratories certifying bio-fuels. Bio-fuels need to be certified to build the consumers' confidence in the quality of the marketed fuels.
- To make proposals to the Government for persuading government agencies to prefer vehicles propelled by bio-fuels. Creating the demand provides an incentive to the suppliers to offer vehicles suitable for using bio-fuels and to the fuel suppliers to market bio-fuels, and, in turn, the demand for bio-fuels is the driving force behind the production and import thereof.



II Growing rape plants

Owing to the support of government, cultivation of rape plants has been one of the growing lines of agricultural production and rape plant has assumed an important position in agriculture and industry. Over the recent years, rape crops have covered about one tenth of all land under cultivation in Estonia. In Estonia, rape-seed yield is the lowest among the EU countries. Estonia does not have high-persistence varieties of winter rape plants, which provide a high yield—the government has not promoted the breeding of winter rape plants.

Until now, rape-seeds have been used to produce mainly cooking oil and oilcakes suitable for animal feed. Also, crude oil has been exported.

Table 2. The area and yield of rape plants in 2004.

	Estonia	Latvia	Lithuania	Finland	Sweden	Germany
Winter rape plants, area ha	–	15 100	24 200	–	37 500	1 267 200
yield, t/ha	–	2,79	2,71	–	3,43	4,13
Summer rape plants, area, ha	50 400	39 200	76 400	2 100	36 700	16 200
yield, t/ha	1,36	1,58	1,82	1,52	2,24	2,45
Total area ha	50 400	54 300	100 600	2 100	74 200	1 283 400
Total yield, t/ha	1,4	2,0	2,0	1,5	2,8	4,1

Production of bio-diesel from rape-seed

The main reason for using bio-diesel is to reduce consumption of fossil fuels, thus it is necessary to assess if the production of bio-diesel from rape-seed is energy efficient. Energy efficiency was taken into the focus of the audit because the vegetation period in Estonia is short and therefore the rape-seed yields are lower than in southern countries (e.g. three times lower than in Germany).

The calculations of the Ministry of Environment based on surveys claim that for the production of 1 litre of bio-diesel from rape seeds, only 0,2 litre fossil fuels is used. Since this data originated from countries where the vegetation period is longer, the Estonian Research Institute of Agriculture was subcontracted to execute an alternative study based on Estonian conditions.

Table 3. Energy efficiency of producing bio-fuel from rape plants grown in Estonia (converted to diesel fuel litres)

	rape-seed yield 1,2 t/ha	rape-seed yield 1,5 t/ha
Amount of diesel used for sowing, fertilizing, fighting with pests and harvesting l/ha	100	100
Amount of diesel used for drying and sorting the seeds l/ha	19,9	28,5
Amount of electricity used for drying and sorting the seeds l/ha	1,9	2,2
Amount of diesel used for producing fertilizers and pesticides l/ha	152,5	152,5
Amount of electricity used for producing fertilizers and pesticides l/ha	12,0	12,0
Amount of diesel used for transport (seeds, fertilizers, pesticides)	4,5	4,5
Amount of diesel for producing biodiesel from seeds, l/ha	84,2	97,2
Total energy used for production of biodiesel, l/ha	375	396,9
Produced biodiesel, l/ha	432	540
Coefficient of energy efficiency	1,15	1,36

The calculations made by the commissioned Institute demonstrate that at average yield of rape-seed (1,5 t/ha) less than one litre of diesel is used for producing 1 litre of bio-diesel. The use of diesel for growing rape plants does not change considerably when yields are larger. The amount of used fossil fuel could be reduced by better agricultural technology and more efficient machinery.

Production of bio-diesel fuel from the rape plants cultivated in Estonia is economically and environmentally reasonable only if the rape-seed yield per hectare is increased. There are no short-term perspectives of rapid progress in terms of yield.

Recommendation to the Minister of Agriculture

- To consider commissioning to Jõgeva Plant Breeding Institute to breed high-yield winter rape plant varieties suited for cultivation in the soil and climate conditions of Estonia. The cultivation of rape plant is cost-effective only if the rape-seed yield grows considerably and if the crops are harvested earlier.

III AS Werol Tehased

The major rape-seed processor has been AS Werol Tehased with nearly all the shares owned by the government.

The Supervisory Board of AS Werol Tehased failed to accomplish its tasks in 2004. The Supervisory Board and the Management Board did not have an agreement as to the vision and business plan of the company. The Supervisory Board did not react quickly enough to the Management Board's plan to expand operations substantially and lost control over the latter's activities. In 2004, a number of mistakes were made in the management of the plant, leading to a loss of EEK 42 million for the financial year 2004/2005. Werol purchased more rape seed than the budget funds allowed, and some of it above the market price. Since the plant was unable to process the excessive stocks of seed itself, it was resold at disadvantageous prices. The loans related to these operations were not repaid in timely manner and the fines for delays led the company to payment difficulties in 2005. Werol did not comply with the rape-seed oil supply contract made with AS Biodiesel, and the parties have failed to come to an agreement on the amount or the payment of the resulting contractual penalty. The Minister of Agriculture has not made an assessment as to the activities of Werol's Supervisory Board in 2004.

Recommendation to the Minister of Agriculture

- To decide whether to hold the Members of the Supervisory Board of AS Werol Tehased liable for inadequate supervision of the activities of the company's Management Board which lead to causing a serious proprietary damage to the government.

Response of the ministries

In his response, the **Minister of Economic Affairs and Communications** dealt with the possibilities of establishing standards necessary for using bio-fuels. The Minister did not adopt a position as to the recommendation to take measures for persuading government agencies and persons benefiting from government support for transport to prefer vehicles propelled by bio-fuels and carriers using such fuels.

In his response, the **Minister of Agriculture** analysed the problems related to the cultivation of rape plants and did not challenge the data or assessments provided by the NAOE. The NAOE proposals to analyse the advantages and disadvantages of different energetic crops and to determine the most suitable crops are to be taken into account in preparing the "Development Plan for Promoting the Use of Biomass", which is included in the working plan for 2006. As to the liability issue of the Supervisory Board of AS Werol Tehased, the Minister finds that the final position can be adopted once the scope and basis of the responsibilities of the former Chairman of the Management Board of the company have been ascertained.

The NAOE is of the opinion that, regardless of whether and to what extent the law enforcement authorities ascertain the guilt of the Chairman of the Management Board of the company as regards causing extensive damage to the company, the Minister can and must express his clear position regarding the Supervisory Board's joint liability for the company's situation as at the end of 2004. The NAOE sent the draft audit report for opinion also to the Minister of Environment and the Chairman of the Supervisory Board of AS Werol Tehased.

The Minister of Environment did not communicate his opinion to the NAOE. The Chairman of the Supervisory Board of AS Werol Tehased did not agree to some conclusions made in the report. In his opinion, Werol's Supervisory Board has complied with its diligence obligation concerning the management of the company within the limits foreseen by law.

The full texts of the responses from the Minister of Agriculture, **the Minister of Economic Affairs and Communications** and the **Chairman of the Supervisory Board of AS Werol Tehased** have been annexed to the audit report.

This audit report was also communicated to the Government of the Republic.

The audit report was several times referred to in national newspapers.

Lessons learned from the audit

The audit did not have a single clear focus, but attempted to study three more or less loosely connected issues: increasing the share of bio-fuels; growing rape plants in Estonia and aspects of using it for the production of bio-diesel; and economic problems of the state owned rape-seed oil company. The audit team consisted of two auditors and an audit manager. The auditors were responsible for different topics. Therefore there were difficulties in developing the structure of the final report. The structure developed gradually in the course of several discussions of the team and as a result of reviewing by auditors from other departments of the NAOE.

Auditing of the issues was even more complicated because of poor data and practically non-existing surveys of producing and using bio-fuels in Estonian conditions. Therefore an external expert was invited to study the economic aspects of producing bio-diesel from rape-seed that has been grown in Estonia. Also, the NAOE invited the potential user organisations and vehicle importers to discuss the aspects and possible hindrances of using bio-diesel in Estonia (keeping in mind also cold winters). Both of these exercises produced added value for discussions with the ministries and the final report.

The outcomes of the audit, especially the issue of responsibility were discussed in all three ministries concerned. However, they all acknowledged the problems with achieving the goal, none of them admitted being responsible for reaching the target and two of them did not see the necessity for any governmental incentives for promoting the use of bio-fuels. Auditors experienced once more the importance of communication, as the discussions with the auditees became more productive as they progressed.

Audits

Handling the Issues Related to Rape and Bio-diesel Fuel by the Government (2006)

Challenges of Auditing the Natural Resources — Indian Perspective "Performance Audit of Conservation and Protection of Tigers in Tiger Reserves" (India)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Author: Office of the Comptroller and Auditor General of India

"Conservation and Protection Of Tigers In Tiger Reserves" - Presented to the Legislature in 2006

Background

The Indian constitution envisages protection and improvement of environment and safeguarding of forests and wildlife as a very important function of the state which has been spelt out in the Article 48A of the Constitution of India, 1950. India has been a signatory to the **Convention on Biological Diversity, 1992** and ratified the same in 1994. The convention recognises the intrinsic value of biological diversity and its importance for evolution and for maintaining the life sustaining systems of the biosphere. Further, the convention notes that the fundamental requirement for the conservation of biological diversity is the in-situ conservation of eco-systems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings. It also notes that it is vital to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at source. India is also signatory to the **Convention on International Trade in Endangered Species of Fauna and Flora, (CITES)**, ratified in 1976. This convention regulates trade in wildlife species. The Environment (Protection) Act, 1986, the Forest (Conservation) Act, 1980, the Wildlife Protection Act, 1972, National Forest policy, 1988, and the National Wildlife Action Plan, 2002-16 etc are some of the important legislations and policy initiatives of the Indian government in the direction of conserving and protecting its natural resources including wildlife.

About the Audit topic

Tiger is at the top of the food chain and symbolizes the wellbeing of the ecosystem. Therefore conserving tiger ensures conservation of the ecosystem which is crucial for life support systems and in turn for survival of the human beings. Audit of the conservation and protection efforts through the **Project tiger** and other eco-development initiatives of the government was taken up by the SAI India in the wake of the media reports about the dwindling numbers of the tiger species due to poaching and illegal trade activities.

Project tiger

The Indian government launched the 'Project tiger' initiative in 1973 to protect the tiger from extinction. The Indian tiger is an endangered species due to the lucrative cross border illegal trade of tiger skin and other body parts. It is also under threat from encroachment of forest land and loss of forest cover. Tiger population in India has come down to less than 4,000 from nearly 40,000 at the turn of the 20th century. The project which began as a federal government scheme, is now run as a centrally sponsored scheme with funding shared by the federal and the provincial governments. The **Project Tiger Directorate(PTD)** is the nodal agency under the **Ministry of Environment and Forests (MoEF)** to provide technical guidance, budgetary support, coordination, monitoring and evaluation whereas the management and implementation of the project rests with the provincial governments concerned. The project envisages creation of 'core' and 'buffer' zones in the Reserves, relocation of people, prevention of encroachments and tree felling, creation of wildlife corridors, generating alternative employment opportunities for the local communities, regulating tourism and other developmental activities in the Reserves.

Another initiative of the Indian government is the '**India Eco-development project**' (IEDP) with a cost of US\$67 Million, initiated in 1997 with the assistance of the World Bank and the **Global Environment Facility** to conserve biodiversity through eco-development in five tiger reserves and two national parks. This project aims at improving the capacity of the Protected Area Management to effectively conserve biodiversity and support collaboration between the provinces and local communities in and around ecologically vulnerable areas. Further, there were four regional wildlife divisions created to curb illegal trade in wildlife.

Audit Scope and objectives

Though the tiger protection and conservation efforts have been under implementation for several decades, tiger population continued to be a concern for the government. Tremendous pressure on the forests due to human settlements coupled with widespread illegal trade posed a real challenge to the conservation efforts.

Audit aimed to assess whether,

- the efforts made by the government have ensured a viable population of tigers in the country,
- the planning was adequate; resource allocation was reasonable, and targets were achieved through judicious utilization of resources,
- the efforts made to reduce biotic disturbance in the tiger habitats were effective and system for monitoring, evaluation and follow up existed.

Audit Methodology

Audit was conducted using Performance Audit principles through test check of the records in the nodal ministry, i.e., MoEF, the Project Tiger Directorate(PTD), Wildlife divisions, offices of the implementing agencies in the concerned provinces, and field offices in 24 out of 28 the tiger reserves. At the outset, an entry conference was held with the MoEF to explain the audit objectives and methodology. Test check of records was conducted to examine the

effectiveness of the financial, managerial, compliance and regulatory inputs used in the project.

Audit findings

The following are some of the major findings of Audit:

I. Master Plans for development of tiger reserves:-As per the government directions for implementing the 'Project Tiger' scheme, there was to be a master plan prepared by the tiger reserve and approved by the PTD and the concerned provincial government for development of each of the tiger reserve and the physical targets' achievement was to be monitored with reference to the master plan. The following are few major deviations found in the process:

- In a good number of the tiger reserves the master plans (also called Management plans/MPs) were not prepared. The PTD did not have an internal control mechanism to ensure receipt of approved MPs.
- Though the MPs were to be approved by the concerned provincial government as well as the Government of India, this was not adhered to. Some of the MPs were received in the PTD without the approval of the provincial government.
- There was no technical scrutiny of the MPs in the PTD which should have been there to make sure that the MPs are in line with the objectives of the scheme.
- There were deviations between the targets set in the MPs and the activities included in the Annual Plan of Operations (APO) in some reserves.
- Financial projections indicating the funds requirement for the proposed activities were not made in some reserves.
- Funds released under the central assistance were not adequate to cover expenditure on the proposed physical targets.

II. Mapping of National parks:—A pilot project for mapping of the Wildlife sanctuaries/National parks was initiated at five sites including three Tiger Reserves. The project which intends to generate accurate latest baseline spatial information using satellite imagery about the forest types, density, and topographic features, was not completed as planned. The poor progress was attributed to delay in induction of research personnel. Delay in mapping of forests meant lack of reliable information for preparation of management plans of the tiger reserves.

III. Creation of new Tiger Reserves:- Based on a recommendation of the Working Group on Wildlife sector for bringing more areas under protection, the MoEF proposed creation of eight new tiger reserves during the period 2002-2007. However as the financial projections were incomplete, and also physical targets were not clearly laid down, approval for the proposal was pending till March 2006. The PTD instead of pursuing for obtaining approvals, has decided to defer creation of the new reserves.

IV. Allocation and utilization of funds:—Funds were allocated to the Tiger Reserves without following any norms and with no correlation with the identified priority areas. The quantum of funds released varied widely across the Reserves. There was no correlation between the funds released and the number of tigers or the area of the Reserves. The variation between the Reserves ranged from \$14 per sq.km to \$577 per sq.km. Similarly, it varied from \$2000 per tiger to @24000 per tiger for different Reserves.

V. Other irregularities in funds release included delayed release of central funds to the Reserves by the provincial governments, non-utilisation of funds by the reserves, short release of matching funds by the provincial governments, diversion of funds to other purposes, payment of project allowance to ineligible personnel etc. Important activities such as creation of Strike force, anti-poaching camps, formation of armed police, patrolling tracks etc have suffered due to diversion of funds.

VI. Biotic Pressure:—The international standards prescribe an area of 2000 sq.km (core) with a similar contiguous area (buffer) to ensure viable population of 300 tigers in an area. However in 1972, a Special Task Force, considering the Indian conditions, decided to create Reserves with an area of 1500 sq.km with 300 sq.km as core area. However lack of seriousness of the concerned agencies and shortcomings in creating the Reserves is evident in the following:

- Out of the 28 Reserves, in 15 Reserves the minimum area was less than 720 sq.km, which is grossly inadequate for promoting tiger breeding. In 6 of these 15 Reserves, the core area was less than 300 sq.km. Human settlements existed even in the core area of 6 Reserves. Four Reserves had no buffer zone.
- As per the Wildlife Protection Act, 1972, the provincial government has to notify an area as National Park, which provides a legal basis for ensuring protection. However in 10 Reserves final notifications were not issued and in 3 Reserves demarcation of Reserve boundaries not completed.
- Relocation of forest dwellers living in the core and buffer zones of the Reserves is very crucial to create favourable atmosphere to increase tiger population. However, existence of 1487 villages with 64951 families in 26 Reserves was noticed during the scrutiny of records. Out of this, 17650 families were in the core area of the Reserves. While the funds required for relocation of these families were estimated to be about \$2455 Million, only \$2.3 Million was allocated during 2002–2007 period.
- The provincial governments failed in taking firm action to relocate people from the Reserves and funds meant for the purpose were lying unspent.
- Widespread encroachments by the local communities or by private companies was noticed in several Reserves inspite of clear powers of eviction available under the Wildlife Protection Act, 1972. The encroachments have resulted in tremendous biotic pressure and also were a source of pollution in some cases due to use of pesticides in cultivation in the forest areas.
- The Tiger Reserves also faced encroachment by other governmental agencies such as the Electricity, Irrigation, and Tourism departments.

VII. Eco-tourism:—Comprehensive guidelines to regulate eco-tourism in the protected areas were not completed till March 2006, with the result the Reserves continued to be exposed to biotic disturbance and illegal activities. In many provinces no separate tourism management policy has been developed nor the tourist carrying capacity assessed. The PTD lacked adequate monitoring mechanism to control eco-tourism.

VIII. Creation of Development fund:—As per the Wildlife Conservation Strategy, 2002 the revenue earned by the Reserves from tourism should be used for conservation efforts. However in several Reserves the revenue receipts were deposited to the government instead of creating a development fund.

IX. Conservation efforts:—The efforts required for tiger conservation include habitat restoration and improvement activities such as grasslands development, water management, weeding out lantana, soil conservation, management of wetlands etc. Though these were spelt out in the NWAP, several Reserves did not take adequate action to achieve the milestones. Some of the deficiencies noticed in audit are given below:

Management of water in the Reserves:-

- Periodical desilting of water bodies was not attended to in some Reserves.
- Contamination of water holes due to mining found.
- Shortfall in construction of water holes, ponds, dams, and repairing old tanks etc.
- Water availability during dry seasons was neglected thereby endangering wildlife conservation.

Grassland management:

- Lack of proper planning to develop grasslands to ensure adequate fodder for herbivores was noticed.
- Increase in livestock in the Reserves resulted in decline of grassland and fodder shortage to the prey population.
- Adequate efforts were not made to eradicate weeds such as lantana, parthenium and eupatorium invading the grasslands.
- Herbivore estimation and prey predator ratio assessment have not been done in many Reserves.

X. Prevention of trading and commercial activities:— Even though felling of trees is banned, incidences of illegal felling of trees have been noticed and several unauthorized saw mills and plywood factories continued to operate in the vicinity of forests. The forest authorities failed to conduct surprise checks and prevent the same.

XI. Creation of tiger corridors:—The NWAP recommended identification and restoration of linkages and corridors between wildlife habitats to provide gene continuity and prevent inbreeding. However there has been little progress on this.

XII. Eco-development:- Eco-development activities were envisaged in the Project Tiger scheme as well as the IEDP with a funding of US\$67 million during 1997-2004 to take care of the needs of the forest dwellers. The targets set for development of local communities and reduce their dependence on the forests were not achieved fully. Targets set for creation of Self-Help groups (SHGs), supply of fuel-saving ovens, installation of bio-gas plants, generation of employment opportunities, and collaboration of locals in conservation efforts were found to be lagging behind.

XIII. Prevention of poaching:- Tiger deaths have been reported time and again due to poaching, poisoning, elocution, infighting etc. Between 1999–2004, about 22 tigers died annually due to poaching. The guidelines issued by the PTD for preservation of tiger were not effective as the governments failed to take stringent action against the offenders. Lack of intelligence network, inadequate patrolling, insufficient manpower (foresters), absence of special strike force, inadequacy of arms and ammunition, non-investigation of poaching cases etc contributed to continuation of the menace. Lack of adequate fire control measures also resulted in loss of forest property.

XIV. Prevention of wildlife crimes:—The four Regional wildlife offices were entrusted with the responsibility of prevention of illegal wildlife trade, enforcement of the Wildlife Protection Act, 1972 and also assisting in the implementation of the provisions of the CITES. However these functions have not been discharged effectively due to shortage of staff, lack of job specific training; Incidents of poaching of tigers and smuggling have increased also due to the porous borders and lack of intelligence gathering and coordination. Though 502 offences were detected during 2000–05, the cases were not pursued and no effective action taken.

XV. Impact of tiger protection and conservation measures:—In eight Tiger Reserves, tiger population has not increased between 1984–2002, and in some of these Reserves, there was a sharp decline upto 45% to 48%.

Audit Recommendations

Some of the significant recommendations made by the Audit were:

1. The Tiger Reserves should have well-formulated management plans; Annual plans should incorporate measurable targets.
2. Detailed mapping of Tiger Reserves should be completed and boundaries notified.
3. Allocation of financial resources, and utilization should be streamlined.
4. Relocation of the local families from the Reserves should be given priority with a credible financial package. Encroachers to be dealt with firmly.
5. Eco-tourism to be regulated to minimize adverse impact on conservation efforts.
6. Needs of the people sharing habitat with tigers should be addressed effectively.
7. Communication and intelligence network to be improved and adequate arms and ammunition should be provided to the project personnel.
8. Patrolling efforts should be augmented with suitable staff.
9. Project Tiger Directorate should be strengthened for effective monitoring.
10. Monitoring mechanisms at the centre and provinces to be strengthened and accountability to be enforced.
11. Tiger census should be done regularly and reliable and refined techniques of tiger estimation to be adopted.

Innovations/Solutions to the environmental problem

- The audit review has thrown light on the complex nature of the issue of tiger conservation and various dimensions of the man-animal conflict. It has highlighted the adverse effects of various developmental activities on the ecosystems.
- While there were enough number of studies in the country on the subject of wildlife including conservation of tiger and well documented policies, there was a big gap between intention and implementation. This was highlighted in audit.
- The review has shown that conservation efforts not only need financial and human resources, they also call for sensitive handling of the forest communities and their needs.
- Strengthening of monitoring mechanism and coordination between various implementing agencies coupled with right kind of training in handling wildlife crimes,

and stringent action against offenders are the essential measures for a long term solution to the problem.

Impact of Audit and Results

- The Project Tiger Directorate has admitted almost all the deficiencies pointed out by Audit.
- The PTD informed that a National Tiger Conservation Authority (NTCA) was being created with statutory powers for addressing tiger conservation. It informed that action on the suggestions made by Audit would be taken after constitution of the NTCA. The government has since constituted the NTCA.
- The MoEF stated that the need for augmentation of manpower and logistics has been considered and included in the proposed National Wildlife Crime Control Bureau (NWCCB).

Challenges and barriers

SAI India has conducted EA audits of the forest development projects as well as functioning of wildlife sanctuaries in some provinces in the past. However this is the first comprehensive audit covering all aspects of conservation and protection efforts focusing on the tiger. The audit required developing common approach for scrutiny of records in 24 Tiger Reserves and coordination of audit teams spread across 17 provinces in the country. Lack of adequate data and involvement of multiple agencies in the project were some of the challenges in audit.

Lessons learned

In the performance review of the tiger conservation and protection efforts, Audit looked at not only the shortfalls and deficiencies in financial targets of the project, but commented extensively on the physical targets and qualitative aspects of the project implementation requiring attention of the concerned agencies for a long term solution. It is pertinent to say that this type of EA requires comprehensive understanding of the issues involved and also appreciation of the ground realities such as man-animal conflict, rights of forest dwellers, contrasting objectives of development and conservation etc. Response of the nodal ministry as well as the Project Tiger Directorate has been very positive to the Audit suggestions.

Audits

Performance Audit of Conservation and Protection of Tigers in Tiger Reserves—Union government (Civil) No. 18 (2006)

KENAO's Approach to Building and Managing Environmental Audit (Kenya)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Author: National Audit Office of Kenya

1.0 INTRODUCTION

1.1 Kenya.

- Independence - gained independence from the British rule on 12 December, 1963. The Republic of Kenya lies across the equator in East Central Africa on the coast of Indian Ocean. Kenya borders Somalia to the east, Ethiopia to the north, Tanzania to the south, Uganda to the west and Sudan to the northwest. The capital city is Nairobi. The Great Rift Valley is also found in Kenya. We also have the famous Lake Victoria in the southwest corner of the country. In the coastal areas along the Indian Ocean, we have tourist sites in Mombasa (the second largest city in Kenya), Malindi, Lamu, Fort Jesus, and Gendi Ruins among others. Mt. Kenya is one of the highest mountains in Africa also found in the Central Region of the country.
- Land Size – 589,251 sq. km.
- Capital City: Nairobi
- President: Mwai Kibaki (2002)

1.2 Population.

- The entire population is estimated to be 34.7 million people. The capital city, Nairobi alone has over 3.2. Million people currently.
- There are about 42 different ethnic groups in Kenya.



Map of Kenya: Source Wikipedia

1.3 **Official Language** is English while the national language is Kiswahili.

1.4 **Currency – Kenya Shilling.**

- Kenya is a member of Commonwealth of Nations. Tanzania is one of its major trading partners.

2.0 KENAO

- The Office of the Controller and Auditor General was renamed Kenya National Audit Office through the Public Audit Act 2003, which became operational on 9th January, 2004. The Public Audit Act Sec.29 gives the Controller and Auditor General the mandate to audit financial accounts of Government Institutions, Local Authorities and State Corporations. It also gives the Controller the mandate to audit the economy efficiency and effectiveness with which government Ministries, Departments and Agencies undertake their statutory and other operations. The Act also gives the Controller the mandate to report on matters that come to his/her attention in the course of audit.
- The enactment of this Act has made it possible for the office to expand its audit mandate to cover new emerging audits such as environmental audits.
- Although the Public Audit Act does not expressly provide for Environmental Audits, it gives authority for VFM assessments and it is under this provision that the office is carrying out Environmental Audits.

2.1 Training

The office has over the years trained several staff on Environmental Audits. In 2004, four staff attended an IDI/AFROSAI-E workshop at Safari Park (Kenya).

After this workshop, the participants presented proposals of possible audit areas and the then Controller and Auditor General gave his commitment to form an Environmental Audit Unit. There was follow up training in 2005 in Pretoria, South Africa, where two of those trained previously in KENAO were invited to participate in a collaborative audit with four other AFROSAI-E member countries, i.e. Ghana, South Africa, Ethiopia and Mauritius. The area of audit was on Accountability Framework for solid waste management in respective country.

The five countries who participated were under the supervision of the AFROSAI-E from South Africa. Following the training on the use of Team-mate in this audit, those trained were to do the audit in a month and present the report to AFROSAI-E/I.D.I. The findings were presented at a meeting of AFROSAI-E Auditor General's in Cape Town in May, 2005.

2.2 The Environmental Audit Section

The Environmental Audit Section comprises of five staff who are fully involved in environmental audit work. Two out of the five staff members have been trained by both I.D.I and AFROSAI-E.

2.3 Getting started

Due to inadequate staff and multiple roles played by those who were trained, it was not easy to allocate them environmental audit work only and this hampered the progress of the waste audit which had been started in 2005. However the current Controller and Auditor General set up the Environmental Audit in July 2006. The team was to carry on the waste Management Audit which had been identified earlier as a priority for our country. The team leader and the supervisor with the aid of the I.D.I training materials conducted training for one month so as to get the other staff acquainted with the Environmental Audit which is new to them. It was only after the training was over that we were able now to carry out to completion of the waste audit in the City of Nairobi. The report is in the process of being published.

3.0 ROLE OF I.D.I/ WGEA, AFROSAI-E

The institutions have been supportive and have continued to use their materials.

The I.D.I has also been keen to see that the office sets up an Environmental Audit Section. The have also been following up on the progress of the waste audit which we can now report has been completed and is in the process of being published.

The office plans to carry out more training of the staff in the unit. The training will be both in-house and where necessary external. The I.D.I materials, WGEA publications on issues audited by other SAI, approach on auditing environmental issues, experiences gained by other SAIs on similar issues and the general guidelines issued by WGEA from time to time will form the basis of our training.

Where necessary we will request I.D.I./AFROSAI-E to assist in training more staff in Environmental Audit areas. The office also intends to post more staff to the Environmental Audit Unit so as to expand the Unit.

4.0 ENVIRONMENTAL CHALLENGES

The environmental challenges facing Kenya as a country include:

- Deforestation due to increased demand for human settlement and farming.
- Droughts and floods.
- Overgrazing
- Human wildlife conflicts
- Soil erosion accelerated by poor farming methods
- Infestation of water bodies by aquatic sea weeds (hyacinth) in Lake Victoria
- Coastal erosion and threats to mangroves
- Air pollution due to increase in Industrialisation
- Ground water pollution due to increased use of fertilizers and illegal disposal methods of waste
- Solid waste (hazardous and non-hazardous) management by City Councils, Town Councils, industries and health institutions.

4.1 Challenges facing Environmental Audit in Kenya and how we plan to overcome them

Challenge	Mitigation
1. Lack of clear and express mandate for Environmental Audit in the Public Audit Act	The office hopes to request amendment of the Act to include specific mandate on Environmental Audit.
2. New and under developed Environmental Management Institutions and Statutes	NEMA in 2007 issued environmental management regulations which we hope will be amended to encompass all issues on environmental matters.
3. Staff constraints. The office has other responsibilities on Value for Money Audits, Financial Audits and others.	The office intends to expand the Unit and train more staff on Environmental Audit so as to increase capacity to Handle various Environmental Audits.
4. Lack of tools, guides and Environmental Audit manual for the office.	We are currently using INTOSAI Materials but we plan to develop Manuals and guides customised for the KENAO use.

4.2 What the Environmental Audit Unit hopes to attain in the long run

- Raise the profile on Environmental management issues in Kenya.
- Influence a positive change on how the Environment is managed in the country.
- Through the Environmental Audit findings, recommendations and reports, we hope to assist the country through various institutions in conforming to International Conventions on Environmental Management.
- Help the country to achieve sustainable development in Environmental issues.
- Contribute to the attainment of the overall KENAO's vision and mission.

5.0 WAY FORWARD

Issues being considered for study include:-

- Hazardous Waste Audit - (medical waste) which will focus on government hospitals in the country, the main one being Kenyatta National Hospital which is the largest referral hospital in the country.
- The causes and impact of the aquatic sea weeds (water hyacinth) on the fish population and fishing in Lake Victoria.
- Human wildlife conflict
- Deforestation and its effects.
- The office plans to publish two Environmental Audit report every year.

The State Audit Bureau Experience in the Management and Development of Environmental Auditing (Kuwait)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Author: State Audit Bureau of Kuwait

The importance of environmental audit:

The Rio de Janeiro conference had a significant impact on diverting the control efforts toward environmental issues, increasing the interest in such issues and making the necessary arrangements to include the environment within the main objectives of audit, and in light of the conference held in Cairo in 1995, a decision was made that the INTOSAI working group on environmental audit shall develop a manual containing instructions and methodologies for the implementation of environmental control in accordance with INTOSAI control standards.

Forming an environmental team work in SAB:

As of 1998, by Decision No. 43 /1999 issued by SAB President and the amended decision No. 19/ 2003, a new unit in SAB was formed, "Performance Audit unit", under SAB affairs and pre-audit sector specializing in auditing the performance of bodies subject to SAB control and developing their performance by focusing on efficiency and economy in the use of public funds and other resources and the achievement of these objectives set for it effectively. SAB has also developed a strategic plan to audit performance so that it reflects a broad vision on important topics relating to performance audit.

The environmental audit work is assigned to task forces, where the environmental audit team is concerned with environment-related topics, and the processes of controlling environmental pollution. And the most important objective when preparing any environmental report is to examine the actual application of laws and regulations governing the activities and environmental programs in the body, and to verify the efficiency and effectiveness of some procedures and systems related to the environment in accordance with the recommendations of INTOSAI/ 1995 and the sustainable development draft issued in August 2003 that emphasize on the application of audit and environment concepts.

As well as ensuring the integrity of financial transactions and express an opinion on the validity and accuracy of the related data, and the efficiency, economy and effectiveness in achieving policies, programs and environmental activities and preparing a report on them.

The focus was on several environmental topics with a significant impact on environmental safety and the continuation of the sustainable development process, so as to ascertain the efficiency and effectiveness of environmental policies and regulations applied, and the most important reports that have been issued are as follows:

Marine environment report	July 2002	I-PA 2002
Audit report on solid waste management	February 2004	20031-PA
Environmental audit report on Asbestos waste management	December 2004	23-PA 2004–2008
Summery environmental audit report of Ali Al.Salem area	February 2006	27-PA 2004–2008
Summery environmental audit report on the actions taken to ensure the safety of local poultry from Salmonella	May 2006	30-PA 2004–2008

SAB is also concerned with training auditors continuously throughout the period of their service in SAB, in order to upgrade the quality of the work results in a way suitable with the levels of development in knowledge and information, and the most important training programs joined by the environment team members are:

- The importance of environmental auditing.
- Environmental accounting principles.
- Environmental audit.
- Modern environmental audit methods.
- Working group on environmental audit on water and biological diversity resources-China.
- The fourth meeting of the Sub-committee of environmental audit affairs-Egypt.
- Field training in the Public Authority for Environment.

Steps to accomplish control tasks

1- Proposals (the foundations of selecting the topics included in the performance audit unit strategies)

Control topics selection in the strategy relies on SAB new methodology in determining high risk issues that are of concern to the legislative authority and SAB through the regularity control comments with a focus on the volume of financial allocations and the amounts expended, and the extent of deviation from the applied standards in addition to the social, economic, regulatory, or environmental impacts. This strategic plan can be modified based on the changes in the structure of the State or in regulations or regulatory concepts and work practices or the emergence of some related important topics, and accordingly some of the topics can be excluded or postponed to implement topics of higher importance in light of the available capabilities.

In conclusion to the aforementioned, the selection of topics to be included in the strategic plan and annual plans of the Unit are from:

- SAB (the annual reports, the administrative correspondences, and the unit members' proposals).

- The legislative authority (The National Assembly regulations).
- The government work program.
- Media (community).

2- The initial survey: (acknowledging the body)

- The initial survey objective is to determine the possibilities of applying the proposed task according to the inspection fields.
- It is preferable to be performed by the team leader.
- Preparing a report by the end of the assigned period determining the possibility of implementation.

3-Planning

- Preparing the work plan and the time schedule
- Determining the inspection scope
- Determining the task members' number
- Determining the need to seek the help of an expert
- Providing business models

4-Implementation

In this stage a field inspection is done by using the following inspection tools:

- Field interviews
- Reports and statistical data analysis
- Circulating the questionnaire
- Gathering evidence
- Preparing follow up reports

5- Reporting

Contents of the performance audit report:

- Introduction
- Summary
- Method and scope of inspection
- Inspection restrictions
- Comments analysis
- Results
- Recommendations
- Reporting (initial)

Auditing Activity of the Accounts Chamber of the Russian Federation in the Field of Natural Resources Utilisation and Environment Protection (Russian Federation)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Auditor: Mikhail V. Odintsov, Accounts Chamber of the Russian Federation

Activity of the Accounts Chamber of the Russian Federation in Auditing the Use of Natural Resources and Environmental Protection.

Relevance (audit justification and planning)

The most important aspects of the activity of the Accounts Chamber of the Russian Federation as supreme audit institution include those relating to rational and efficient use of natural resources which, according to the Constitution of the Russian Federation, are the basis of the life and activity of the people living within the appropriate territory.

The above tasks are dealt with by the Accounts Chamber of the Russian Federation, in combination with the issues of assessing the efficiency of using public funds allocated to environmental protection. This problem is of high priority in the course of nature management issues.

Nowadays the problems concerning rational and efficient nature management and environmental protection are becoming more and more critical for the global development nowadays. Experts estimate that the total global energy consumption as a whole has practically doubled since 1970, and the demand may grow as twice higher by 2050. Presently, Russia holds the lead in the world in terms of oil and gas extraction, and in this context, the task of the state is to make power consumption more efficient.

The problems of rational and efficient use of natural resources and environmental protection management are primarily considered in the course of public financial control in terms of analyzing the use of public funds, formation of public management system in that field, and observance of the environmental legislation.

These issues are considered in the course of both preliminary and current control over the federal budget execution as well as in the course of follow-up financial control assessing the effectiveness of the use of public funds.

Methodology

The tasks of the Accounts Chamber of the Russian Federation, according to the Federal Law "*On the Accounts Chamber of the Russian Federation*", are realized in the course of public financial control of the timeliness of executing the revenues and expenditures items of the federal budget in terms of amounts, structure and designated purpose, as well as in terms of the efficiency and expediency of public funds expenditures and the use of federal property.

Public financial control in the field of rational and efficient use of natural resources and environmental protection management is exercised by a specially established auditor unit responsible for control over the federal budget expenditures related to nature management and the agricultural sector. This direction of the budgetary policy is based on both the formation of the revenue side of the federal budget owing to appropriate payments while using the natural resources and centralized expenses on of public management, as well as on the

obligations to fulfill the terms of license and other agreements concerning nature management.

The main tasks of public financial control in this field are identified through analyzing the basic program documents stating the purposes of state development of nature management and environmental protection :

- mid-term program of the social and economic development of the Russian Federation;
- regulatory legal acts of the Government of the Russian Federation and federal executive authorities concerning the implementation of the federal law on federal budget and high-priority tasks set by the President of the Russian Federation;
- macroeconomic indices of the social and economic development of the Russian Federation;
- the effectiveness indices and main activity trends of the subjects of budgetary planning.

Subject to the analysis of the basic indices of the country's mid-term social and economic development and the assessment of the status and development problems, the tasks of the Accounts Chamber of the Russian Federation are updated relating to the issues of the use of natural resources and environmental protection using all the forms of public financial control—**the preliminary audit** involving the review and analysis of the justification of the federal budget formation for the next fiscal year and for the midterm; **current audit** consisting in the monitoring of execution of the budget in terms of revenues and expenses on monthly basis; **follow-up audit**, the essence of which is to examine the federal budget execution in the previous fiscal year.

In the course of assessing the efficiency of the use of natural resources and environmental protection, the VFM audit of the use of state resources is the main form of control. Both the generally accepted methods of financial audit (documenting and inventory, random inspections of documents, statistical and economic mathematical calculations, expert examinations) and specific methods (for example, interview, analysis and synthesis, system analysis, induction and modeling, shortage grouping, etc.) serve as a methodological base for these audits.

Considering the issues of nature management and environmental protection, audits carried out by the Accounts Chamber of the Russian Federation jointly with control accounts institutions of the constituent entities of the Russian Federation and municipal authorities are the most preferred forms of control. While in case of the use and conservation of transboundary natural resources or auditing the fulfillment of interstate agreements, including production sharing agreements, it would be expedient to carry out a joint and parallel audits in coordination with supreme audit institutions of foreign countries.

The activity of the Accounts Chamber of the Russian Federation

In accordance with the work-planning principles of the Accounts Chamber of the Russian Federation, priorities of the auditor's activity unit are being identified for the next year and in the mid-term perspective. Such process takes into account the issues that are of mutual interest for foreign supreme audit institutions (SAIs).

The Accounts Chamber of the Russian Federation performs audits differing in form and content, in the field of environmental protection and rational use of the natural resources.

1. When considering nature management issues that are of mutual interest both for Russia and foreign countries, priority is given to combined audits, mainly in the form of parallel inspections. This approach enables the most comprehensive engagement of the potential of audit institutions in their work using unified agreed-upon audit criteria, and, which is of especial importance; it enables working out harmonized proposals for national governments. Most audits of this type are carried out under the auspices of the EUROSAI Working Group on Environmental Auditing.

The practice of carrying out such type of audits in 2006 has revealed their exceptional value at the stage of preparation of final documents (minutes, memorandums, etc.), as it is general assessments that serve the base for developing appropriate appeals to national governments.

Audits of such type may include the following arrangements:

- parallel audit of the use of the funds of the budget of the Russian Federation and budgets of constituent entities of the Russian Federation allocated for financing reproduction, protection of forests and forest fire extinguishing in the border regions of the Russian Federation and the Republic of Kazakhstan (parallel with the Accounts Committee for Control over Execution of the Republican Budget of the Republic of Kazakhstan).

In the course of the audit, the experience of intensive management of forestry in the Altai Territory, Russian Federation, was studied, which was based on international practice, which enabled preservation of the ecological and resource potential of forests and preserving their biological diversity. One of the recommendations to executive authorities was to share the said experience. Based on the estimated public expense for public administration, a conclusion was made on the necessity of financing regulatory bodies to the full extent, including funds allocation for certain forest protection measures such as fire fighting, forest reproduction and proper technical support.

- VFM audit of the use of public funds allocated in 2002–2003 for the implementation of environmental protection measures ensuring the fulfillment of the Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention) in the Kaliningrad Region, Saint-Petersburg and Leningrad Region (within the framework of international parallel audit).

The outcomes of the audit allowed us to detect the shortcomings in the management of execution of the Convention, and primarily, the lack of federal program documents on its implementation to estimate the amount of actual financing, as its current level is insufficient and does not allow to fulfill the obligations of the Russian Federation resulting from the Helsinki Convention to the full extent. In this context, the appropriate presentations on corrective measures were sent by the Accounts Chamber of the Russian Federation to executive authorities. A report on the audit within the framework of the II parallel audit of fulfillment of the provisions of the Convention on the Protection of the Marine Environment of the Baltic Sea was sent to the EUROSAI Working Group on Environmental Auditing.

- parallel audit of transboundary waste movement between the Russian Federation (the Kaliningrad Region) and the Republic of Poland in 2001–2005.

The audit showed that the current regulatory and legal framework in Russia, as well as the level of public financing of corresponding measures generally allow the competent executive authorities to settle the problems concerning control over the transboundary waste movement at the territory of the Kaliningrad Region, including waste movement through Poland. However, the audit revealed the imperfection of the international legal control of the waste removal issues owing to the lack of sanctions for legislation violation. This issue is critical in

the light of the forthcoming entry of the Republic of Poland to the European Union which will entail growth of the volume of waste moved as predicted.

- parallel audit of the use of catching quotas for water biological resources allocated in 2004–2005 to the Russian Federation and the Kingdom of Norway in accordance with the decisions of the Mixed Russian-Norwegian Fishing Committee (in parallel with the Office of the Auditor General of Norway).

That audit analyzed the activity of Intergovernmental Fishing Commission based on the common approved criteria, determined the efficiency of implementation of bilateral agreements aimed at preservation and rational use of water biological resources in the Barents and Norwegian Seas. In connection with information on numerous facts of illegal fishing (poaching) leading to a significant reduction of fishery resources, this audit is essential both for Russia and Norway. The audit outcomes contributed to the development of legal, institutional and economic measures, the implementation of which will enable the involvement of the existing public regulation mechanisms, as well as public control in the field of fishery and water biological resources preservation. The parallel audit is scheduled to be completed in June 2007, with the approval of the final memorandum by joint decision of the Accounts Chamber of the Russian Federation and the Office of the Auditor General of Norway.

- parallel audit by the Accounts Chamber of the Russian Federation, the Accounts Chamber of the Azerbaijan Republic and the Accounts Committee for Control over Execution of the Republican Budget of the Republic of Kazakhstan, aimed at auditing the efficiency of the use of water biological resources of the Caspian Sea, as well as of the funds allocated to protection, preservation, reproduction and rational use the sturgeon recourses (Acipenseridae).

The heads of supreme audit institutions of Caspian states have signed a final protocol based on the results of the audit, with general unsatisfactory estimation of the level of interstate coordination of the activity in such critical for preservation the unique Caspian ecosystem fields as environment monitoring; ecological, sanitary and epidemiological security; prevention and elimination of emergency situations. The protocol has also noted the necessity of revising and signing an intergovernmental agreement on the preservation and use of the Caspian Sea biological resources to establish a legal base for fishing industry management in the Caspian region, primarily in terms of protection, exploration and reproduction of fishing resources. The report also admits the necessity of undertaking joint efforts aimed at increasing the efficiency of the use, preservation and reproduction of the Caspian Sea biological resources and consolidating the efforts of all Caspian states in struggle fight against poaching, ensuring of comprehensive scientific research of biological resources and the use of artificial reproduction for their preservation.

Based on the experience of international cooperation between supreme audit institutions, a conclusion can be made that their cooperation becomes closer and closer year after year. This is no surprise, allowing for the expansion of the scope of international financial circulation and exchange of commodities. Whereas it was only information exchange that was carried out earlier, general audit criteria are worked out today, and joint audit programs are developed reflecting unitary tasks and purposes. In this context, of special significance is the activity of the INTOSAI Working Group on Environmental Auditing implementing the standardization of joint and parallel audits.

2. The second important element of the activity of the Accounts Chamber of the Russian Federation in the field of public financial control is the practice of carrying out audits jointly with audit institutions of constituent entities of the Russian Federation. This aspect is especially critical in the light of the fact that natural resources are the fundamental of the life

and activity of the people living in the appropriate area, as stated in the Constitution of the Russian Federation.

The following measures have been taken in this regard:

- monitoring of the legality of arranging and carrying out privatization as well as the efficiency of the use of the federal property, including the implementation of license agreements and fulfillment of provisions for earth interior use with the account of expenditures of the federal budget funds allocated to the reproduction of the mineral and raw material base in 2004 in the Republic of Sakha (Yakutia) (in cooperation with the Control Committee of the State Assembly of the Republic of Sakha (Yakutia)).

The participation of the external audit authority from the Republic of Sakha (Yakutia) in the audit ensured detailed analysis of the Republic's legislation regulating the legal relations in the field of licensing and earth interior use in terms of conformity with the Constitution of the Russian Federation and federal legislation, as well as the assessment of the activity of executive authorities. In particular, nonconformity of individual normative and legislative acts with the federal subsoil legislation on earth interior was pointed out; the control over the state geologic information fund was not adequately provided. An expert estimation of budgetary losses due to the above mentioned shortcomings was carried out.

- Audit of the arrangement and the efficiency of managing water resources of the Russian Federation (jointly with audit institutions of the Volgograd and the Nizhniy Novgorod Region and the Republic of Dagestan).

Water consumption indices in the Russian Federation indicate an extensive development of the water utilization system. Whereas the volumes of water intake and utilization have reduced more than by one third, the water losses versus the consumption volumes remained practically unchanged and constituted 8 cubic kilometers in 2005, or one tenth of the total intake. The fact was also noted that the sanitary state of a significant portion of water bodies used for drinking water supply and recreation was unsatisfactory, more than one third of surface sources water intake structures having no sanitary protection areas. It was found that the reasons for the unsatisfactory situation are the lack of systematic approach to the management of water resources, inexpedient system of financing the measures for maintenance of hydro-technical facilities in a safe state and reduction of technogenic risks (there is no insurance mechanism against such risks established or functioning). It was also found that the economic potential of hydropower resources is underused. Electric power production by hydropower units is more than 170 bln kilowatt-hour per year, which is 20% of the energy potential available.

In cases concerning estimation of the efficiency of implementing specific state projects or programs, the Accounts Chamber of the Russian Federation carries out topical audits, for example, the audit of the use of the federal budget funds allocated to the implementation of "*Water Resources and Water Objects*" sub-program of the "*Ecology and Natural Resources of Russia*" target program, (2002–2010).

The participation of external audit bodies of constituent entities of the Russian Federation in such events is also vital due to the changes in the legislation on local government and in the budgetary financing system concerning the transfer of the state management functions, primarily regulating nature management, to the level of the constituent entities of the Russian Federation and the local government with assignation of the appropriate centralized financing. Reasonable cooperation between external audit institutions of all levels is especially critical in the situation of implementing major projects, or program arrangements providing for co-financing of expenditures from all levels of budgets. In this case, it is impossible to estimate

the efficiency of the use of resources without assessing the overall cumulative activity of all participants.

The cooperation with public audit authorities of foreign countries and constituent entities of the Russian Federation in the field of nature management and environmental protection is of high priority for the Accounts Chamber of the Russian Federation.

It is necessary to address such an important aspect of joint and parallel audits as the implementation of their results. The Accounts Chamber of the Russian Federation has positive experience when the results of the parallel audit carried out together with the Accounts Committee of the Republic of Kazakhstan on forestry problems were considered in the form of a telebridge between Moscow and Astana. This allowed to extend the target audience, parliament members first of all, and to promptly turn the lawmakers' attention to the imperfections in the field under consideration.

Experience and recommendations of the Accounts Chamber of the Russian Federation

The systematization of the results of nature management and environmental protection audits of the Accounts Chamber and the practice of carrying them out in cooperation with other external audit bodies, including those from foreign countries, allows us to come to the following conclusions.

- It would be expedient to ensure a broad presentation of the outcomes of audits in this field, taking into account the necessity of informing the public on the results of external audit as one of the basic tasks of external audit bodies.
- It is also necessary to ensure direct interaction with citizens and civil organizations providing them information on the measures taken and discussing with the general public the most problematic sphere of the public sector of economy requiring additional audits and investigations.
- It is necessary to continue the work associated with the development, adjustment and approval of international audit standards, including methodical support for environmental audit carried out in the form of inspection, and with the analysis of the mechanisms used by public organizations to investigate the observance of national legislation and international agreements on environmental protection and implementation efficiency of the programs in this field. The last example of harmonizing 4 documents worked out by the INTOSAI Working Group, namely *“Auditing Biodiversity: Guidance for Supreme Audit Institutions”*, *“Cooperation Between SAIs : Tips and Examples for Cooperative Audits”*, *“Evolution and Trends in Environmental Auditing”*, and *“The World Summit on Sustainable Development: An Audit Guide for Supreme Audit Institutions”*, is obviously a positive factor in harmonizing national standards of SAIs.
- We need financial expertise of draft laws and monitoring of the current legislation regulating legal relations in the field of nature management and environmental protection to ensure the efficient use of public resources and public property.
- As to the interaction with control accounts authorities of constituent entities of the Russian Federation and municipal-level audit bodies, it would be advisable to improve the information exchange between them and the Accounts Chamber of the Russian Federation, as well as to develop advanced information technologies in the course of audits and expert analyses. To ensure information and methodological support for the control vertical of public financial control, it is necessary to establish a unified information system through integration basic regional information resources.

- It is necessary to further develop cooperation with supreme audit institutions of foreign countries within international organizations (INTOSAI, EUROSAI, ASOSAI, etc.), which is vital owing to the fact that the issues of the use of natural resources and environmental protection are specified by many intergovernmental and international documents, which create the base of short-term initiatives of the Accounts Chamber of the Russian Federation, such as:
 - parallel audits of the use and preservation of marine biological resources of the Atlantic and Pacific Oceans regulated by international and regional fishing conventions;
 - parallel value-for-money audit of the use of public and other funds for utilization and rehabilitation of water resources and for protection of transboundary water facilities of the Amur river shed.
- Working out appropriate recommendations at the international level seems to be live issue to provide the public with objective information on the activity of external audit bodies, as well as to estimate the efficiency of the audit activity in connection with the decision of the 19th UN/INTOSAI symposium.

The Role of SAI's in Environmental Governance: What can SAI's do? The Experience of the Turkish Court of Accounts and Some Suggestions (Turkey)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Author: Derya Kubali, The Turkish Court of Accounts

In this paper, we review three topics:

First, we look at the role of SAIs in environmental governance. We find in particular SAIs can make important contributions in this area because they are in a unique position as national supreme audit institutions that can see the big picture.

Second, we touch upon the experience of TCA in environmental auditing. We briefly state the results of the last two audits in this area, covering the protection of forests and coasts.

Third, we consider the lessons from our experience. We also draw from our colleagues' experience. These include lessons such as ensuring coordination among the various levels of government, leveraging the power of media and improving the relations between SAIs and their parliamentary committees.

SECTION 1- THE ROLE OF SAI's in ENVIRONMENTAL GOVERNANCE

Promoting Efficient Environmental Governance

As Supreme Audit Institutions (SAI), we are duty bound to promote and ensure efficient use of our natural resources and environment. In some cases, these are explicitly stated in our laws and institutional framework. For some other countries, their SAIs have not yet been explicitly assigned legal responsibility for environmental auditing. Nevertheless, the trend is clear. People would generally like their governments to pay more attention to environmental problems. As SAIs, we should take leadership and should be proactive in addressing the accountability with regard to environment issues.

This is not an elitist approach. Environmental problems threaten the future of our civilizations. The cumulative mass of scientific studies have shown that the damage to environment by human activities have been a lot higher than the earlier naive estimates. Jared Diamond, in his book titled "*Collapse*"¹, gives many examples of societies which have been wiped out while their neighbors have survived. A fundamental pattern that emerges is the depletion and squandering of natural resources, such as cutting of the last tree in some old countries. Diamond does not ignore other factors such as climate change, change of trade routes etc. Yet his message is clear. Environmental problems, such as depletion of fisheries, deforestation, reduction of biodiversity have taken the ultimate toll for some historical civilizations. History indicates that environmental problems threaten the future of our current societies as the world population and the use of natural resources has grown exponentially.

What are the important environmental problems? First, we are depleting or destroying these natural resources: Natural habitats, wild food sources, biological diversity and soil. Natural habitats such as forests, wetlands, coral reefs are being lost at an accelerating rate. The losses of rainforests are especially alarming as they are now recognized as the "lungs of the world". Wild foods are being depleted; many important fisheries have already collapsed. The loss of biological diversity is now understood to have very serious effects percolating along the

¹ Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed*, Viking Press, 2005.

ecosystem chains. In addition to these, we are depleting the important sources of energy (oil, gas, coal) and freshwater. We are releasing harmful chemicals to environment, releasing an amount of CO₂ to atmosphere at a rate that is changing the global climate patterns. On top of these, we are increasing our consumption levels and our numbers.

Can these problems be solved? These are global problems but their resolution calls for actions at local, national and global level. If we look at the picture today, we can identify many different types of institutions involved in protecting the environment. What is the role of SAIs in this picture? Let's look at the subject of environmental auditing and monitoring in particular as this is what SAIs can do in particular to help resolve the environmental problems.

The Role of SAIs in Environmental Auditing and Monitoring

The role of a SAI is to respond to the expectations of citizens by providing independent, credible, and objective verification of the information provided by the government agencies with respect to their activities and their impact on the environment.²

The audit results presented by SAIs may contain a relatively up-dated picture of the situation and cases examined, proving useful at various levels. Recognition and definition of the problems is the point of departure for all efforts to protect the environment and overcome these problems. This need to recognize and define has compelled almost every country to better define its environment, the problems connected with it and to audit the responsible agencies in order to gather information on this subject and to take necessary measurements. Such need has also been felt in Turkey.

If we look at the news today, we observe most voices on environment come from NGOs and international organizations. SAIs have been quiet on this subject until the 1990s when the INTOSAI WGEA (Working Group on Environmental Auditing) has been established. We must admit however SAIs have not yet taken a leadership role in this subject.

If SAIs do not step forward and take leadership role in environmental monitoring, this role would continue to devolve from national governments to NGOs and International Organizations (IOs). For some, especially for those who have been disillusioned with the limited progress in environmental issues, this course of developments is normal and preferable. However, we should ask whether this is in fact the best way forward. We propose that it would be much better if the environmental policies are implemented by national governments who have the trust of their citizens and consequently, environmental monitoring is implemented by national organizations who ultimately answer to their citizens.

Indeed, the activities of SAIs so far and the progress achieved by INTOSAI WGEA have been impressive and supportive of our conclusions.

The WGEA has achieved:

- understanding that reveals on the irregularities which have been found can result in making more efforts by governments for the execution of the environmental legislation being in force;
- increasing openness in presentation of environmental audit findings, which reflect the awareness that all the countries face similar issues of meeting environmental standards and commitments.

SAIs contribute to environmental governance in the following aspects:

1. SAIs help improve the accountability.

² INTOSAI WGEA, Environmental and Regularity Audit, 2004, p.22.

2. SAIs can monitor the adherence to international environmental agreements.
3. SAIs' work can complement the work performed by NGOs and international organizations.

1. Improving Accountability

The audit performed by the SAI seeks to promote accountability of the executive to the legislature. The public needs to have confidence that there is sufficient government machinery to hold the performance of official bodies to account where there are failings, and to identify lessons for the future.

Accountants and environment audits:

Gray (1991) makes a definitive stand regarding the involvement of professional accountants in auditing the environment. According to him, a matter as ubiquitous as the environment requires a multi-disciplinary approach and accountants are professionally exposed to such approaches in the course of their work. Accountants are not just experts in numbers, but also in the evaluation of information systems and evidence which enable formation and expression of an opinion regarding matters arising in the course of their audits. In addition, auditors in the SAI's have expertise in auditing for economy, efficiency and effectiveness; and this makes them particularly suitable for making useful comments on information bases which are not presented in standardized formats like the Annual Accounts. Besides, environment audit incorporates elements of accounting as it is a means of measuring and whenever possible costing an organizations operations against a predetermined set of criteria.³

2. The importance of auditing international environmental agreements

Especially since the 1972 United Nations Conference on the Human Environment held in Stockholm, the international environmental agenda has grown, and with it the number, diversity and scope of international agreements. There are now more than 200 major international environment agreements and this number is growing steadily.⁴ There is also growing interest on how well the international environment agreements actually perform. Although the last few decades have been marked by the emergence of a number of environmental protection regimes in the international arena, we know little about the effectiveness of these regimes.

Nowadays there has been growing recognition that for international environmental agreements to accomplish their objectives, greater attention must be paid to ensuring that the nations who are party to them actually carry out their obligations.⁵

The Dilemma of International Environmental Protection

Environmental problems provide a set of cases in which widespread cooperation is both important and quite difficult. Most international efforts to address environmental problems involve international law – how does such law function? Solving the problem is difficult, mostly because of the ferocious debate over how to do it.

It is not a stretch to claim that the international treaties and conventions on environmental protection have not been very successful. A pessimistic observer notes that "*Thus far, the*

³ Gray, *The Accountancy Profession and The Environmental Crisis (Or Can Accountancy Save The World)*, 1991.

⁴ John Birger Skjaereth, The Fridjof Nansen Institute, "*The effectiveness of international environmental agreements*", EUROSAI, Environmental Audit Seminar, Norway 14-16 May 2001, p.17.

⁵ Canada, 1998 Report of the Commissioner of the Environment and Sustainable Development, *Working Globally – Canada's International Environmental Commitments*, 1998.

climate convention is not protecting climate, the biodiversity convention is not protecting biodiversity, the desertification convention is not preventing desertification, and even the older and stronger Convention on the Law of the Sea is not protecting fisheries. Nor are they poised to do so. The same can be said for the extensive international discussion on world forests, which have never reached the point of a convention."⁶ While the results so far are disappointing for desertification, deforestation, marine protection, management of toxic substances, there have been some improvements in select areas. These include the stratospheric ozone regime, the European acid rain treaty; the regulation of marine pollution from ships. Climate change and biodiversity have led to some changes in national policies, however the changes are not considered meaningful enough to reverse the deep-seated problems.⁷

Many international environmental agreements have monitoring mechanism. Monitoring can determine both procedural compliance and effectiveness –that is, whether outcomes intended is being achieved. In the past, most monitoring activities focused on whether nations have implemented processes to transform their international obligations into acceptable rules within their domestic legal systems. However, it is also important to ensure that the implementation of domestic policy or laws that conform that the agreement's goals are effective indeed. Information on the implementation of and compliance with international environmental agreements is spread throughout the various branches and divisions of departments with implementation responsibility. Many countries do not have an overall picture of the extent to which they are meeting their international obligations.

Recent studies show some reasons for the limited nature of monitoring. One possible reason is the concept of state sovereignty, which has resulted in nations not being willing to accept external sovereignty. For this reason, nations avoid any potential sovereignty questions that could result from external monitoring. However, partly because of the problems of low reporting rates and quality of reported data the effectiveness of such self-monitoring provisions is questionable. But poor reporting in developing countries is often related to a lack of financial and technical resources to gather data. Beside international environmental agreements generally do not provide specific authority or adequate resources to carry out an effective monitoring function.⁸

International organizations (IO's) are very valuable institutions in regard to implementing environmental policies. The enormous help provided by IOs such as the technology transfer, advice, assistance, scholarships cannot be ignored. Yet, IOs cannot be as efficient as national institutions in environmental protection. IOs do not have the dynamism and gravitas of national institutions. For most people, IOs are remote organizations. They do not respond to individual people. For example, citizens cannot submit petitions to IOs for actions or file complaints for noncompliance with environmental laws and regulations. Such avenues are available to citizens at national level at least for some countries (e.g. Canada). International agreements on environment cannot be considered in isolation from the economic, strategic concern and diplomatic relations. At a minimum, these concerns lead to a diminished trust on the effectiveness of IOs. At worst, the governments provide lip service to environmental concerns by signing several international agreements on environmental protection but not following up with the implementation and auditing. The result is that some countries have ostensibly the stringent laws and standards on the world for air pollution, but these laws

⁶ J. G. Speth and P.M. Haas, *Global Environmental Governance*, Island Press, 2006.

⁷ P.M. Haas, *Institutions for the Earth: Sources of Effective International Environmental Protection*, MIT Press, 1995.

⁸ GAO, "*Literature on the effectiveness of international environmental agreements*", *International Environment*, May 1999, p.15.

remain on paper as these laws and regulations are not implemented and their practice audited. This problem also manifests itself in Turkey.

3. Complementing the Role of NGOs

In the last several decades, NGOs have taken the leadership role in environmental issues and succeeded spectacularly in many instances in drawing attention to environmental issues and helped address them. They are now considered active political actors in environmental agendas. In *Environmental Activism and World Civic Politics*, Paul Wapner⁹ estimates that “there are over 100.0000 NGOs working, in some capacity, for environmental protection, and a majority of these are activist groups. Perhaps more impressive than numbers, the scope and power of these has dramatically increased. The budgets of the largest of these groups are greater than the amounts most countries spend on environmental issues and at least double what the United Nations Environment Program spends annually for its work.”

NGOs have emerged because the actions taken by national governments have been behind the collective desire of at least certain segments of societies. In fact, a frank assessment of the state of affairs should state that government actions have been certainly lacking in addressing environmental problems. Moreover, in some circles, the governments are considered to be part of the problem alongside with “international conferences, agencies and bureaucracies.”¹⁰ It is fair to say that governments at least have a credibility problem on environmental concerns.

Does this mean, we should leave the environmental issues to NGOs? No matter how successful they are, NGOs cannot provide all the answers. In her book titled “*A New World Order*”, Anne-Marie Slaughter indicates¹¹ governments have to be part of the resolution of environmental issues as they are the actors who can be held to account through a variety of political mechanisms. In most democratic countries, citizens can hold those in positions of power responsible for bad environmental governance and reward those that have been efficient in addressing environmental problems. We should acknowledge the differences in practices and the extent of democracy across different countries. In the bottom line however, the governments need to gain the trust of their citizens if we want to help solve the problems of environment.

This is why the role of SAIs is very important. Through environmental auditing, we SAIs can ensure the laws and regulations adopted by our parliaments and governments will not remain on paper. Once the citizens trust that their wishes are acted upon by their government, they might also be less cynical and be more willing to help and participate in addressing the environmental problems.

The Lessons

What is the best way for SAIs to achieve their goals toward this end? To answer this question, we should look at the collective experience of SAIs and draw lessons from these.

SAIs worldwide indeed have collectively performed over several hundreds of environmental audits since early 1990s. These audits cover a wide set of subjects involving:

Air pollution, Biodiversity, Climate change, Ozone layers depletion, Disaster management, Energy, Environment & human health, Forests, Fresh water, Industrial pollution, Natural resources, National parks & recreation areas, Noise reduction, Pesticides, Pollution prevention, Radioactivity, Fish stocks, Marine pollution, Soil

⁹ P. Wapner, *Environmental Activism and World Civic Politics*, State University of New York Press, 1996.

¹⁰ R.D. Lipschutz, *Global Environmental Politics* CQ Press, 2004.

¹¹ A.M. Slaughter, *A New World Order*, Princeton University Press, 2004.

pollution, Traffic & transportation, Waste management and environmental management work of internal departments.

This is a substantial body of experience. It is quite important to share our experiences and impart on ourselves the collective wisdom of all this work.

SECTION II—ENVIRONMENT AUDIT EXAMPLES PERFORMED BY TCA

TCA's Mandate

As the ecological awareness of the community grew and ever more extensive legal infrastructure in the field of environment protection came to exist, the TCA adjusted its audit programmes to new public and legal requirements.

Environmental policies of development plans evolved from a passive stance of cleaning up in the aftermath of pollution, to more improved strategies that envisage prevention and incorporate the concept of sustainable development, which requires integration of environmental, economic, and social policies.

Progress has been made in developing legislation with a view to address environmental problems and to strengthen the institutional structure for environmental management. Despite these positive developments, however, there are deficiencies in the environmental management system, in particular, enforcement of legislation, sustainable management of natural resources, integration of environmental policies with economic and social policies, and utilization of economic instruments.

Turkish Court of Audit has a very wide mandate in terms of attributions for the audit of public management. One of the major reasons for the 1996 review of its competences was the desire to progress from regularity and compliance audits to economy, efficiency and effectiveness audits with a view to improving the performance of the public sector in general and the administration in particular. So, TCA has clear mandate and jurisdiction for regulatory and performance (economy, efficiency and effectiveness) audit under the TCA Act.

In particular, TCA is responsible for auditing the enforcement of national legislation on environmental protection. TCA monitors also the government's adherence to the international agreements it signed.

There is no special department in TCA for environmental audits. This work is an integral part of performance audit. However, the capacity to undertake environment audit is increasingly developing over time.

Current Progress

Some of the recent audits performed by TCA concerned *marine pollution from ships, protection of forests* and *protection of coasts*. Our results from these audits:

The findings of the audit on the **protection of forests** have identified the following:

- The law allows that degraded areas of forests may be converted into alternative use for public benefit. However, there exist arbitrary rules on how to define "*public benefit*". Consequently, these rights have been abused or misused, resulting in the conversion of forests into uses such as sports facilities, universities, trash collection areas etc.
- The destruction of forests stem mostly from the high value of land. Forests, especially those near the economically very active and touristic sites have been cleared in most cases illegally.

- The legal boundaries of the forests have not been defined in the national land registry and as a result, it is been hard to reverse illegal clearings.
- Sadly, it has been very hard to reverse the illegal constructions once they have been built. In some cases, even the legal court decisions could not be enforced.

The main lesson from this audit has been communicated to public and Parliament:

- The forest boundaries must be identified and recorded on Land Registry.
- To help prevent abuses, the government must change the regulations governing decisions on conversions of degraded forest areas into alternative uses; these must incorporate objective and scientific criteria.
- Before bringing municipal services such as water, electricity, wastewater into new areas, the local authorities & municipalities must check with other agencies whether these areas comply with the zoning laws and environmental regulations.

The findings of the audit on the **protection of coasts** were similar:

- Illegal and semi-legal buildings occupy large segments of the coasts where the land is valuable. Most of such building activity takes place on the lands that belong to Treasury. The access to beaches is sometimes limited to public by private users.
- These infringements persists despite the Constitution which specifically gives the government a duty to protect the coasts and states the coasts can be used only for public benefit and despite a large set of laws and regulations.
- Clearly, the laws are not being enforced by public authorities in sufficient capacity.
- In many instances, it is the municipalities & local authorities who violate the laws and permit and sometimes undertake the illegal construction. For example, the sea fills are used by select municipalities for roads, ports, new buildings almost arbitrarily.
- Among the institutions responsible for the protection of coasts and environment, there are conflicts and confusions with regard to the extent of their authority. Such conflicts are an important factor (among the other well known factors such as corruption) in limiting the effectiveness of measures to protect the coasts. Some authorities defer their duties and tasks to others, after interpreting the laws and regulations in their favor.

TCA has made several suggestions to improve these problems:

- The current set of regulations must be simplified. The authorization on the use of coasts must be given to a single institution. The Parliament and government should make such changes to ensure all the authorities involved act in cohesion.
- The use of coasts must be preconditioned on obtaining permits which would ensure the protection of environment and the right of public to free access to coasts.
- The exact layout of coasts must be recorded in Land Registry. Satellite imagery and aerial photographs should be used to map the exact boundaries of coasts.
- It would be very helpful to establish a computerized information system and database on the structure and layout of coasts which all public authorities can access.

SECTION III—HOW TO IMPROVE THE PRACTICE OF ENVIRONMENT AUDITS

We can draw valuable lessons from the work performed by SAIs on how we can improve the practice of environmental audits. In the past seminars, we have observed that there exist indeed common challenges to environmental audits across SAIs. These involve issues such as the lack of expertise, the lack of institutional support in the organization, resistance to changing the emphasis of SAIs from financial audits to performance audits and environmental audits.

Based on our experience at TCA and from what we learned from our colleagues, we can suggest some solutions to these common challenges. These solutions would involve:

1. incorporating environmental audit and monitoring in SAI's strategic plans
2. following the general guidelines for assessment of environmental policies
3. effective use of international resources
4. leveraging the force of media
5. more efficient interaction with our parliaments
6. coordination and delineation of responsibilities among public authorities
7. incorporating best practices and benchmarking and guidelines/

1. Incorporating Environment Audit in SAI's Strategic Plans

A SAI's environment audit strategy must spell out its overall goal and define its specific objectives. The overall goal can only be achieved if the intermediary objectives are reached. There is a strong relationship between the two. By establishing a long term strategy with regard to environment audit we can conquer the challenges that we face.

Although there is no official document that provides information on the environment audit strategy, the way in which it will be implemented and the instruments and provisions to do so the audit teams at TCA use some selection criteria for auditing.

Line of reasoning (selection criteria):

As for international environmental agreements, it is impossible for SAIs to audit all them which their governments have ratified since there are too many. For effectiveness of audits the subject of audits should be chosen systematically. There are some selection criteria for auditing:¹²

- available information on an agreement;
- signs of non-compliance with an agreement;
- environmental risks underlying an agreement;
- obligation to comply with an agreement;
- period of implementation of an agreement;
- strictness of an agreement;
- importance of the subject and timeliness of an audit report.

¹²Floris Roijackers, The Netherlands Court of Audit, "Criteria for selection of international agreements and conventions to be audited", EUROSAI, Environmental Audit Seminar, Norway 14-16 May 2001, p.51.

Based on the collective experience of we can also suggest that our audit work should focus on few selected main issues. It is not realistic to audit all aspects of a subject as grand as environmental problems. For developing countries, the focus should be based on how to achieve sustainable development. For example, the air pollution is not a critical issue in rich countries but it remains an extremely important problem in many developing countries. Further, the audit subjects must be concordant with the central policy decisions and the concerns of our Parliaments and citizens.

2. Following the General Guidelines for Assessment of Environmental Policies and Practices

What is the right approach for assessing environmental policy? Four basic ways are identified for evaluating the policies and practices of the authority:

- measuring the actual impact of policies on the ground level;
- estimating the impact of policy on every elements of environment;
- comparing the policy with best practices, if it exists elsewhere;
- assessing the effectiveness of the management systems that reflects the policy clearly.

Measuring the actual impact links with the policy oriented environmental study; identifying indicators provide a measure of policy success or failure. If the target for each indicator is stated in detail, the task of assessment will be easier. It is desirable to evaluate performance clearly by examining actual outcomes. In the long run it may be essential that all spheres of the policy be monitored and reviewed the procedures carefully, but in the short run it is not practicable. The reality is that only a limited number of key variables can be systematically monitored.

The professional services can be utilized for systematic estimate of policy impacts through the use of matrix. These matrixes –checks and balances—are valuable and contribute to the monitoring process. It may, however, hit or miss and there may be a possibility that a potential and critical impact elude the notice because these impacts are not on the top of the political agenda.

The common way of assessing the content of practices and policies is to compare them with some influencing qualities. Checklists of the model policies can be prepared to meet the purpose.

The significant advantage of a straightforward comparison with good practices is that it is quick, directional and pointing the way forward. The limitation is that it does not assess how far the policy is being translated into action. In many circumstances the content of policy may be assessed with less significance than the authority ability in successfully implementation of the policy.

Assessing the management system focuses on human behavior and organizational structures rather than policy content or direct environmental impact. The auditor's questionnaire may include the question 'Are there expressly stated environmental objectives?', 'Are there programmes or strategies for achieving them?', 'Are the responsibilities clearly defined for implementing the programme?', 'Are there effective monitoring and review procedures?' By applying this approach it is assumed that people involvement matters most and whether they have appropriate goals and values and also whether the institutional framework permits them to be effective. Hence the key to improved performance is organizational culture and well

awareness of the staff. If the attitude and the framework are taken in the right direction, the right decisions will certainly flow.

3. Effective Use of Resources

Environmental problems require expertise and sometimes significant resources. The polls of SAIs undertaken by INTOSAI WGEA have frequently indicated one of the major impediments to environmental auditing is the lack of expertise in the corresponding SAI.

Training will help us improve our competence in environmental auditing. Competent work by highly qualified auditors will be a credit on the profession.

On each environmental issue, we can find experts on technical matters. And remember that environmental problems are global problems manifesting themselves in various degrees in many countries at once. In other words, the problems are not unique. The sharing of best practices would also be enormously helpful to each of us. We can for example point to our experience. We, in Turkey, have benefited quite a lot from the experience of other countries.

4. Leveraging the Communication Channels and the Force of Media

Our experience has shown that audits on the environment draw significant media interest.

SAIs should recognize the role played the media in informing the public about government operations and should take steps to ensure that media representatives are aware of significant audit reports. A competent and proactive media is crucially important for the effective implementation of audit results, as the public at large is most unlikely to be interested or directly competent to interpret the audits.

We should provide a summary of our reports on environmental audits and distribute them to press. We should also make them available on our web sites. If we can update the status on the implementation of our suggestions, it would also help the public to trust us.

5. More Efficient Interaction with Parliaments, Reporting to Parliamentary Committees

Ideally SAIs and Parliaments are both elements of a balanced system of accountability of government.

INTOSAI Lima Declaration states that to report SAIs findings to Parliament will ensure extensive distribution and discussion and enhance opportunities for enforcing the findings of the SAI. Parliament can perform its functions most effectively when it uses SAI auditing works. An SAI can also be much more effective when Parliament through its committees provides both a forum for discussion of SAIs audit findings and in taking appropriate corrective actions.

We note that in order to cultivate this special working relationship with parliamentary commissions, we need to pay special attention to certain matters:

- We need to report our findings in objective criteria.
- We must avoid the appearance of interference with the policy setting rights of the parliament and government.
- We must stay neutral on politics; avoid any political statement that can tarnish our reputation as an objective and independent expert.
- We should be concise in our reports and presentations to Parliament if we do not want to see our reports not being read and acted upon.

- We need to follow up on the results of previous audits and inform the commissions on any important developments and inaction on important problems.

So that relationships between SAIs and PAC are professional we should review our system of SAI and Parliament relations.

6. Coordination and Delineation of Responsibilities among Public Authorities

The subject of environmental auditing involves a variety of institutions by its nature. Not only the central government but also the local governments at regional, city and municipality levels have various degree of responsibilities and duties. In addition, there are many public and private institutions with various degree of involvement in the environmental subjects. All these institutions and a myriad of regulations may lead to confusion and a lack of coordination in implementing the environmental policy and laws of the country. A further factor that complicates environmental auditing is the fact that SAIs may not have auditing powers at local or regional levels.¹³

Current environmental structures in Turkey for handling environmental policy are complex. This is hardly surprising. Contemporary environmental concerns do not readily fall into discrete categories which can readily be handled by a single government department or body. They can legitimately encompass local issues, such as noise, waste disposal or river pollution, which may have immediate impacts on individuals and local communities, but they also raise wider, longer-term challenges such as biodiversity, transport patterns, resource use and, in the global context, climate change which are bound to cut across the interests of many departments.

It is sometimes still all too easy for officials and others to view the environment in a narrow way and assume it falls outside their sphere of interest. Within Turkey many policy issues with profound environmental implications –such as transport, energy, housing and agriculture— either fall within the prime responsibility of departments other than the Ministry of Environment or required a coordinated approach between a number of departments. These types of issues often fall within current concepts of sustainable development.

The complexity of the subject made it difficult to write a report which reflected our work and findings at the right level of detail for its different audiences (i.e. Parliament, the public, the Department and experts in the subject).¹⁴

Due to the importance of these interwoven structures, our recommendations would be:

We at SAIs should spend some time in our audits on the effectiveness of coordination among these authorities. We should not avoid making suggestions at changing this structure. The implementation of environmental policy can be improved by creating a more clear line of rights, duties and responsibilities among the authorities and institutions involved.

SAIs would be especially useful to governments and parliaments in this respect because often there are no other institutions that can look at the big picture. We should keep asking questions such as who has the responsibility, who has the data required and whether these data are being shared on a timely basis among institutions. We should give concrete examples in our audits as much as possible on the results of discoordination and collaboration among public authorities.

¹³Pieter Zevenberger (The Netherlands Court of Audit), "Progress report on environmental auditing since the 15 th Incosai in Cairo 1995", EUROSAI, Environmental Audit Seminar, Norway 14-16 May 2001, p.36.

¹⁴INTOSAI WGEA, "The UK emissions trading scheme: a new way to combat climate change (United Kingdom)", Brazil Compendium Workshop Papers, 30 May-2 June 2004, p.79.

7. Incorporating Best Practices, Benchmarking and Guidelines

It is obvious that we would benefit from the collection of best practices. TCA has been very keen on learning from the experience of other audit institutions.

The guidelines for environmental audit are very helpful especially since it is a new subject. We find the guidelines published by INTOSAI Working Group on Environmental Auditing particularly useful. Some of these are:

- Environmental Audit and Regularity Auditing (2004),
- Sustainable Development: The Role of Supreme Audit Institutions (2004),
- Guidance on Conducting Audits of Activities with an Environmental Perspective (2001),
- The Audit of International Environmental Accords (2001) ,
- How SAIs May Co-operate on the Audit of International Environmental Accords (1998)

We also consider the ISO14010 and ISO19010 series of Environmental Auditing Standards as useful guidelines. Another useful source for benchmarking supranational environmental management systems is the European Union's Eco-Management and Audit Scheme (EMAS).

Finally, we share the view of our colleagues in that we need to pursue the one of the important recommendations of the Rio Summit. Rio Summit called for integrated environmental and economic accounting. The Statistical Division of the United Nations has developed an integrated system of environmental and economic accounting (SEEA) which is already implemented in some countries to account for their natural resources. These involve the collection of data and statistics on items like CO2 emissions, oil & gas and precious metal and mine reserves, water amounts, expenditures for environmental protection.

While some countries have been compiling such data for years, in some countries this has not been given adequate attention. In such cases, SAIs should request such data from the government departments. After getting this data, SAIs can use these data and relevant benchmarks in analyzing the effectiveness of environmental measures taken.

Concluding Remarks

We, SAIs, can make important and unique contributions in the area of environmental governance. The audits performed so far all over the world is the best example of this contribution. Nevertheless, we as SAIs must strive for even a more prominent role because unless we take a leadership role in protecting the environment, nobody can ensure the measures taken to protect environment can be precise. Most importantly, our work on environmental audits can help the governments who, in most instances, have a credibility problem on environment.

To prepare for such a leadership role, we must draw from the lessons of audits performed. Some lessons are clear and obvious for everyone: More training, collecting of best practices, establishment of guidelines, having strategic plans for environmental audits. Some other lessons may not be so obvious. For example, cultivating a special working relationship with parliamentary committees could be very valuable. We should be aware of the power of media and keep the public informed on the results of our audits by creating summaries of our work and making them available to media sources. We should address in our environmental audits the structural and institutional sources of the inadequate implementation of environmental laws and policy. In furthering our work in this area, it would be critically important to have data on environmental subjects compiled. We can then use these data to

make more precise analyses in our audits on the effectiveness of environmental measures taken.

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Auditing Chernobyl-related Aid (Ukraine)

Theme: SAI's Approaches to and Emergency Topics in Environmental Auditing

Auditor: Dr. Valentyn Sumonenko, Accounting Chamber of Ukraine

Chernobyl-related Audits in Ukraine

National audits on the radioactive waste and nuclear safety issues conducted so far by the Accounting Chamber of Ukraine:

- Audit of the State Budget funds utilization allocated for repayment of planned losses of the State Association "Radon" (radioactive wastes; conducted in 2001)
- Audit of the financial support from the State Budget for state guarantees' provision to the employees quitting in the connection with pre-term decommissioning of the Chernobyl Nuclear Power Plant (conducted in 2002)
- Audit of the State Budget funds expenditures in 2002 allocated for execution of actions regarding maintenance of ecologically safe situation in the Exclusion Zone and Zone of Unconditional (Mandatory) Resettlement (conducted in 2003)
- Audit of the State Budget funds expenditures in 2003 allocated for the maintenance of the Shelter Object in secure state (sarcophagus; conducted in 2004)
- Audit of the activities of the Ukrainian State Association "Radon" and Launching Complex "Vector" (conducted in 2004)
- Audit of the State Budget funds utilization allocated in 2002–2004 for implementation of the Comprehensive Program for Radioactive Waste (RAW) Management (conducted in 2005)

Major audit findings:

- Chernobyl accident is unique and has no analogs in the world and thus there is no available technical maintenance of similar objects.
- Ukraine allocated USD 1 billion from the State Budget to elimination of the consequences of the Chernobyl accident.
- About € 1 billion was provided to Ukraine under international assistance projects and Chernobyl Shelter Fund.
- International community provides its assistance and support at the Chernobyl via numerous bilateral and multilateral agreements concluded between Ukraine and relevant Western stakeholders (Memorandum of Understanding, Framework Agreement, SIP etc).
- None of the key international technical assistance projects at the Chernobyl Nuclear Power Plant (CNPP), which are administered by the European Bank for Reconstruction and Development, was carried out.
- Construction activities are delayed from 3 to 7 years in comparison to initial schedules framework.

- Insufficient level of project management resulted in lack of scientifically grounded technical and technological solutions.
- High radiation levels remain and the danger of repeated Chernobyl accident in twenty years renews.
- Chernobyl Shelter Object erected under extreme after-accident conditions is particularly characterized by its potential danger exceeding permitted standards and rules for objects, which contain nuclear dangerous and radioactive materials.
- Around 100,000 tons of highly radioactive wastes, 200,000 tons of medium-radioactive wastes and 1,000,000 low-radioactive wastes need to be secured at the Chernobyl site.
- Due to the Chernobyl accident 50 thousand sq.km of the territory in Ukraine was contaminated with radioactive nuclides and about 2.4 million of Ukrainians live in contaminated areas.
- Ukraine executed its commitments before international community and closed Chernobyl NPP in 2000 thus initiating the process of transforming the Shelter Object into an environmentally safe system.
- National system of comprehensive RAW management was established, priorities and particular tasks within the Comprehensive Program for RAW management were specified.
- G-7 countries and EU established the Chernobyl Shelter Fund, secured grant allocation by more than twenty countries and created the Donor Assembly which developed and approved the Shelter Implementation Plan.

Recommendations drawn upon audit results:

- Urgent need for further coordination and consolidation of joint efforts both at the national and international levels.
- Due to existing limitations in mandate of the Accounting Chamber of Ukraine there is an increasing need for outer help from other SAIs interested on environmental safety.
- INTOSAI is seen as a leading institution joining SAIs' efforts towards improving environmental situation.

Following the results of conducted national audits the mandate of the Accounting Chamber of Ukraine is limited solely to Ukrainian funds allocated to elimination of the consequences of the Chernobyl accident and doesn't cover activities of the Chernobyl Shelter Fund, Chernobyl Donor Assembly and the EBRD. Thus SAI of Ukraine faced the **challenge** of mandate limitation and need for outer help from other SAIs.

Accounting Chamber of Ukraine appealed to SAIs from donor and contributor countries to audit own contributions to the Chernobyl Shelter Fund and presented an idea of establishing Special Subgroup on the Audit of Natural, Man-Caused Disasters Consequences and Radioactive Wastes Elimination within existing EUROSAI WGEA structure.

It took us 2 years of negotiations and open discussions when on November 26, 2006 the Special Subgroup was officially established at IV EUROSAI WGEA Meeting in Luxembourg with its Secretariat in Kyiv.

Upon questionnaire results provided in 2005 by interested SAIs the primary task of the Special Subgroup for 2007–2008 is defined in its Terms of Reference as follows:

- conducting the audits of foreign donor funds expenditures provided to Ukraine for carrying out activities regarding elimination of the Chernobyl disaster consequences by SAIs—Subgroup members in cooperation with the Accounting Chamber of Ukraine.

The International Co-ordinated Audit of the Chernobyl Shelter Fund **is aimed** at evaluating the progress reached while transforming the Shelter Object at the Chernobyl site into an environmentally safe system via carrying out the Shelter Implementation Plan (SIP Project) financed through the Chernobyl Shelter Fund and approved by the Governments of G-7 countries and Ukraine.

9 SAIs (Ukraine—Audit Coordinator, EU, Germany, France, Poland, Russian Federation, Slovak Republic, Switzerland, USA) expressed their principal interest in participating in this International Audit which will be completed in 2008.

Tasks of the International Co-ordinated Audit are the following:

- What are the problems arising in connection with the Project;
- Which activities are carried out to eliminate these problems. Are they deemed sufficient and timely?
- How is the Project management organized?
- How efficient is the Project Management structure?
- How efficient are the Chernobyl Shelter Fund's resources utilized?

The International Audit will result in drawing both national reports by participating SAIs and the Joint Report by the SAI of Ukraine.

Expected Audit results of the International Co-ordinated Audit:

- It will bring some added value in the case of auditing Chernobyl-related aid;
- International community being informed in open and timely manner about audit findings by concerned SAIs;
- Programs and Projects implementation being facilitated at the Chernobyl site;
- Increase of pressure on public authorities in concerned countries to resolve revealed problems;
- Facilitation of audit recommendations implementation on specified urgent topic.

Accounting Chamber of Ukraine could significantly contribute in this relation since we have elaborated methods and some approaches towards operative environmental monitoring.