

ISSAI 5510

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INTOSAI



*The audit of disaster  
risk reduction*

# INTOSAI



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## Part 1: Disaster, disaster management and disaster risk reduction

### 1. Background

- 1.1** The number of natural disasters reported globally has increased considerably over the past three decades. Every year, disasters related to meteorological, hydrological and climate hazards cause significant loss of life and set back economic and social development by years. Between 1980 and 2005, nearly 7500 natural disasters worldwide took the lives of more than 2 million people and produced economic losses estimated at over USD 1.2 trillion. Hazards related to weather, climate or water, such as droughts, floods, windstorms, tropical cyclones, storm surges, extreme temperatures, landslides and wildfires, or health epidemics and insect infestations directly linked to meteorological and hydrological conditions caused 90 per cent of these natural disasters, around 73 per cent of the casualties and 75 per cent of the economic losses.<sup>1</sup>
- 1.2** **Investment in disaster risk reduction** saves lives and mitigates suffering. It can be a significantly more efficient and effective use of resources than **paying the bill for disaster response**. In 2010 Pakistan was hit by the worst floods in its history. The country spent USD 3 billion in relief and recovery and suffered over USD10 billion in damages. According to the Chairman of Pakistan's National Disaster Management Agency, "Had we spent only USD 40 million in making sure our flood infrastructures are maintained, these losses would have been reduced to one-tenth. We would have been able to save a lot of lives, properties and the trauma the affected population went through."<sup>2</sup> Many studies have indicated that disaster risk reduction is highly cost-effective: a dollar invested in disaster risk reduction can save two to ten dollars in disaster response and recovery costs.<sup>3</sup>
- 1.3** These developments have led to changes in international policies concerning disasters over the past decade. Disaster-related aid used to be almost entirely devoted to resources for post-disaster relief and reconstruction activities. In recent years the international community has moved towards new policy objectives to reduce the risk of and prepare for potential disaster. The Yokohama (1994) and Kobe (2005) Conferences and the Hyogo Framework for Action (HFA) have set new objectives and criteria to reduce disaster risk.<sup>4</sup> These are monitored by the United Nations International Strategy for Disaster Reduction (UNISDR) which established the Global Platform for disaster risk reduction and proposed the formation of National Platforms comprising not only the relevant official bodies but also Non-Governmental Organisations (NGOs) and universities. The policy of many governments towards disaster risk reduction has developed in tandem with these international objectives. The goal is to make the world less vulnerable to disasters.

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<sup>1</sup> [http://www.itu.int/net/newsroom/wrc/2012/features/natural\\_disasters.aspx](http://www.itu.int/net/newsroom/wrc/2012/features/natural_disasters.aspx)

<sup>2</sup> See <http://www.trust.org/alertnet/news/interview-pakistan-flood-rebuilding-to-take-at-least-3-5-years/>

<sup>3</sup> See <http://www.ifrc.org/Global/global-alliance-reduction.pdf>, and David Rogers and Vladimir Tsirkunov, The costs and benefits of early warning systems (ISDR and World Bank, 2010), [http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/Rogers\\_&\\_Tsirkunov\\_2011.pdf](http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/Rogers_&_Tsirkunov_2011.pdf)

<sup>4</sup> <http://www.unisdr.org/eng/hfa/hfa.htm>.

**1.4** The following are some of the risk factors contributing towards the occurrence of disasters on a scale which challenges the capacity of government and the international community to manage emergencies:

- population growth,
- increased urbanisation,
- climate variability and change,
- dependency on critical infrastructure,
- the increased mobility of people and goods around the world.

The response has been to develop policies which call for new approaches, new methods and expertise, particularly concerning activities such as:

- identifying risks at different levels,
- making projections of likely consequences and
- devising methods to avoid, reduce, share and prepare for risks.

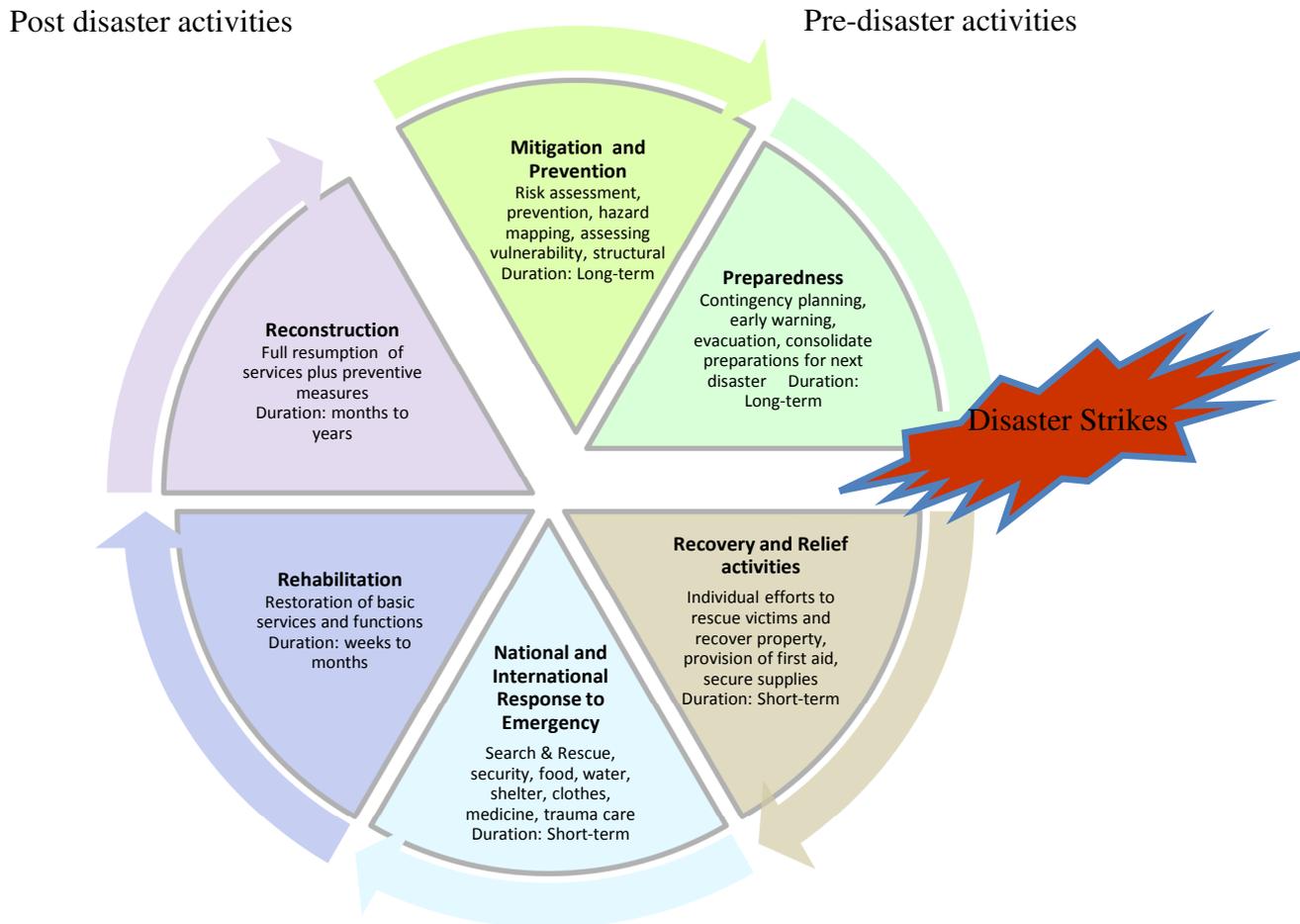
ISSAI 5510 groups together all of these activities under the umbrella concept of **disaster risk reduction**.

## **2. Purpose, scope and structure**

- 2.1** The management of disasters by governments has evolved to take account of disaster risk reduction issues. The approach to auditing disasters has developed accordingly. The purpose of ISSAI 5510 is to assist SAIs in the audit of disaster risk reduction by governments. In some countries governments have not yet accepted the importance of establishing disaster risk reduction policies and plans. ISSAI 5510 assists SAIs in making recommendations in this area. Where disaster risk reduction and risk reduction policies exist, ISSAI 5510 provides advice on how to audit them based on exchanges of experience between SAIs. ISSAI 5510 can be used both by SAIs and by governments and communities seeking to improve mechanisms, procedures and institutions so as to reduce the risk of exposure of populations and assets to the consequences of disasters.
- 2.2** ISSAI 5510 provides advice on the recommendations which SAIs may make regarding the good use of public funds and the value of investing in pre-disaster measures which can greatly reduce the cost of post-disaster activities. When planning an audit, SAIs can consider issues such as the responsibilities of government for ensuring the physical safety of the population, etc. in addition to the cost to the public purse once disaster has occurred.
- 2.3** To assess the appropriateness and quality of disaster risk reduction SAIs may need to use information types and sources which they have not used in previous audits. Examples include geospatial information, information about the probability of events and information from specialist agencies, universities, international bodies and online sources. This is an area in which training may be necessary and about which information can usefully be shared between SAIs.
- 2.4** ISSAI 5510 provides guidance and good practice on auditing disaster risk reduction. Measures in support of disaster risk reduction are carried out in the period preceding a disastrous event. The length of this period depends on the policy approach of governments towards preparing for disasters and on the perceived and actual frequency of occurrence of disasters. Figure 1 highlights the pre-disaster phase of the disaster management cycle. Ideally, disaster risk

reduction measures should always be in place and should be corrected and improved upon as soon as possible following the receipt of new information or the occurrence of a disaster.

**Figure 1: Disaster Management Cycle highlighting the activities of the pre-disaster phase**



Source: Prepared for WG AADA by the SAI of Indonesia

- 2.5** The 5500 series of ISSAIs on disaster-related aid focuses on natural disasters, although the guidance and good practice cited can in most cases equally be applied to man-made disasters. ISSAI 5510 does not cover auditing disaster-related aid provided for emergency response and relief, rehabilitation and reconstruction (the post-disaster phase). Refer to ISSAIs 5520 and 5530 for guidance and good practice in these areas.<sup>5</sup> The disaster risk reduction of governments has become a key issue in recent years. Within this context, ISSAI 5510 refers SAI auditors to other relevant organisations and documentation to guide the reader who would like to know more. The 5500 series of ISSAIs is not compulsory for SAIs and should not be used as standalone audit guidance. ISSAI 5510 should be used to supplement the level 3 and level 4

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<http://www.issai.org/composite-280.htm>

ISSAIs, which are published by INTOSAI and available on the website of the Professional Standards Committee.<sup>6</sup>

## 2.6 ISSAI 5510 is structured as follows:

**Part 1** defines disasters, disaster management and disaster risk reduction and explores the political and operational context of auditing disaster risk reduction.

**Part 2** explores the issues SAIs are faced with when planning or conducting an audit of disaster risk reduction. It draws examples from the experiences of SAIs in auditing disaster risk reduction, gathered by means of surveys and a parallel audit conducted amongst SAIs.

**Part 3** proposes an audit programme to assist SAIs in auditing disaster risk reduction.<sup>7</sup>

ISSAI 5510 provides assistance to SAIs by covering the following:

- obtaining and documenting an understanding of disaster risk reduction activities and the organisation of the authorities concerned and the legislative framework governing them;
- establishing a preliminary view of the strengths and weaknesses of the overall audit environment;
- providing information for the assessment of risk and the design of the audit;
- establishing an effective and sound audit process;
- forming a common basis for partnership audits amongst SAIs.

## 3. Definition of terms

### 3.1 ISSAI 5510 employs the definition of **disaster** provided by the UNISDR:

“A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.”<sup>8</sup>

An agreed definition is a prerequisite for coordinating the approach towards auditing disaster-preparedness. SAIs can refer to the terminology booklet prepared by UNISDR in cooperation with stakeholders.<sup>9</sup>

### 3.2 Disasters can be brought on by **natural hazards** such as earthquakes, tsunamis, flooding or volcanic eruptions, or can be the consequence of **man-made hazards**, which are human activities, such as building in a flood plain or inappropriate building standards in earthquake-prone areas. Many natural events become disasters due to the failure to take precautions in time or to other forms of mismanagement. Different hazard types produce different risks. For example, for some disasters, such as famine or terrorist attacks, the risk of weak controls may be

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<sup>6</sup> [www.issai.org](http://www.issai.org)

<sup>7</sup> This was prepared using the results of the survey and tested and strengthened by carrying out a parallel/coordinated audit. See the final report of the INTOSAI Working Group on Accountability and the Audit of Disaster-related Aid.

<sup>8</sup> “UNISDR terminology on disaster risk reduction (2009)”, Geneva, Switzerland, May 2009.  
<http://www.unisdr.org/eng/terminology/terminology-2009-eng.html>.

<sup>9</sup> *ibid*

of primary concern. For others, such as earthquakes and tsunamis, the risk of poor coordination by managers of disaster-related aid might rank more highly. Appendix I explores the relationship between natural and man-made hazards.

**3.3** There is a wide variety of concepts in the field of **disaster management**.<sup>10</sup> The International Federation of the Red Cross and Red Crescent Societies (IFRC) defines disaster management as:

“the organisation and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters.”<sup>11</sup>

Where the IFRC distinguishes three phases of the **disaster management cycle** (before, during and after an event), the US Federal Emergency Management Agency (FEMA) distinguishes four: mitigation, preparedness, response, and recovery.<sup>12</sup> So does the European Union: prevention, preparedness, response, and recovery.<sup>13</sup> Reconstruction and rehabilitation are usually considered elements of the recovery phase. In other words, whereas there is agreement about two of the phases of the disaster management cycle (response and recovery), there are terminological differences as to the phase preceding the disaster. For practical purposes, auditors may consider the **pre-disaster phase** as comprising **prevention, mitigation (including early warning) and preparedness**. Disaster risk reduction primarily covers the pre-disaster phase.

**3.4** UNISDR defines **disaster risk reduction** as:

" The concept and practice of reducing disaster risks through systematic efforts to analyse and reduce the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.”<sup>14</sup>

Disaster risk reduction includes measures that prepare communities for possible disaster and improve the reaction of the various parties involved to such an event. Disaster risk reduction activities aim to reduce the impact of the disaster by ensuring that stakeholders are not caught unprepared by disaster and that assistance is provided in a coordinated manner<sup>15</sup>. UNISDR defines the component phases of disaster risk reduction as follows:

**Risk assessment:** "A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that together could

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<sup>10</sup> See: <http://www.vanderbilt.edu/vector/research/emmgtp/phases.pdf>

<sup>11</sup> <http://www.ifrc.org/en/what-we-do/disaster-management/about-disaster-management/>

<sup>12</sup> <https://training.fema.gov/EMIWeb/edu/breakingcycle.asp>

<sup>13</sup> A Community approach on the prevention of natural and man-made disasters, COM(2009) 82 final, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0082:FIN:EN:PDF>

<sup>14</sup> <http://www.unisdr.org/eng/terminology/terminology-2009-eng.html>.

<sup>15</sup> The European Commission on EU Strategy for Disaster Risk Reduction, 15/4-2008 and Austrian Development Cooperation, “*International humanitarian aid policy document*”, Vienna, March 2009, p.9.

potentially harm exposed people, property, services, livelihoods and the environment on which they depend."

**Prevention:** "The outright avoidance of adverse impacts of hazards and related disasters." This includes measures intended to ensure a permanent protection against disaster such as dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high risk zones and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake.

**Mitigation:** "The lessening or limitation of the adverse impacts of hazards and related disasters." Mitigation measures encompass engineering techniques and hazard-resistant construction as well as improved environmental policies and public awareness.

**3.5** Disaster risk reduction also encompasses preparedness.

**Strategic preparedness** consists, inter alia, of:

- preparing for disasters by developing plans and interventions that reduce and mitigate disaster risk, reduce poverty and work towards the sustainable use of natural resources;
- developing systems to identify and analyse hazard risk, climate variability and vulnerability to disaster;
- raising awareness of the need for reducing disaster risk;
- providing guidance to disaster managers on disaster risk reduction;
- adapting the institutional, legal and policy framework to enable decision makers and practitioners to take appropriate action to enable the population at large to reduce its exposure and vulnerability to disasters as well as respond effectively to disasters when they occur.

**Operational preparedness** focuses, inter alia, on:

- appropriate early warning mechanisms being in place;
- the public being properly informed about risks and the actions to take;
- funding being immediately available to support relief operations;
- contingency plans being regularly reviewed and updated at local and central levels to adjust to changing environmental and societal situations;
- the most vulnerable groups and areas should be identified in the contingency plan and appropriate measures should be included;
- coordination mechanisms including all the relevant stakeholders;
- information being able to flow in a timely fashion;
- local communities being well committed and informed, with training and drills taking place.

**3.6** Auditing by SAIs of disaster risk reduction can cover all of government's activities which **prepare** communities, the economy and the environment for the possibility of disasters, **mitigate** the impact of disaster when it strikes and **reduce vulnerability** and/ or exposure to natural hazards.

#### **4. Governance framework for managing disaster risk reduction**

**4.1** Disaster management is primarily the responsibility of governments. The governance framework should be well-defined at central, regional and local level. It should cover accountability for outcomes, division of responsibilities, chains of command, feedback

mechanisms and information flows among various actors. SAIs should be aware that the success of disaster risk reduction depends upon the soundness of the governance framework and its operational effectiveness. This implies strong government programmes for disaster risk reduction and the support of parliament. External scrutiny and audit by SAIs is an important element of the governance framework.

- 4.2** Governments are responsible for disaster related activities such as early warning systems, evacuation plans, supplying response and relief and drawing up and communicating the post-disaster assessment of the situation. In this context, governments should identify risks, assess and monitor them properly and develop a governance model for all of the parties concerned - government institutions, regional and local organisations and civil society, including volunteers, the private sector and the scientific community. Designing an efficient and effective governance structure can represent a considerable challenge given the number and variety of the entities that have a role to play in disaster management. Appendix 2 shows an example of governance structure.
- 4.3** SAIs can evaluate the priority assigned to disaster risk reduction by government. Where it is not sufficient or appropriate, SAIs may consider making recommendations to government and reporting to parliament. Parliament's oversight of the budgetary process provides a channel for reflecting on and monitoring government's commitment to disaster risk reduction. Parliament can also help to raise public awareness of the risks and potential impact of disasters and bring disaster risk reduction issues onto the public agenda. SAIs may consider including in their reports to parliament information which supports the oversight function and raises the awareness of parliamentarians to the requirements of adequate disaster-preparedness. It may be helpful for the auditors to back up their argument with a costing of potential disaster losses or the risk of exposure to disaster – these types of arguments are more likely to be heard by Ministries of Finance, who can often make budget allocation decisions that may lead to actions which reduce disaster risk.
- 4.4** SAIs can point out to national governments that disaster risk reduction includes anticipating such scenarios by preparing regulatory frameworks at national level to minimise bureaucratic obstacles to disaster-related aid and to facilitate coordination and accountability.<sup>16</sup> The “Guidelines for the domestic facilitation and regulation of international disaster relief and initial recovery assistance” adopted by the International Conference of the Red Cross and Red Crescent were developed to help governments prepare for and avoid such problems.<sup>17</sup>

## **5. Tools for auditing disaster risk reduction**

- 5.1** When preparing for the possibility of disaster, governments need to manage and coordinate the entities and activities involved. Key elements of this management are the legal and regulatory framework, disaster plans, risk assessment and appropriate information systems. These can be obtained and assessed by SAIs and used as tools for auditing the disaster risk reduction of governments.

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<sup>16</sup> See also INTOSAI GOV 9250 on preparing for accountability of disaster-related aid <http://www.issai.org/composite-194.htm>.

<sup>17</sup> <http://www.ifrc.org/en/what-we-do/idrl/idrl-guidelines/>

- 5.2** The national **legal and regularity framework** should provide a basis for good governance and accountability. There should also be consideration given to levels of accountability, for example local authorities in high-risk areas should also have disaster plans, to which they should be held accountable by national authorities, auditors and the local population. Lack of clarity on the roles and responsibilities of actors following disasters is a major risk in disaster management. Auditors should take account of the appropriateness of the governance framework and the extent to which roles and responsibilities are defined when setting the scope and objectives of an audit. Where necessary auditors can consider making recommendations for improvements to legislation and regulations.

***Examples of Disaster Management Laws***

***Canada:*** The Emergency Management Act of August 2007 governs the national leadership responsibility of the Department of Public Safety for emergency management and for conserving critical infrastructure. It also defines cooperation between the federal ministries.

***Sri Lanka:*** The Disaster Management Act of May 2005 governs the establishment, responsibilities and duties of The National Council for Disaster Management and the Disaster Management Center and the preparation of disaster management plans.

The legal and regularity framework for disaster management should provide for:

- developing a national disaster management policy;
- preparing national plans and programmes under this policy;
- setting up a general framework for the responsibilities and roles of the institutions involved in disaster management and the arrangements for coordination between these institutions, and
- a facilitating framework for international disaster relief and recovery assistance.<sup>18</sup>

- 5.3 National disaster plans** outline disaster management strategies and provide the basis for setting priorities for and coordinating disaster management activities at all levels, following an analysis of potential risks. In some countries, the national disaster plan takes the form of a general framework for disaster management and is complemented by more detailed sub-plans, known as implementation plans, specific plans, operational plans or emergency plans. In other countries, national disaster plans themselves contain operational details. Cross-border risks which are regional in nature should also be included in regional disaster plans. National disaster plans are key documents for audits of disaster risk reduction. Their alignment with regional plans should

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<sup>18</sup> Guidance on this is provided by the IFRC.

See [http://www.ifrc.org/PageFiles/41203/1205600-IDRL%20Guidelines-EN-LR%20\(2\).pdf](http://www.ifrc.org/PageFiles/41203/1205600-IDRL%20Guidelines-EN-LR%20(2).pdf)

be considered and evaluated. There is scope for partnership between SAIs and other auditors on this. Examining similar plans at international level and making comparisons with them provides good benchmarks and can facilitate the work of SAIs.<sup>19</sup> See Appendix 3 for more details on disaster plans.

- 5.4 Disaster risk assessment** should guide the optimal allocation of resources to the phases of disaster management. By identifying and assessing the likelihood and consequences of potentially disastrous events, risk assessment provides governments with the basis for the prioritisation of investment in preparing for disasters. In recognition of the importance and priority of disaster risk management, disaster risk assessment and risk financing, the G20 Finance ministers invited the OECD to develop a voluntary framework to help countries exposed to disaster risks.<sup>20</sup> This framework can provide a useful guide for auditors on how to assess, or promote the assessment of disaster risk. It also includes useful information on risk financing and risk transfer arrangements, which are important components for governments of disaster risk reduction strategies.
- 5.5** Governments use **Geographic Information Systems (GIS)** as a source of information. These can be used to integrate, store, analyse, manage and present data that are linked to locations. GIS technology can be used to assess where hazardous natural phenomena are likely to occur. This information can feed into risk assessments along with information on natural resources, population and infrastructure. This can be used to design less vulnerable development activities and/or mitigation strategies to reduce vulnerability to acceptable levels.<sup>21</sup> Mapping hazards and potential sources of disaster using GIS provides essential data for disaster risk reduction plans by allowing governments to link data using a geographical dimension. Using these links, auditors can discover and create information which can be translated into action or policies.<sup>22</sup> SAIs need to assess the use of GIS by governments and can use the same tool for auditing disaster risk reduction.
- 5.6** Appendix 4 provides further examples of using GIS. See ISSAI 5540 for more information on GIS and the use auditors can make of them in auditing disaster risk reduction.<sup>23</sup>

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<sup>19</sup> Refer to FEMA's Comprehensive Preparedness Guide (CPG) 101 Version 2.0 November 2010: Developing and Maintaining Emergency Operations Plans

<sup>20</sup> <http://www.oecd.org/finance/insurance/G20disasterriskmanagement.pdf>

<sup>21</sup> <http://www.oas.org/DSD/publications/Unit/oea66e/begin.htm#Contents>, (06 May 2010).

<sup>22</sup> Al-Shorbaji, Najeeb: "Use and potential of geographic information systems for health mapping in the Eastern Mediterranean Region", s.3.

<sup>23</sup> <http://www.issai.org/composite-280.htm>

## Part 2: The audit of disaster risk reduction

**Part 2 of ISSAI 5510** explores the issues SAIs are faced with when planning or conducting an audit of disaster risk reduction. It draws examples from the experiences of SAIs in auditing disaster risk reduction, gathered by means of surveys and a parallel audit conducted amongst SAIs.

### 6. Issues for SAIs

- 6.1** In countries which have only recently adopted and implemented **policies on disaster risk reduction**, SAIs can assess the appropriateness of the policies, including their compliance with the Hyogo Framework,<sup>24</sup> and can make recommendations for improvement. Where disaster risk reduction policies do not yet exist, SAIs can draw attention to the absence of such policies. When disaster risk reduction policies are well established, SAIs can audit their implementation as well as whether the funds allocated were used efficiently and effectively for the purposes intended. In some cases SAIs may find that disaster risk reduction is not a matter of high priority to government and parliament. SAIs may need to work to raise awareness of the importance of a disaster risk reduction policy, or of improving an existing policy. This may especially be the case during times of financial crisis and related economic austerity. Auditors may need to present calculations of potential losses which could be incurred as a result of disaster to support their recommendations.
- 6.2** The challenges associated with auditing disaster risk reduction and of ensuring the impact of constructive and meaningful recommendations highlight the importance of **good communication between SAIs and their parliaments**, governments, the media and the public at large. The success of disaster risk reduction depends on the participation of society as a whole, including an understanding of the importance of the resilience of nations and communities. The clarity of SAI reports is vital in this respect, to ensure maximum impact. SAIs may consider giving publicity to recommendations in audit reports by using other media, such as civil society organisations and academia and by making themselves available for discussion with stakeholders.
- 6.3** There are increased risks of fraud and corruption in post-disaster situations. This can be as a consequence of the large volumes of aid arriving quickly into affected regions for rapid distribution to disaster victims or for large rehabilitation and reconstruction projects to repair the damage caused to infrastructure by the disaster. SAIs can urge governments to prepare for these risks by proposing the development of an anti-fraud and corruption strategy. To do this, SAIs can evaluate the adequacy of controls already in place and where necessary recommend improvements to them. Where appropriate, SAIs can recommend the development of additional controls specifically designed to prevent, detect and respond to identified risks in a manner

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<sup>24</sup> The Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, endorsed by the United Nations General Assembly in Resolution GA/RES/60/195; <http://www.unisdr.org/we/coordinate/hfa>

consistent with the legal and regularity framework. For example, to deliver goods and services swiftly to the affected population, controls over procurement must be well-defined and tested in advance.<sup>25</sup> SAIs can then audit the design, implementation and operational effectiveness of the controls as part of their audit of disaster risk reduction.

- 6.4** The **audit mandate** of the SAI is a major factor in determining the nature and extent of audits of disaster risk reduction. Audit mandates can permit and encourage broad audits encompassing most or all of the activities and organisations involved in disaster risk reduction, or they can prove an obstacle to complete audits of disaster risk reduction.
- 6.5** A major issue facing SAIs is that of satisfactory **access to information** on the degree to which government and society is prepared for disaster and on the associated use of funds. Different implementing bodies have different reporting requirements and arrangements. Audit bodies often do not have access to reliable and complete information regarding all areas of disaster risk reduction. In addition, many SAIs audit disaster-related aid, but not all of these audit disaster risk reduction.<sup>26</sup> SAIs may consider commenting on restrictions on access to information.<sup>27</sup>
- 6.6** Disaster risk reduction is a new domain for many SAIs, and may require SAI auditors to familiarise themselves with new technology (IT, GIS, GPS, remote sensing, etc.). SAIs may need to invest in additional **training for auditors** to assist them in the use of new systems and data sources to evaluate disaster prediction, risk assessments, urban planning etc. and monitor the progress of the implementation of national disaster plans. It may also be necessary to acquire additional professional expertise. This may be the case if, for example, SAIs decide to broaden the scope of audits to include the examination of predictive and forward planning.
- 6.7** The impact of many disasters is not limited to one country. The fact that disasters can strike several countries at the same time highlights the importance of **international cooperation between SAIs** in auditing disaster risk reduction. SAIs can cooperate to perform comprehensive and meaningful audits, enhance confidence in their work, contribute towards creating public awareness and the improvement of activities and programmes, strengthen political interest in accountability, uphold common criteria and share knowledge both domestically and worldwide. INTOSAI's "Guide for cooperative audit programmes between SAIs"<sup>28</sup> can be taken as a framework and ISSAI 5140 "How SAIs may cooperate on the audit of international environmental accords"<sup>29</sup> can be used as a model. Against this background, cooperation between two or more SAIs can be carried out in three forms: parallel, coordinated and joint audits.

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<sup>25</sup> See <http://eca.europa.eu/portal/pls/portal/docs/1/15578738.PDF>

<sup>26</sup> Refer to the final report of the INTOSAI WG AADA for information regarding surveys carried out by the Turkish Court of Accounts on access to information on disaster-related aid expenditure

<sup>27</sup> Refer to ISSAI 1/10 which states that SAI mandates should ensure full access to information concerning the audit, including internal and external audit reports.

<sup>28</sup> INTOSAI - Capacity Building Committee - Sub Committee 2 Guide For Cooperative Audit Programs. See also See INTOSAI, How SAIs May Co-operate on the Audit of International Environmental Accords, 1998; INTOSAI, Cooperation Between Supreme Audit Institutions - Tips and Examples for Cooperative Audits, 2007, Introduction.

<sup>29</sup> ISSAI 5140: How SAIs may cooperate on the audit of international environmental accords.

**Parallel Audit:** A decision is taken to carry out similar audits. Methodology and audit approach are shared. The audit is conducted more or less simultaneously by two or more autonomous auditing bodies, but with a separate audit team from each body, usually reporting only to its own hierarchy or the legislature and only on matters within its own mandate.

**Coordinated Audit:** A coordinated audit is either a joint audit with separate audit reports to the SAIs own hierarchy or to the legislature or a parallel audit with a single audit report in addition to the separate national reports.

**Joint Audit:** Key decisions are shared. The audit is conducted by one audit team composed of auditors from two or more autonomous auditing bodies who usually prepare a single joint audit report for presentation to each respective hierarchy or to the legislature.<sup>30</sup>

**6.8** In recent years some SAIs have themselves experienced severe disruption following the occurrence of disaster. In the aftermath of an emergency, an SAI may not only need to recover its ability to function quickly and easily, but also to provide appropriate assistance to its government in responding to the emergency.<sup>31</sup> Due to the potential impacts of disasters it is important for an SAI to plan in advance and put arrangements in place that will help it recover and start functioning as soon as practically possible. For that reason, SAIs, and particularly those located in disaster prone areas, should develop their own business continuity plan. INTOSAI's Capacity Building Committee has produced a guide for SAIs on this.<sup>32</sup>

## **7. Shared experience of auditing disaster risk reduction**

**7.1** The Working Group set up by INTOSAI carried out two surveys and a parallel/coordinated audit to explore some of these issues of importance to SAIs in the audit of disaster risk reduction.<sup>33</sup> The following are some of the major points arising from this collaboration.

*Audits of disaster risk reduction should make recommendations to government and parliament regarding the adequacy of disaster risk reduction measures.*

**7.2** In cases where disaster risk reduction policies are new for government or where there is lack of awareness of the need for disaster risk reduction measures, SAIs may formulate audit objectives and make recommendations to the end of raising the interest and understanding by parliament of the issues. Where better disaster preparedness requires international cooperation, SAIs can recommend that parliament enacts appropriate laws or concludes international agreements to facilitate this.

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<sup>30</sup> **Source:** INTOSAI - Capacity Building Committee - Sub Committee 2 Guide For Cooperative Audit Programs

<sup>31</sup> See Audit New Zealand's account of "Audits in challenging times" following the Canterbury earthquakes in 2010 and 2011 <http://www.auditnz.govt.nz/who-we-are/scott-tobin-feature>

<sup>32</sup> <http://cbc.courdescomptes.ma/index.php> The Capacity Building Committee prepared and published this guide in association with the Pacific Association of Supreme Audit Institutions and the Caribbean Organization of Supreme Audit Institutions.

<sup>33</sup> The SAI of Turkey led the parallel audit. The other participants were the SAIs of Azerbaijan, Chili, India, Indonesia, the Netherlands, Pakistan, the Philippines, Romania and the Ukraine. See the final report of WG AADA for more on this.

***Cooperation between SAIs should be developed in conformity with the INTOSAI Guidelines and Standards.***

**7.3** Disaster risk reduction activities in one country may be funded by another country. In such cases the need for the SAIs of donor and recipient countries to collaborate to allow their audits to cover all aspects of disaster risk reduction takes on added importance. Collaboration between SAIs of different countries is equally important when auditing bilateral or multinational treaties on reducing disaster risks and/or promoting cooperation on hazards which transcend national borders such as the establishment of early warning systems. Both domestic and international cooperation and coordination are vital if SAIs are to contribute to improving activities or strengthening accountability in the disaster risk reduction area. Such cooperation may range from a simple exchange of information to much closer cooperation in the form of coordinated or joint audits, allowing the exchange and sharing of audit experience and results between SAIs. The latter scenario requires a common understanding of the audit methodology to be applied and of the relevant audit criteria to be followed. To this end, an agreement (for example, a memorandum of understanding or protocol) may be established to define the scope, extent and form of the intended cooperation between the relevant SAIs.

***Joint audits among the SAIs of countries which are party to international agreements in areas exposed to the risk of disasters may contribute towards good governance and accountability in the field of disaster risk reduction.***

**7.4** When disaster risk reduction activities are financed from the national budget they are subject to audit by the SAI of the country concerned. Funding from donor governments is audited by the SAIs of the donor governments. Cooperation between the SAIs of the different governments may require the setting up of bilateral or multilateral agreements. In many cases, SAIs have similar objectives and apply the same auditing standards. This makes it possible for SAIs to consider the feasibility of relying on the work of other auditors to reduce the overall audit burden (see ISSAI 1610 on ‘Using the work of Internal auditors’ and ISSAI1620 on ‘Using the work of an auditor’s expert’). Alternatively SAIs may consider carrying out joint or parallel audits which allow them to pool resources, share tools, learn from each other and possibly overcome issues regarding the adequacy of individual SAIs’ audit mandates.

***SAIs should foster relationships with other relevant audit bodies.***

**7.5** Many bodies may be responsible for auditing different aspects or phases of disaster management. Examples of other audit bodies include public or private sector internal or external auditors of central, state, regional or local government or auditors of specific agencies. SAIs should be clear on who audits what and on what is the relationship between themselves and these auditors. Constructive cooperation at all levels should be fostered between SAIs and other auditors.

## **8. Types of audit**

The surveys and parallel audit examined the different audit approaches followed by participating SAIs. Paragraphs 8.1 to 8.3 reflect this work.

**8.1** When auditing disaster risk reduction, SAIs can carry out financial, performance or compliance audits of disaster-related aid. In all cases the audits should fall within the mandate given to the SAI and be carried out in accordance with the national and other relevant legislation and auditing standards which apply. Reference should be made to which standards have been

complied with (International Standards on Auditing (ISAs), ISSAIs, INTOSAI Practice Notes and/or other national and relevant auditing standards) and whether compliance with such standards is total or partial. ISSAI 1000 provides guidance on this.<sup>34</sup>

- 8.2** An audit of disaster risk reduction may include aspects of financial, performance and compliance auditing. However, the objectives of these different types of audit are not the same and should be stated clearly and separately. Financial audit focuses on reports and accounts, compliance audit is concerned with the respect of legislation, policy or agreed upon terms and performance audit looks at activity with the main objective of promoting good performance. Each type of audit should be completed in accordance with the applicable standards, notably:

General Auditing Guidelines on Financial Audit	ISSAIs 1000-1810
General Auditing Guidelines on Performance Audit	ISSAIs 3000-3100
General Auditing Guidelines on Compliance Audit	ISSAIs 4000-4200

- 8.3** Financial audit coverage of disaster risk reduction expenditure tends to take place as part of annual financial audits of government departments/institutions, although some SAIs carry out separate financial audits of national disaster risk reduction funds or as donors of foreign aided projects. Many SAIs reach the conclusion, however, that to address specific aspects of the activities of disaster risk reduction management in a way that best meets the needs of stakeholders, performance audits should be carried out. Depending on the scope and objectives, a performance audit approach can allow SAIs to get a good overview of disaster risk reduction, including the activities and organisations which may normally lie outside an SAI's mandate. The relatively low value of disaster risk reduction financing, the multi-annual nature of disaster risk reduction activities and the fact that they may be carried out by different bodies can reduce the relevance of financial audits alone to disaster managers. In this context, SAIs may consider auditing compliance with the requirements set in international agreements on disaster risk reduction which are of great importance and can bring to light inadequate implementation or the failure to apply agreements.

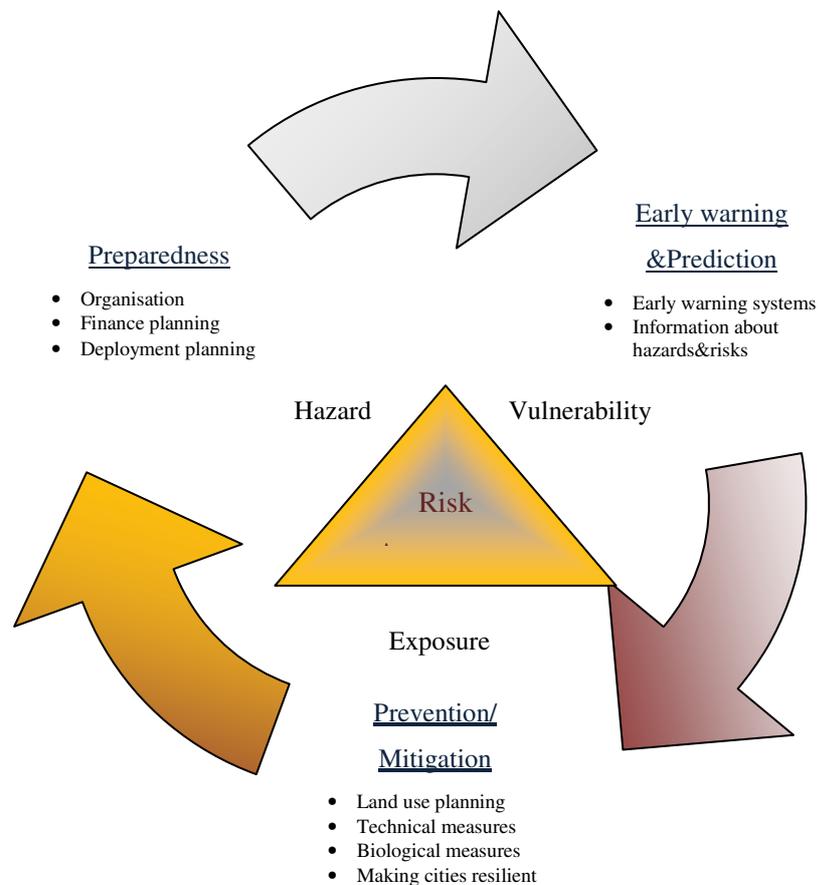
## 9. Assessment of Audit Environment

SAIs participating in the survey and parallel audit emphasised the importance of risk assessment in auditing disaster risk reduction.

- 9.1** In advance of setting the audit approach and scope, auditors should carry out a risk assessment of the audit environment. They should first evaluate the appropriateness and quality of the risk assessment carried out by the government agency responsible for developing disaster plans. Prevention and mitigation measures such as the adequacy of early warning systems and disaster prediction should then be assessed. Figure 2 shows the different activities of disaster risk reduction. These do not follow chronological steps or fall into mutually exclusive phases.

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<sup>34</sup> ISSAI 1000/28

**Figure 2: Disaster risk reduction activities**

Source: Prepared for WG AADA by the SAI of Turkey

**9.2** The following examples of the type and source of information required, can be set out in the audit programme.

- For assessing the risks relating to disasters the following information might be sought:
  - ✓ which areas are most vulnerable to particular hazards?
  - ✓ how vulnerable are people who live there/how vulnerable is the critical infrastructure in that area?
  - ✓ what is the likelihood of an earthquake with epicentre X and strength Y / that a volcano will erupt with certain strength / that a cyclone with force Z will hit a certain location, etc?
- To assess the risks associated with the operational management/ implementation of disaster management, the following information might be sought:
  - ✓ who should be responsible for what?
  - ✓ who should cooperate with whom?
  - ✓ what information is needed to plan and coordinate? etc.

The task of evaluating the quality of the risk assessment is a complex one: When is it good or good enough? What is sufficient? SAIs can often benefit from sharing experience with other SAIs to identify answers to some of these questions by referring to examples from previous audits. SAIs can also consider using the work of external experts (see ISSAI 1620 on this). The G20/OECD methodological framework for Disaster Risk Assessment and Risk Financing<sup>35</sup> could provide a useful guide for auditors on how to assess, or promote the assessment of, disaster risk.

**9.3** In assessing the audit environment, auditors may consider seeking out information regarding:

- the organisational structure and main activities which ensure that the systems, procedures and resources fulfil the disaster risk reduction requirements. This covers the preparedness of communities to help themselves in the event of a disaster including training, awareness raising, establishment of disaster plans, evacuation plans, pre-positioning of stocks, early warning mechanisms and strengthening local knowledge. Auditors also need to establish the arrangements for financial preparedness to minimize the macro-economic or budgetary impact of a disaster (budgetary provisions, contingency financing, stand-by agreements, risk insurance);
- the preventive measures to be taken before disaster occurrence with a view to reducing or eliminating the impact on society and the environment if and when it does occur. This includes reducing the physical vulnerability of existing infrastructure or vulnerable sites which may directly endanger the population, e.g. retrofitting of buildings and reinforcing key infrastructure;
- the identification of prevention activities conceived to ensure permanent protection against a disaster, including engineering, physical protection measures, legislative measures for the control of land use and codes of construction. These activities reduce the physical vulnerability and/or exposure to risks through inadequate infrastructure.

## 10. Planning and carrying out audits

Paragraphs 10.1 to 10.10 cover issues explored by SAIs participating in the survey and parallel audit in relation to planning and carrying out audits of disaster risk reduction.

**10.1** Participants in the survey and parallel audit emphasised the advantage of the performance audit approach for auditing disaster risk reduction because it allowed for more comprehensive objectives and scope. ISSAI 3000 provides guidance for **planning** performance audits in an economic, efficient, effective timely manner. Careful planning reduces the risk of problems arising at a later stage of the audit. Before starting the audit, it is important to define the audit objectives, the scope, and the methodology to achieve the objectives.<sup>36</sup>

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<sup>35</sup> [www.oecd.org/finance/insurance/G20disasterriskmanagement.pdf](http://www.oecd.org/finance/insurance/G20disasterriskmanagement.pdf)

<sup>36</sup> ISSAI 3000/3/3.3: <http://www.issai.org/composite-344.htm>

**10.2** After obtaining enough background information and knowledge about the audit environment, the auditor should specify the **risks** with regard to economy, efficiency, and effectiveness (the 3Es) in broad terms. The extent to which these risks exist depends on the type of disaster, its risk of occurrence and the impact it is likely to have. Once this information is documented, risks to the 3 Es are likely to relate to inadequate organisation, planning, monitoring, control, coordination and lack of a sound disaster management information system. Assessing the risks allows the auditors to identify control weaknesses and high risk areas in disaster risk reduction measures and activities. Figure 3 shows the strong correlation between the risks to the 3Es (good financial management) and audit criteria, findings, conclusions and recommendations. For this reason, identifying the risks to the 3Es at the outset is important for designing a successful performance audit of disaster risk reduction. Audit criteria show “what should be”. The area for which the criteria should be set can be determined once the risks to the 3Es have been identified and recommendations can then be produced to address areas in need of improvement.

**Figure 3:**Correlation between risks, criteria and recommendations



Source: Prepared for WG AADA by the SAI of Turkey

**10.3** Once the auditor has identified the risks an appropriate **audit approach** can be determined accordingly. Different SAIs employ different approaches to auditing disaster-preparedness. For example, Turkey used a risk-based audit approach in a performance audit of disaster risk reduction entitled “How well is Istanbul getting prepared for the earthquake?”<sup>37</sup> During their enquiries, the auditors tried in particular to detect problems and inadequacies in implementation. This audit approach helped the auditors determine the most risky activities and areas. See appendix 5 for more information on this audit. The parallel audit on disaster risk reduction conducted within the scope of INTOSAI WG AADA used a mixed audit approach and was conducted from both a top-down and a bottom-up perspective (see paragraph 10.4).<sup>38</sup> In another example Korea focussed on the systems in their compliance audit of disaster risk reduction

<sup>37</sup> [http://www.sayistay.gov.tr/english\\_tca/Performance/IstanbulEarthquake.pdf](http://www.sayistay.gov.tr/english_tca/Performance/IstanbulEarthquake.pdf)

<sup>38</sup> ISSAI 3000/1.8, p.27, [http://www.issai.org/media\(890,1033\)/Performance\\_Audit\\_Guidelines\\_E.pdf](http://www.issai.org/media(890,1033)/Performance_Audit_Guidelines_E.pdf),

(2006). Within the scope of this audit, they assessed the effectiveness and operating efficiencies of a recently established “National Disaster Management Support System” (NDMSS), including an independent verification of the reliability of the information and an examination of the stock management of relief goods and materials.<sup>39</sup> In a similar example from the Philippines, the 2008 financial audit used a systems based approach to determine whether the Statement of Expenditures, Statement of Assets and the Statement of Cash Position were fairly presented, to review the project’s progress in terms of timeliness, compliance with project documents and to assess the effectiveness of the project’s internal control systems.<sup>40</sup>

**10.4** ISSAI 3000<sup>41</sup> points out that performance auditing is normally based on an overall **owner perspective** which is top-down and concentrates mainly on the requirements, intentions, objectives and expectations of the legislature and central government. The possibility of adding a ‘**client-oriented perspective**’ is also emphasised in the ISSAI. From this perspective SAIs can focus on problems of especial concern to the people and the community. The 21st UN/INTOSAI Symposium<sup>42</sup> supported the notion that SAIs should interpret and reconsider the audit mission in the field of disaster risk reduction from the perspective of enhancing public accountability. Performance auditing of disaster risk reduction can help SAIs to focus on the interests of the public and approach the issues from a bottom-up perspective.

**10.5** **Audit objectives** are set depending on the type of audit to be carried out. In financial audits, the audit objectives are generally defined by legislation and SAIs carried out their audit over a fixed period of time. Financial audits include a review of the accounts and the underlying transactions, including disaster-related expenditure and are conducted to ascertain the legality and regularity of income and expenditure. An example of a financial audit objective might be to examine the management of funds earmarked for protection against floods. Performance auditing objectives are set depending on the issues to be examined. When setting the objectives for a performance of disaster risk reduction, SAIs should consider their own roles and responsibilities and the expected impact of the audit in this field. Taking the National Development Plans as a point of departure, the objectives and scope should take account of the complex environment and issues surrounding disaster risk reduction. Appendix 6 shows examples of audit objectives for performance auditing.<sup>43</sup>

**10.6** **Audit methodology** is the set of techniques developed for data collection and analysis. When risks are assessed, audit questions are formulated. Answering these questions requires data and SAIs have to decide which data are needed to answer the questions and which is the best methodology for gathering these data from which of the available sources. INTOSAI Auditing Standards state that to support the auditor’s judgment and conclusion regarding the activities

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<sup>39</sup> From WG AADA survey <http://www.bai.go.kr/>

<sup>40</sup> From WG AADA survey

<sup>41</sup> ISSAI 3000/1.8

<sup>42</sup> [http://www.intosai.org/fileadmin/downloads/downloads/5\\_events/symposia/2011/\\_E\\_\\_21\\_UN\\_INT\\_SympReport.pdf](http://www.intosai.org/fileadmin/downloads/downloads/5_events/symposia/2011/_E__21_UN_INT_SympReport.pdf)

<sup>43</sup> Compiled from WG AADA surveys. See the final report of WG AADA for more details

under audit, competent, relevant and reasonable evidence should be obtained.<sup>44</sup>

**10.7 Audit evidence** is necessary to support the auditor's opinion and report. It is cumulative in nature and is primarily obtained from audit procedures performed during the course of the audit.<sup>45</sup> In financial audits, evidence is based on the transactions, financial statements, project implementation reports, physical verification, independent technical assessment, compliance with tender/procurement procedures, etc. The auditor focuses on the following:

- reviews of internal controls and procedures,
- reviews of documents (disbursement and receipt of donations) and records in the accounts,
- tests of accounting records,
- verifying beneficiaries on a sample basis.

**10.8** Evidence in performance auditing should be persuasive and should be obtained by the collection and analysis of data, information and knowledge from appropriate sources. Some of the **methods used for collecting and analysing data in performance auditing** are:<sup>46</sup>

- **File examination.** Auditors should gather and analyse relevant guidance, protocols, legislation, disaster planning documents and post-event reports at all levels of government, especially those of the bodies responsible for disaster management. For example, for Turkey's audit of earthquake preparedness, the planning of building development, ground condition reports and the documents related to the reinforcement activities of Istanbul Metropolitan Municipality and district municipalities were scrutinized on site.
- **Site Visit.** Auditors may make site visits to observe and evaluate the work of relevant institutions included in the audit scope and interview key local individuals. This is the most effective method for auditors to observe what happens during inspections of storage and transportation facilities.
- **Interview.** Auditors may envisage direct interviews with individuals designated to play a key role in minimizing risks in the event of a disaster. These include the authorised personnel of disaster management institutions, heads and staff of service groups and relevant professionals taking part in disaster plans. Service groups provide services to the public, such as transportation, communication, rescue and debris removal, first aid and health services. Interviewing is an important tool for assessing coordination and collaboration between levels of government, and the contribution of the different parties concerned. Interviews with scientists and NGOs and other bodies, such as the Red cross/Red crescent, the Chamber of City and Regional Planners, local or municipal

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<sup>44</sup> ISSAI 3000/3.5.1

<sup>45</sup> ISA 500/A1

<sup>46</sup> Compiled from the surveys and parallel audit led by the Turkish Court of Accounts in preparing ISSAI 5510. See the final report of WG AADA for more details

governments, etc., known to have contributed to minimising disaster risks, can also help auditors formulate audit criteria and obtain audit findings.

- **Before & After Analysis.** The adequacy and success of disaster risk reduction activities can be evaluated by auditors by visiting the site of the most recent major disaster and looking at the results of disaster risk reduction. The SAI of Turkey assessed the adequacy of disaster action plans in the Van region which was struck by an earthquake in 2011 in this way. The audit concluded that the disaster action plans failed to ensure the good organisation and coordination of the emergency actions.
- **Surveys/Questionnaire.** Auditors may employ the use of surveys for evaluating the activities of community preparedness and training and to collect similar data from a large number of different institutions, such as ministries, municipalities, fire brigades and provinces. Surveys can also help the auditor evaluate public awareness to disaster risk reduction and specify public expectations about urban transformation projects.
- **Literature Review.** Reviewing articles, studies, other audits reports and evaluations concerning disaster risk reduction will help to:
  - ✓ understand the overall control environment for disaster risk reduction,
  - ✓ specify different needs for and approaches to disaster risk reduction,
  - ✓ formulate audit criteria,
  - ✓ develop recommendations.
- **Assessment of the adequacy of management tools.** Carrying out activities related to disaster risk reduction depends on the adequacy of management tools such as disaster plans, Geographic Information Systems (GIS), Remote Sensing (RS), the Global Position System (GPS), disaster information systems and other relevant software. The disaster plans should therefore be analysed and the adequacy of these systems should be assessed. When assessing these systems, attention should be paid to the quality of information on which they are based. The information should be accurate, consistent, complete, accessible, relevant, timely, easy to understand and obtained at reasonable cost. Refer to ISSAI 5540.<sup>47</sup>
- **Risk assessments, including hazard maps, disaster loss databases, vulnerability assessments and exposure calculations.** Disaster risk reduction measures are implemented on the basis of risk assessments and scenarios. For this reason, risk analyses should be evaluated as part of performance audits.
- **Observation and case studies** can be used to evaluate the practical experience, training and education of professionals who are involved in disaster risk reduction activities.

- Sampling. Since it is rarely feasible to test the whole of the disaster risk reduction audit area, sampling methods should be used. GIS and/or other similar tools help the auditor to select samples.
- The data obtained needs to be reliable, accurate and up-to-date. Data and information are obtained from many different organisations. Auditors should carefully collect, cross-check and analyse the evidence, as well as establishing their own database containing reliable, accurate and timely data. Geographical Information Systems (GIS) can be used to complement such a database.<sup>48</sup>

**10.9** **Audit criteria** give direction to the assessment and help auditors to determine whether activities and programmes meet expectations or not. In financial audits, criteria are laid down in the laws on financial management and the legislation establishing the audit body. In performance audits, audit criteria are generally formulated by the auditor. Thus, in performance auditing, the general concepts of economy, efficiency, and effectiveness need to be interpreted according to the subject. Other sources for criteria include national disaster plan objectives and targets, lessons from previous disasters, lessons from other countries and input from external experts. For this reason, criteria will vary from one audit to another. Successful auditing of any phase of disaster management requires firstly the establishment of what the particular expectations of the activity or activities were. Essentially, these expectations are criteria. See Appendix 8 for examples of audit criteria for performance and financial audits.

**10.10** The auditor develops **audit conclusions and recommendations** by analysing the causes and effects of the findings arising from the audit. When producing recommendations, auditors should bear in mind the relationship with the risk to the 3Es and propose reasonable solutions in areas where weaknesses and risks are identified. Recommendations should be made in a way that allows government to understand and act on them promptly. See Appendix 9 of the guideline for examples of audit recommendations.

## Part 3: Basis for an audit programme

The audit of disaster risk reduction should be based on a sound audit programme focused on understanding the operational environment of disaster risk reduction including the organisational structure and resources of all the relevant authorities. The aim is to design a sound audit and prepare a reliable audit report with a high impact. The audit programme which follows is based on an assessment of SAIs' audit reports, the disaster management plans of various countries and the results of two surveys and a parallel audit of disaster risk reduction conducted during the preparation of ISSAI 5510.<sup>49</sup> It should be adapted and expanded upon taking into account the conditions in the country being audited, the specific tasks established by the SAI concerned and the particularities of the disaster. SAIs should use the questions and criteria which are relevant and appropriate to their audits on disaster risk reduction.

The first seven sections of the audit programme refer to prevention and mitigation activities of disaster risk reduction, which are best considered at national and international level. The final section refer to activities aimed at making cities resilient and reducing urban risk, which are better examined at local/city level.

- A. Identification of the characteristics of the disaster
- B. Specifying and understanding the national strategy and action plans
- C. Identification of the framework and organisation of the authorities involved
- D. Assessment of the adequacy of coordination
- E. Assessment of disaster management tools and early warning systems
- F. Assessment of emergency exercises and training/public awareness
- G. Assessment of disaster funds and grants administration
- H. Assessment of the adequacy of the activities for making urban areas more resilient and reducing urban risk

### *A. Identification of the characteristics of the disaster*

**A.1** Specifying disaster types and the likelihood with which they are expected to occur should be the first step in auditing disaster risk reduction. Government approaches and policy preparedness activities depend on this calculation. The government approach to the potential disaster will determine the scope of the audit. These are factors which should be taken into account when designing and undertaking an audit of preparedness

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<sup>49</sup> See final report for details

activities. See Appendix 1 of ISSAI 5520 for more details on characteristics of various types of disaster.<sup>50</sup>

**A.2** The auditor should explore the following issues:

- What types of disaster affect each country?
  - What is the probability of each type of disaster?
  - Does the government (specific agency) prepare risk assessments, taking into account, among others, the following aspects:
    - ✓ natural, human, indirect hazards;
    - ✓ specific vulnerabilities;
    - ✓ specific geographic locations;
    - ✓ disaster management capacities.
  - Are there (up-to-date) hazard maps and/or hazard analyses?
  - What is the extent to which communities, structures, services and geographic areas are likely to be damaged or disrupted by the impact of a particular hazard, on account of their nature, construction and proximity to hazardous terrain or a disaster prone area (physical & socio economic vulnerabilities)?
  - What are the possible combinations of types of disasters?
  - What could be the average annual and probable maximum extent of loss or damage?
  - What is the government’s approach to prepare for such disasters?
  - What is the recent experience of major disasters? What were the government’s responses? What lessons have been learned?
  - What was the worst disaster experienced by the country and how much was the damage?
  - .....
- ..... (Please add your own questions)

**B. Specifying and understanding the national strategy and action plans**

**B.1** For the auditor, the national disaster plan (or equivalent document) is one of the most important tools in the evaluation of disaster risk reduction. The national disaster plan, which is prepared by the authority responsible for disaster management, along with event-specific and departmental plans, will guide the government response to disasters. It should outline the processes and mechanisms to facilitate an integrated government response to a disaster. It should address specific threats, the response to international

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<sup>50</sup> ISSAI 5520/Appendix 1

emergencies, and the National Emergency Response System which outlines a harmonised federal and provincial/territorial response to disaster. With a good national disaster plan, the auditor can specify and examine all activities related to disaster risk reduction as a whole.

**B.2** Comparison between the national disaster plan and those of other countries exposed to similar disasters will help the auditor to evaluate the adequacy of disaster risk reduction. Moreover, national disaster plans will be a good source for determining audit criteria because they identify what to do and to expect. In order to understand the government's approach to disaster risk reduction, the auditor should also look for consistency between regional and national disaster plans. In many cases, an additional complicating factor is the unknown extent and nature of international disaster relief provided by NGOs, referred to in disaster plans.

**B.3** To understand the government's approach to disaster risk reduction, the auditor should carefully examine the national disaster plan and assess its aims and targets:

- Is there a legal framework for disaster management, including disaster risk reduction/risk reduction?
- Has the State signed any bilateral or multilateral treaties or agreements on reducing disaster risks and/or promoting cooperation against the threat of hazardous events?
- Has a national disaster plan been prepared or are there any substitutes for a national disaster plan?
- Do the disaster plans/substitute tools cover the international treaty/agreement obligations?
- Are the disaster plans/substitute tools updated regularly?
- Are there procedures for systematically reviewing plans/substitute tools for timeliness, completeness, consistency with existing guidelines and overall usefulness?
- What are the reviewing entities? Are they independent third parties with objective views?
- Which events/situations are accepted as disasters in the national disaster plan, or the substitute tools?
- Have the national disaster plans/substitute tools been designed on the basis of analyses like disaster risk maps, risk assessments, etc.?
- What information has been used for the plans? What is the quality of the information used? Have experts been involved?
- To what extent do the disaster plans have priority over other legislation? (e.g. limitations of ownership or property rights in case of emergency.)
- Do these plans/substitute tools provide a good basis for timely, clear and organized action – including when and who will perform such action during an emergency or disaster?
- Within the disaster plans/substitute tools, how are the roles and responsibilities defined and allocated to each unit responsible?
- Are NGOs/POs (Red Cross and Red Crescent, international organisations) involved in the design of the National Disaster Plan?

- Is there a contingency plan for external collaboration mechanisms in an emergency situation?
- ✓ Formal structures?
- ✓ Collaboration at international, national, regional and local level?
- Which body is responsible for coordinating disaster planning?
- What are the main activities for disaster risk reduction within the plans/substitute tools? Do they cover all necessary activities?
- Are disaster risk reduction planning efforts consistent and adequate? (General preparedness plans as well as hazard-specific plans.)
- Are there realistic options to counter threats, decrease vulnerabilities or mitigate consequences?
- Do the disaster plans promote regular disaster risk reduction exercises, including evacuation drills, with a view to ensuring rapid and effective disaster response and access to essential food and non-food relief supplies, as appropriate to local needs?
- Do they provide for a review and amendment of the existing zoning regulations, building codes and bylaws (including a review of enforcement mechanisms for the bylaws etc) and the creation of an awareness among building experts that this might be necessary?
- How is compliance of measures such as building codes enforced? Is supervision used as a measure?
- Do they adopt preventive maintenance policies and action towards earthquake safety in hospitals and key public institutions?
- Is the critical infrastructure determined on a national scale within the scope of disaster plans/substitute tools?
- Are specific measures designed, or taken, to protect critical infrastructure?
- Have the goals, objectives and strategies set out in the disaster plan been integrated into the annual budget process (emergency operations and grant application processes)?
- Is the National Disaster Plan allocated with a sufficient government budget to carry out the plan?
- Is the National Disaster Plan properly disseminated to all units of government?
- Is the public allowed access to the plans? If so, what methods are used to disseminate them?
- Is the public informed about what actions it can take to prepare for a possible disaster, and what actions to take in case of a disaster?
- What kinds of action plans and alternative plans are prepared?
- Are the sub-plans (action plans etc.) prepared in accordance with the national plan/substitute tools?
- Are all units of government such as regional, provincial, city and municipal levels required to prepare their own Disaster Plan based on the National Disaster Plan?

- Is consistency and harmonization ensured between the disaster plans in various regions and the national disaster plan?
- Are disaster risk reduction plans and policies at all levels prepared or reviewed and periodically updated with a particular focus on the most vulnerable areas and groups?
- .....
- .....(Please add your own questions)

### ***C. Identification of the framework and organisation of the authorities involved***

**C.1** The many institutions and agencies involved in disaster risk reduction should be identified. For this, the auditor should have a comprehensive knowledge of the legal framework and organisational structure, of all entities involved. Establishing their roles, responsibilities and cooperation among them will help the auditor assess where and how to collect data, who is responsible for what actions, etc. Additionally, it is beneficial to answer questions like “is there a sufficient legal framework? Are the activities well-coordinated? What is the governance structure like?” (See Appendix 3 for an example.) The disaster risk reduction auditor should also focus on how coordination and concerted action can be achieved by the various bodies involved in disaster risk reduction.

**C.2** The auditor should look at the following points:

- What are the applicable laws/directives/national/local initiatives in this respect?
- Which body has the main responsibility for disaster risk reduction?
- Which bodies are related to disaster risk reduction at each level? (evaluate the organisation structure as a whole, for example, by preparing an organisational map)
- Are responsibilities clear to everyone at every layer of government: “who, when, what?”
- What responsibilities have private entities, NGOs?
- Are the organisational structures and systems well defined and designed to facilitate successful disaster risk reduction activities?
- Are the relevant functions of these bodies formulated clearly and sufficiently?
- Are authority and responsibility clearly assigned?
- Is there a reliable and effective internal control for the activities of disaster risk reduction?
- Is there an existing communication system that will effectively provide timely information to each level of government with regard to disaster risk reduction and has this system been tested?
- Does the main body responsible have capable and sufficient human resources?
- What are the staffing profiles? Is the staffing appropriate in order to coordinate and carry out disaster risk reduction activities?
- Are there any specific plans to ensure that the government can continue operating even in case of a disaster?

- Does the main body responsible have a complete and detailed overview of the resources allocated to disaster risk reduction activities?
- Is there a Quick Response Team to respond to disasters as they occur?
- In which areas within the disaster risk reduction process do non-government and other organisations act?
- Could the main body responsible provide the facilities and support necessary for the activities of the non-government bodies?
- Has a monitoring mechanism been established with a view to monitoring extra-budgetary funds and the activities of non-government bodies?
- What lessons have been learned from previous experiences of disasters in view of the position and authority of the relevant organisations? Have these lessons been properly reflected in such areas as the reorganisation and strengthening of authorities?
- .....
- ..... (Please add your own questions)

#### ***D. Assessment of the adequacy of coordination***

**D.1** Recent events, such as Hurricane Katrina in the USA in 2011, the Great East Japan earthquake and tsunami in 2011 and earthquakes in Pakistan and Haiti in 2010 have shown that the management of large-scale disasters is a matter that concerns not only the government, but also other stakeholders including businesses and individuals exposed to disaster risks. Auditors need to evaluate coordination between all stakeholders including intergovernmental bodies, regional organisations, national bodies and institutions and NGOs at the national and international level.

**D.2** The national disaster legislation and the national disaster plan are the main tools for evaluating coordination, along with event-specific and departmental plans. Additionally, the auditor should pay special attention to the activities of the main authority responsible for coordination and examine its management system and governance structure.

**D.3** To assess the adequacy of coordination with bodies at regional, national and international level, the auditor should examine the following issues:

- Has a coordination mechanism been established that should function in case of a disaster?
- Are all relevant participants identified and included in this coordination mechanism (national/regional/local level and the main contact point for external bodies)?
- Has the expected level of coordination between and among the agencies concerned been achieved during the occurrence of recent disasters (if any) or by means of test exercises?
- Is there a monitoring mechanism to provide information to help ensure cooperation, as appropriate, with different bodies at the regional, national and international levels?

- Does the existing coordination foster collaboration in order to avoid the duplication and overlap of activities in the field, to make the most efficient use of resources and to raise awareness of the risk of disaster?
- Are different forms of cooperation for disaster risk reduction activities, such as technical assistance, consultancy, equipment and supplies, etc. specified in accordance with the nature, role and work of different participants in this field?
- What alternative means of communication are ready, such as telephones, radios and the internet? Are there multiple options in case of a disaster?
- .....  
..... (Please add your own questions)

***E. Assessment of disaster management tools and early warning systems***

**E.1** Geo-science technologies are widely used for disaster risk reduction activities. Geographic Information System (GIS) can be used in all types of disaster to collect various types of data. GIS is structured in different ways from country to country according to the disaster risks faced. For example, to understand the full short and long-term implications of floods and plan accordingly, an analysis needs to be made of combined data on “meteorology, topography, soil characteristics, vegetation, hydrology, settlements, infrastructure, transportation, population, socioeconomics and material resources”.<sup>51</sup> These aspects, which vary in the field of disaster management, are easily processed with the help of a GIS and can be used for risk analysis and planning.<sup>52</sup>

**E.2** In order to evaluate the adequacy of management tools used to accomplish the goals for disaster risk reduction, the auditor should assess the following:

- Does the country have early warning mechanisms to predict calamities that may hit the country come during a certain period?
- Are assessments of hazard risk, vulnerability and disaster risk, at national and sub-national levels, undertaken on a regular basis?
- Are risk and vulnerability assessments properly documented for reference and audit purposes?
- What data are used for these assessments, what data are needed, what quality measures are in place to ensure quality of information/data used, is and can information be exchanged between relevant entities?
- Are cost-benefit analyses of a range of disaster risk reduction measures performed on a regular basis and are they a requirement for public investment planning?

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<sup>51</sup> Rego, Aloysius J: “National Disaster Management Information Systems & Networks: An Asian Overview”, .1.

<sup>52</sup> See ISSAI 5540 for guidance on the use of GIS

- Is a monitoring system in place to determine the extent of loss or damage following a disaster?
- Is there an up-to-date disaster management information system?
- Is the existing disaster management information system suitable for analyzing risks and planning efforts to reduce the risk and/or mitigate the impact of disasters?
- Does the management information system contain enough information on hazards and risks to determine, at the local level, who is exposed and who is vulnerable?
- Has the main authority developed effective and appropriate instruments to guide the local authorities in making the risk assessment in their own areas in accordance with the national strategy and policies?
- Is an appropriate geographical information system used? For what purpose?
- Does the main agency responsible regularly review its disaster management tools and measures on their efficiency and effectiveness? When is this assessment done?
- Are the results of this assessment used for decision-making and the improvement of future disaster management initiatives?
- The questions below will help the auditor (as well as the planners) assess the needs for and use of a GIS in disaster risk reduction:<sup>53</sup>
  - ✓ What planning decisions need to be made?
  - ✓ Which decisions involve the use of mapped information and information appropriate for map display?
  - ✓ What information cannot be managed efficiently with manual techniques?
  - ✓ What information management activities can be supported by the proposed GIS?
  - ✓ What types of decisions can be supported with a GIS?
  - ✓ Are the GIS appropriate for the analysis? Will it produce the necessary maps?
  - ✓ To what extent will a GIS help achieve the desired objectives?
- To assess the suitability of the GIS, the following questions can help the auditor:
  - ✓ Are its capabilities compatible with the needs of the new users?
  - ✓ Is the in-house technical expertise capable of serving the new users?
  - ✓ What are the institutional arrangements that would enable the appropriate use of this GIS?
- In order to evaluate the sustainability of the GIS, the following questions can help the auditor:

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<sup>53</sup> Primer on Natural Hazard Management in Integrated Regional Development Planning, “Geographic Information Systems in Natural Hazard Management”, <http://www.oas.org/DSD/publications/Unit/oea66e/begin.htm#Contents>, (06 May 2010).

- ✓ Who will be the users of the information generated with the GIS?
- ✓ In terms of information, time, and training needs, what is required to obtain the desired results? Can these requirements be fulfilled?
- ✓ Is the budget sufficient and is staff availability adequate?
- ✓ What agencies are participating in similar projects?
- ✓ To what extent would a GIS help to attract the interest of other agencies and facilitate cooperation?
- Are hazard maps prepared taking into consideration the existing environmental plans, land use planning and building development schemes, etc.?
- Are there any special tools intended to mitigate disaster risks and impacts?
- Are there any standby arrangements for purchasing, receiving, storing, distributing disaster relief supplies?
- .....
- ..... (Please add your own questions)

#### ***F. Assessment of emergency exercises and training/public awareness***

- F.1** Large-scale disasters which have occurred in recent years have fostered better understanding and improved relationships between national and international actors in the field of disaster risk reduction. They have also encouraged a degree of participation and awareness-raising, both of which are important for bringing about changes in policy.
- F.2** However, there is no clear evidence that enhanced public awareness translates into public action and greater accountability. It seems that public awareness creation is not generally part of strategic national efforts; it is rather the result of single projects. Large shares of national and international funds, especially for exercises, training and community preparedness, are used by bodies like NGOs. Therefore, the possibility of duplication in these activities is particularly high. To give all stakeholders assurance, the auditor should carefully examine all training activities and public awareness campaigns. Also, it should be assessed whether or not the organisations and individuals have, through training, gained the necessary knowledge and skills to effectively respond to and quickly recover from various types of disaster. In these areas, the SAIs should pay special attention to promoting public accountability.
- F.3** In the immediate aftermath of disasters, the dissemination of clear and objective disaster information to the public and stake holders is critically important. Therefore an effective mechanism for conveying information in a way that is understandable and clear and leaves no room for misinterpretation or speculation and providing two-way communication should be specified and introduced in public awareness campaigns. This is an important issue which can be examined in auditing of disaster risk reduction.
- F.4** To assess the planning and implementation of emergency exercises, training and community preparedness, the auditor should try to answer the following:

- Is the government promoting public awareness and education and strengthening community participation in the area of disaster risk reduction?
- Are there plans for disaster risk reduction training for the public and/or public education campaigns in order to raise public awareness? Are these executed according to plan?
- Are education programmes and training on disaster risk reduction planned and realized in schools and local communities?
- Have training requirements and effective training plans been established and are they being updated as appropriate?
- Do programmes provide organisations and individuals with the necessary knowledge and skills to respond effectively and quickly recover from various types of disaster?
- At the local level, have more practical matters such as evacuation areas/routes and possible shelters been considered, disseminated and reflected in the disaster drills?
- Is responsibility for developing and conducting emergency exercises and training clearly defined and assigned to an appropriate agency, department or individual?
- Are local drills and simulation exercises conducted at all levels of government?
- Are training/emergency exercises at the national and local levels, including at the town level, implemented and/or supervised by an authorised body/agency?
- Is it ensured that training functions and activities are not unnecessarily duplicated or overlapping?
- Is there any specific programme for training/emergency exercises for particularly vulnerable people (Patients in hospitals, students in schools, employees in government/private sectors housed in tall buildings/dilapidated buildings, people living in low-lying areas or near river banks)?
- Are various local departments (fire dept., police, and hospitals), community-based organisations, the Red Cross/Red Crescent, the media and local businesses involved in the training/emergency exercises?
- Has the government been involved in capacity building by sending officials to other more developed countries for purposes of learning the most effective emergency exercises during disasters?
- Is a communication mechanism established and introduced into the community?
- .....
- ..... (Please add your own questions)

### ***G. Assessment of disaster funds and grants administration***

**G.1** The social and economic costs of disasters vary widely and are difficult to estimate on a global basis. The most expensive disasters in purely financial and economic terms are floods, earthquakes and windstorms. Precautions taken before the disasters will decrease the devastation and economic impact. Less developed countries with limited economic diversity and poor infrastructure mostly need external funds when preparing for a disaster. Conversely, in developed economies, governments, communities and individuals have

greater capacities to cope. However, disasters will adversely affect all economies and societies whether in developed or developing countries. Therefore, the national and external funds allocated to disaster risk reduction should be used in an economic, efficient and effective manner.

- G.2** For this reason international policies concerning disaster management have moved towards more emphasis on disaster risk reduction. Financial procedures established in accordance with previous policies that allocated large resources to post-disaster relief and reconstruction activities need to be redefined in accordance with these changing policies. The procurement processes and flow of funds must be well-defined and tested in advance. They also should be flexible enough in design to accommodate unexpected events in post disaster environments. The specifications for services and goods which may be delivered in urgent circumstances should be pre-defined to avoid the lack of quality in both services and delivered goods frequently observed following disasters. The auditor should pay special attention to whether financial processes have been redefined in parallel with new policies.
- G.3** In order to contribute towards improved economy, efficiency and effectiveness in this area, the auditor should carefully examine the costs of all projects/investments. In this connection he/she should look into whether:
- a national disaster plan and sub-plans taking into account realistic cost estimates need to be prepared.
  - the projects to be implemented within the scope of the plans need to be determined by means such as cost-benefit analyses.
- G.4** Disaster risk reduction activities, especially such as reinforcement and reconstruction activities/urban transformation can continue over several years. The sustainability of the projects/investments in the field of disaster risk reduction needs to be assessed as follows:
- Resource planning must be performed and future financing models must be developed.
  - In view of the high cost of investments such as GISs and their maintenance, additional sources of finance must be sought.
- G.5** In order to prevent unnecessary investment in this field and to use resources efficiently, a mechanism should be established to monitor the physical and financial implementation of actions, projects and investments. This should help decision-makers take timely corrective decisions.
- G.6** To evaluate the adequacy and management of the funds for disaster risk reduction activities, the auditor should answer the following:
- Does central government and/or the authority responsible for disaster risk reduction have a complete overview of the funds received and/or allocated for disaster risk reduction activities by all relevant bodies?
  - From which sources are the funds provided for disaster risk reduction? (Government institutions, people/community, organisations/private bodies, foreign governments, foreign or local non-government organisations NGOs, international institutions/donors, international financial institutions etc.)
  - By whom are the funds from these sources used?

- Are there specific laws or procedures in the country that govern the allocation and utilization of funds for the National Disaster Plan and are they complied with?
- How do the disaster risk reduction policies of the central and local governments affect the allocation of funds and the selection of projects receiving funds?
- Are dedicated budget allocations made by central government to local governments/authorities and ‘first-line’ implementing agencies?
- Have the processes for receiving, managing, spending and recording of disaster-related funds been clearly established for each of the various channels of funds, such as governmental funds and domestic and foreign donations?
- Is there any periodic reporting on disaster fund allocation and utilization by recipient agencies?
- Is there an agency in-charge of preparing a consolidated annual report to reflect total funds allocated to and utilized by all recipient agencies?
- Are donations from private sources intended for disaster risk reduction duly booked and recorded and used for the purpose for which they were granted?
- Have effective administrative processes been conceived for the application and processing of grants? (Although in principle the administrative procedures for the allocation and use of public funds should ensure timeliness, in case of urgent disaster risk reduction activities, they may not be sufficient. Therefore specific administrative arrangements should be in place to allow for maximum flexibility.)
- Are remaining balances of grants returned to the donor, used for other purposes or remitted to the national treasury?
- Are donors’ reporting requirements complied with and are reports submitted on time?
- Are disaster risk reduction projects/programmes completed on time and within the budget?
- How much flexibility is allowed for the use of otherwise earmarked funds in local and national budgets in emergencies/preparedness for imminent disaster events?
- Does the government make use of cost-benefit and similar analyses to identify realistic alternatives?
- What investments in disaster mitigation could be usefully made?
- Is there a strategic reserve of disaster relief goods?
- ..... (Please add your own questions)

## ***H. Assessment of the adequacy of measures to make urban areas more resilient and reducing urban risk***

**H.1** The world’s population mostly lives in cities or urban centres. Some rapidly growing cities were not originally well constructed and environmental urban degradation, growing informal settlements and failed infrastructure and services pose significant disaster risks. More and more people are settling in disaster prone areas. Therefore, constructions able to

withstand the force of seismic shocks, floods or volcanic ash, etc. and sound urban planning for well-built cities are primary measures and concerns for disaster prone areas.

**H.2** In urban settlements, the auditor should consider the key risks so as to be able to evaluate local disaster risk reduction activities and perform sampling in a sound manner. The most significant risk drivers are as follows:

- Rising urban populations and increased population density. High population density is a significant risk driver where the quality of housing, infrastructure and services is poor.
- Weak urban governance. In cases of poor urban governance, local authorities are unable to provide infrastructure, services or safe land housing. A weak local government with poor resources, which lacks investment capacity and competence and is not engaged in participatory and strategic urban and spatial planning on behalf of low-income citizens in informal settlements, will not embrace the challenge of resilience, and will increase the vulnerability of much of the urban population.
- Unplanned urban development. In many rapidly growing cities, much of the urban expansion takes place outside the official legal building codes, land use regulations and land transactions. Existing planning instruments are often unrealistic. In this situation, the auditor should focus on the requirements of sustainable urbanization. Sustainable urbanization requires comprehensive steps for the management of risk and emergency plans. It also requires the enforcement of urban planning regulations and building codes on the basis of realistic standards, with particular attention to the needs of the most vulnerable.
- Lack of available land for low-income citizens. Most of the urban poor are more exposed to hazards due to poor living conditions in high density neighbourhoods, poor capacity of the buildings to withstand seismic forces, narrow roadways that limit access in emergencies, limited water provision and complicated electrical installations where fires can easily take hold. This knowledge regarding the capacities and profile of low-income citizens is crucial for an evaluation of the economic-social impacts of urban transformation and the design of alternative financial models.
- Inappropriate construction. Building codes and regulations set minimum standards for safety, and resistance to natural hazards in many countries. Building practices and the enforcement of these regulations are essential because cost cutting, a lack or distortion of incentives and corruption are the main reasons why even well-designed buildings collapse. Informal settlements and illegal or non-engineered constructions shelter most city dwellers in many countries. Are conditions right for proper investment in safe structures or improvements.
- Upgrading critical infrastructure and public buildings is a minimum requirement for sustainable urbanizations and resilience. Safe schools and hospitals would provide necessary shelter and services. Storm drainage would reduce floods and landslides - and at low cost.

- Concentration of economic assets. Economic assets tend to be clustered in large cities. Disasters in these cities can have devastating effects on local and national economies<sup>54</sup>.

**H.3** Auditors should design and implement audits taking account of these risk drivers. In this context, the assessment of urban planning and its implementation should be given special attention. Sound urban planning should form a basis for decisions and activities for making urban areas resilient.

**H.4** In order to assess the adequacy of the steps taken to make urban areas/cities more resilient, the auditor should examine the following questions:

*General*

- What are the main disaster risks in the urban areas covered by the audit?
- What activities are planned and realized by local authorities to make cities safer against these disaster risks?
- Is there a competent and accountable local authority that caters for sustainable urbanization with participation from all interested parties?

*Urban planning/Building development plans and their implementation*

- Have urban plans/building development plans been drawn up with a disaster sensitive approach?
- Have building development plans been drawn up on the basis of geological survey reports?
- Have building development plans been reviewed after the preparation of geological survey reports?
- Have urban plans been prepared on the basis of the participation of citizen groups and civil society?

*Reinforcement and reconstruction activities/urban transformation*

- Has the disaster resistance of existing buildings and common infrastructures been examined throughout urban disaster prone areas, in line with the aim of disaster risk reduction?
- Are criteria for reinforcement and reconstruction decisions specified?
- Are measures taken against licensed and unlicensed buildings constructed previously in areas declared unfit for housing?
- Are priorities and long and short term strategies/programme/plans specified for making urban areas disaster-resistant?
- Have there been any improvements in programmes/projects for making existing buildings disaster resistant, reinforcing them if necessary or realizing urban transformation?

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<sup>54</sup> UNISDR: My city is getting ready and Local governments and disaster risk reduction.

- Is the safety of public buildings such as schools and health facilities assessed and are they upgraded as necessary?
- Is the legal framework adequate for the measures relating to reinforcement and reconstruction and urban transformation projects?
- Are there any studies and investments concerning critical infrastructure that reduces risk, such as flood drainage?
- Have the necessary resources been committed? Has a financial plan been prepared according to the strategy/programme/action plans?
- What is the nature of these financial resources (national/local government, other)? Does the SAI have an audit mandate for all resources?
- Do the national government and/or local authorities assign a budget for disaster risk reduction to provide incentives for homeowners, low-income families, communities, businesses and the public sector to invest in reducing the risks they face?
- Have any finance models for urban transformation been designed taking low-income citizens into consideration? Have any alternatives been assessed?
- .....  
.....(Please add your own questions)