THE TURKISH COURT OF ACCOUNTS

INTOSAI

JOINT REPORT

AUDIT OF DISASTER RISK REDUCTION

INTOSAI Working Group on Accountability for and the Audit of Disaster-related Aid

Audit Term 2011 - 2013

Published: March 2015, TURKEY

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http://www.sayistay.gov.tr/en/?p=2&ContentID=234

This is the joint report of the parallel/coordinated audit conducted with the participation of the SAIs of Azerbaijan, Chile, India, Indonesia, Netherlands, Pakistan, Philippines, Romania, Turkey (Lead) and Ukraine within the body of INTOSAI WG AADA. The Turkish Court of Accounts prepared the joint report for publication.

The report will be accessible free of charge on the web site of http://www.sayistay.gov.tr/en/?p=2&ContentID=234

Messages from Heads of Participating SAIs

The South East Asia disaster in 2004 revealed once again that disasters constitute one of the biggest humanitarian, environmental, economic and social challenges and new policies are needed to be resilient against them. New disaster policies towards disaster risk reduction have already been developed by the UN resolutions. These policies need to be addressed in a coordinated effort at the international level.

In parallel with these developments, the INTOSAI primarily created a Task Force on the Accountability and Audit of Emergency Aid after the South East Asia disaster occurred in 2004, and then the Working Group on Accountability for and the Audit of Disaster–related Aid (AADA) was set up in 2007. Within the scope of INTOSAI Working Group AADA, the Turkish Court of Accounts (TCA) took responsibility for and prepared the Guidelines which are included among INTOSAI standards as "ISSAI 5510 Audit of Disaster Risk Reduction". While preparing the ISSAI 5510, the Turkish Court of Accounts (TCA) organised an international parallel/coordinated audit on disaster risk reduction with the aim of providing inputs for the draft versions of ISSAI 5510 and testing and improving its content.

In October 2011, this project was launched with the invitation sent by the TCA to all INTOSAI members. The Supreme Audit Institutions (SAIs) of Azerbaijan, Chile, India, Indonesia, Pakistan, Philippines, Romania, Ukraine, and Turkey (leading SAI) gave positive responses to this call and participated in the international parallel/coordinated audit. The SAI of the Netherlands provided input during meetings and regarding draft versions of ISSAI 5510. We know that the SAIs play a critical role in promoting accountability and transparency by reporting to the parliaments on the efficient, effective and cost-effective implementation of, inter alia, disaster policies. With this perspective, we carried out our national audit studies separately and tried to reflect our experiences into this parallel/coordinated audit.

We are pleased to present the joint results of our audit works and summary of national audits in this report. We hope the results of the international parallel/coordinated audit will provide all SAIs—not only the 10 SAIs represented in this report—with a summary of common issues to consider as they undertake works to scrutinize their governments' achievements as regards to the disaster risk reduction commitments and the development of related policies and programs. The joint report highlights areas that SAIs may wish to examine to improve the implementation of their governments' disaster risk reduction policies and programs. The results also provide legislatures with a means to assess the progress that governments have made and challenges they face in delivering their programs and targets. In addition to all these, we believe that this joint audit report will provide the international community and those concerned with sound information about the sufficiency of current situation as well as the deficiencies in this field.

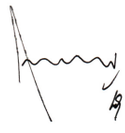
It is clear that global issues such as disasters can only be addressed at the global scale. With this basic awareness, we, as individual SAIs, not only exerted institutional efforts at national level, but we also tried to create global awareness and impact through this joint report.

Participating Supreme Audit Institutions

Mr. Vugar Gulmammadov
Chairman
Chamber of Accounts of Azerbaijan

Dr. Ramiro Mendoza Zuñiga
Contralor General de la República de Chile
Contraloria General de la República

Mr. Shashi Kant Sharma
Comptroller and Auditor General of India
Office of the Comptroller and Auditor General



Mr. Rizal Djalil
Chairman of the Audit Board of the Republic of Indonesia
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Ms. Saskia J. Stuiveling
President of the Netherlands Court of Audit
Algemene Rekenkamer

Confirms acceptance of this report and becomes its signatory by issuance of the Official Letter

Mr. Muhammad Akhtar Buland Rana
Auditor-General
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Ms. Maria Gracia Pulido Tan
Chairperson of the Commission on Audit
Commission on Audit

Mr. Nicolae Vacaroiu
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Assoc. Prof. Dr. Recai Akyel
President of the Turkish Court of Accounts

Mr. Roman Maguta
Chairman of Accounting Chamber
Accounting Chamber of Ukraine

Confirms acceptance of this report and becomes its signatory by issuance of the Official Letter

Message from the President of the Turkish Court of Accounts

Humankind has witnessed such natural events as earthquake, tsunami and typhoon throughout the history. However, the frequency of the natural events to transform into disasters due to economic and environmental factors has increased in the 21st century and the secondary disasters triggered by the natural disasters such as the nuclear leak occurring in the Fukushima Nuclear Power Plant in Japan in 2011 have occupied the agendas of the countries as major problems. The magnitude and frequency of disasters and the losses caused by them reminded the humankind about the importance of the risk reduction activities aimed at preventing the transformation of such natural events as earthquake, tsunami etc. into disasters.

This process also contributed to the development of the sense of cooperation and solidarity among the countries and to the comprehension of the importance of a shared wisdom and action in such transboundary issues as disaster, environment, transport, immigration, terror and economic crisis and made the formulation of common policies compulsory. Transboundary nature of the disasters that affect not only the country in which it takes place but also other countries created the need for cooperation both in the risk reduction activities and post-disaster damage reduction and rehabilitation activities and regional and international joint works gained speed in this regard.

In parallel with these developments, the SAIs started to carry out works to seek global responses to global problems by developing auditing standards on environment and disasters etc. and conducting joint and parallel audits. In this framework, INTOSAI launched a joint work in 2007 and established "INTOSAI Working Group on Accountability for and Audit of Disaster-related Aids (WG AADA)" under the leadership of the European Court of Auditors (ECA) in order to prepare the standards that will guide all the SAIs in their audits related to disasters.

Taking part in the activities of the Working Group in 2008, the Turkish Court of Accounts (TCA) successfully completed the task of preparing *"ISSAI 5510 – The Audit of Disaster Risk Reduction"* assigned by INTOSAI and ISSAI 5510 – The Audit of Disaster Risk Reduction was included among the international standards on auditing. So as to test the applicability of ISSAI 5510 and transfer the experiences of different countries into the standard, an international parallel/coordinated audit on *"Disaster Risk Reduction"* was launched under the leadership of the TCA in October 2011.

The parallel audit conducted with the participation of the SAIs of Azerbaijan, Indonesia, Philippines, India, Netherlands, Pakistan, Romania, Chile and Ukraine contributed greatly to reflecting the experiences of the countries into ISSAI 5510 and increasing the efficiency of the standard. The fact that a high number of SAIs participated in the parallel/coordinated audit and the geographical distribution of the participating SAIs was representative for the whole world increased the value of the parallel/coordinated audit.

It is beyond doubt that strong cooperation and sense of mission among all the participating SAIs and the ECA which also acts as the president of INTOSAI WG AADA, in particular, have played a crucial role in the success of these works. In this respect, I would like to extend my heartfelt thanks to the Presidency of the Working Group which contributed greatly to the success of the activities of the WG AADA, to the SAIs of Azerbaijan, Indonesia, Philippines, India, Netherlands, Pakistan, Romania, Chile and Ukraine and to the auditors taking part in the audit teams realising this international initiative with their diligent works.

Assoc. Prof. Dr. Recai AKYEL

President of the TCA

Abbreviations

AFAD: Disaster and Emergency Management Presidency of Turkey

CCA: Climate Change Adaptation

DM: Disaster Management

DMA: Disaster Management Authority

DRC: Danish Red Cross

DRPoT: Disaster Response Plan of Turkey

DRR: Disaster Risk Reduction

DRRM: Disaster Risk Reduction and Management

ECA: European Court of Auditors

EM-DAT: The OFDA/CRED International Disaster Database

EU: Eurepean Union

GIS: Geographic Information System

GPS: Global Positioning System

GPRS: General Packet Radio Service

ICBRR: Integrated Community Based Risk Reduction Program in Indonesia

IFRC: International Federation Red Cross

INCOSAI: International Congress of Supreme Audit Institutions

INTOSAI WG-AADA: INTOSAI Working Group on Accountability for and the Audit of Disaster-related Aid

ISMEP: Istanbul Seismic Risk Mitigation and Emergency Preparedness in Turkey

ISSAI 5510: INTOSAI standard "ISSAI 5510 Audit of Disaster Risk Reduction"

JICA: Japan International Cooperation Agency

NDMA: National Disaster Management Authority

NGO: Non- Governmental Organisation

ONEMI: National Emergency Office in Chile

SAI: Supreme Audit Institutions

SDRF: State Disaster Response Fund

SNPC: National System of Civil Protection

SOL: Safety of Life

TCA: Turkish Court of Accounts

UN: United Nation

UNISDR: The Secretariat of the International Strategy for Disaster Risk Reduction of the United Nations

Content

Background

In 2004, one of the biggest earthquakes in recorded history and a series of devastating tsunamis triggered by this earthquake struck mainly Indonesia and the coasts of sweeping landmasses bordering the Indian Ocean and caused the deaths of over 230,000 people in fourteen countries. The international community mobilised to bind up the wounds of one of the deadliest natural disasters of all times. As a result of the worldwide humanitarian response, the vast amount of aid flowed from many different donors to many different recipients. However, it was quite difficult to obtain information about and trail the aid flows. By assessing this situation, INTOSAI decided to contribute its collective auditing experience to the international community to enhance the accountability for and the transparency of disaster-related aid.

With the aim of establishing an overview of the tsunami-related aid flows based on the information provided by individual stakeholders (donors, international organisations, intermediary bodies and recipients) and fostering the collaboration on the audit of the aids, the INTOSAI Task Force on the Accountability and Audit of Emergency Aid was set up in 2005. The Task Force concluded its studies by recommending that guidance should be prepared on good practice for financial reporting in this area and on appropriate tools for auditors of disaster-related aid.

In 2007, the INTOSAI Working Group on Accountability for and the Audit of Disaster-related Aid (INTOSAI WG-AADA) as a successor of the INTOSAI Task Force on the Accountability and Audit of Emergency Aid was accordingly established in the XIX INCOSAI meeting in Mexico. One of the prominent mandates of the WG-AADA was to develop guidelines and best practices for SAIs auditing disaster-related aid. In the 1st meeting of the WG-AADA held in 2008, the TCA took responsibility for preparing guidelines on the audit of disaster preparedness. In this framework, the TCA prepared several versions of the Guidelines which are included among INTOSAI standards as "ISSAI 5510 Audit of Disaster Risk Reduction".

In the XX INCOSAI meeting in South Africa in 2010, the Work Programme 2011-2013 of the INTOSAI WG-AADA was designed and accepted. As a part of the work programme, the TCA took on the task of organising and coordinating an international parallel/coordinated audit on disaster preparedness, on the basis of the draft version of ISSAI 5510. In July 2011, Mr. Gijs de Vries, the Chairman of the INTOSAI Working Group, member of the European Court of Auditors (ECA) and Mr. Recai Akyel, the President of the TCA invited the INTOSAI members to take part in the international parallel/coordinated audit on disaster preparedness. The SAIs of Azerbaijan, Chile, India, Indonesia, the Netherlands, Pakistan, Philippines, Romania, Ukraine, and Turkey (leading SAI) gave positive responses to this call and participated in the international parallel/coordinated audit.

Objective of the International Parallel/Coordinated Audit

The *main objective* of the international parallel/coordinated audit was to provide inputs for the draft version of ISSAI 5510 and to test and improve its content.

Scope of the International Parallel/Coordinated Audit

The participating SAIs decided to adopt a broad audit scope and perspective in carrying out the parallel audit since such a broad audit scope would facilitate the achievement of the objective of using the draft ISSAI 5510 and testing and improving its content, and would also be more convenient for fulfilling the new perspective of UN/INTOSAI 21st Symposium.

Background

This symposium, which focused on the "Effective practices of cooperation between SAIs and citizens to enhance public accountability", brought a new perspective to the works of SAIs by underlining the significance of SAIs' being responsive to the needs and concerns of citizens and helping to build public confidence.

Common Audit Methodology

In the international parallel/coordinated audit, organising meetings and carrying out surveys were used as main tools. During the international parallel/coordinated audit, the TCA organised three meetings with the aim of providing and exchanging information among participating SAIs and discussing important issues. Two surveys were conducted among the participating SAIs for collecting comparable information on the participating SAIs' audit. Participants communicated mainly through e-mail and dedicated website of AADA. **http://www.sayistay.gov.tr/aada/**

Progress of the International Parallel/Coordinated Audit

The first step of the international parallel/coordinated audit on disaster risk reduction was the kick off meeting. It was held on October 26th, 2011 in Antalya/Turkey, after the 5th meeting of WG AADA. In this meeting, the basis and the next steps of the international parallel/coordinated audit were determined and discussed. For the international parallel/coordinated audit; planning, implementing and reporting stages were specified as milestones. After the first meeting, the TCA prepared a study proposal and shared it with the participating SAIs.

The second meeting of international parallel/coordinated audit on disaster risk reduction was held on April 25-26, 2012 in Ankara/Turkey. In the meeting, such issues as how to design and conduct the audit and which audit perspectives and types should be implemented were discussed. The meeting focused on clarifying the concept of disaster-preparedness in line with the revised draft Guidelines and on reaching a common understanding that auditing disaster-preparedness should be handled in a broad frame covering risk assessment and disaster prevention and mitigation. This means that, in the international parallel/coordinated audit, the concept of disaster-preparedness was used in place of disaster risk reduction.

Meanwhile, the first survey was conducted to ask the participating SAIs' opinions on such subjects as:

- designing and implementing the international parallel/coordinated audit,
- specifying how to conduct the international parallel/coordinated audit with common questions and criteria or different questions and criteria,
- cooperation and the basis for the exchange of information among SAIs,
- presenting the results of the international parallel/coordinated audit,
- assessment of the previous version of the draft ISSAI 5510.

After the second meeting and in the light of the results of the first survey, the TCA prepared a draft common audit design matrix including main questions, sub-questions, criteria and methodology and shared it with the participating SAIs with the aim of forming a comparable basis for the joint report.

Taking the participating SAIs' opinions on the draft into account, the TCA finalised and shared the audit design matrix.

Before the third meeting, the second survey was sent to the participating SAIs to form a common basis for the presentations to be made in the third meeting and also to collect the data to be directly provided by the participating SAIs. With this survey:

- such data as audit findings/conclusions and recommendations, audit objectives, audit approach/scope, risks, good practice examples concerning the audit studies of the participating SAIs were collected,
- information was obtained on the subjects addressed in the audit programme included within the scope of the exposure draft of ISSAI 5510,
- The participating SAIs made assessments about the policy gap, improving international and regional collaboration and promoting efficiency of the SAIs in the field of auditing disaster risk reduction.

The third meeting of the international parallel/coordinated audit was held in Istanbul on 07-08 February 2013. In the last meeting, the individual audit studies were presented by the participating SAIs and also, the structure of the joint report was discussed. Then, the TCA prepared the draft joint report and sent to the participating SAIs. After taking participating SAIs' opinions, the draft joint report was revised and finalised.

In this report, we presented the results of the international parallel/coordinated audit in two sections:

- In part I: Joint report and common conclusions of the international parallel/coordinated audit were handled.
- In part II: Summaries of the national audits were given.

Part I attempts to provide general information about main activities and audit finding examples derived from the audit works of the participating SAIs, addressing the gaps in current situation. In this section, we handled the issues in accordance with the common audit matrix and the audit programme included in the draft versions of ISSAI 5510. In this framework, event analysis and risk assessment were primarily conducted for the countries of the participating SAIs. Afterwards, major issues starting from legal arrangements in compliance with common audit matrix were tried to be brought to light.

In part II, summaries of national audits were provided. We prepared the summaries of the national audits based on the audit information obtained from the participating countries. We only kept the designs of the SAIs of Chile and India because they provided us with the original summaries of their national audits.

Background

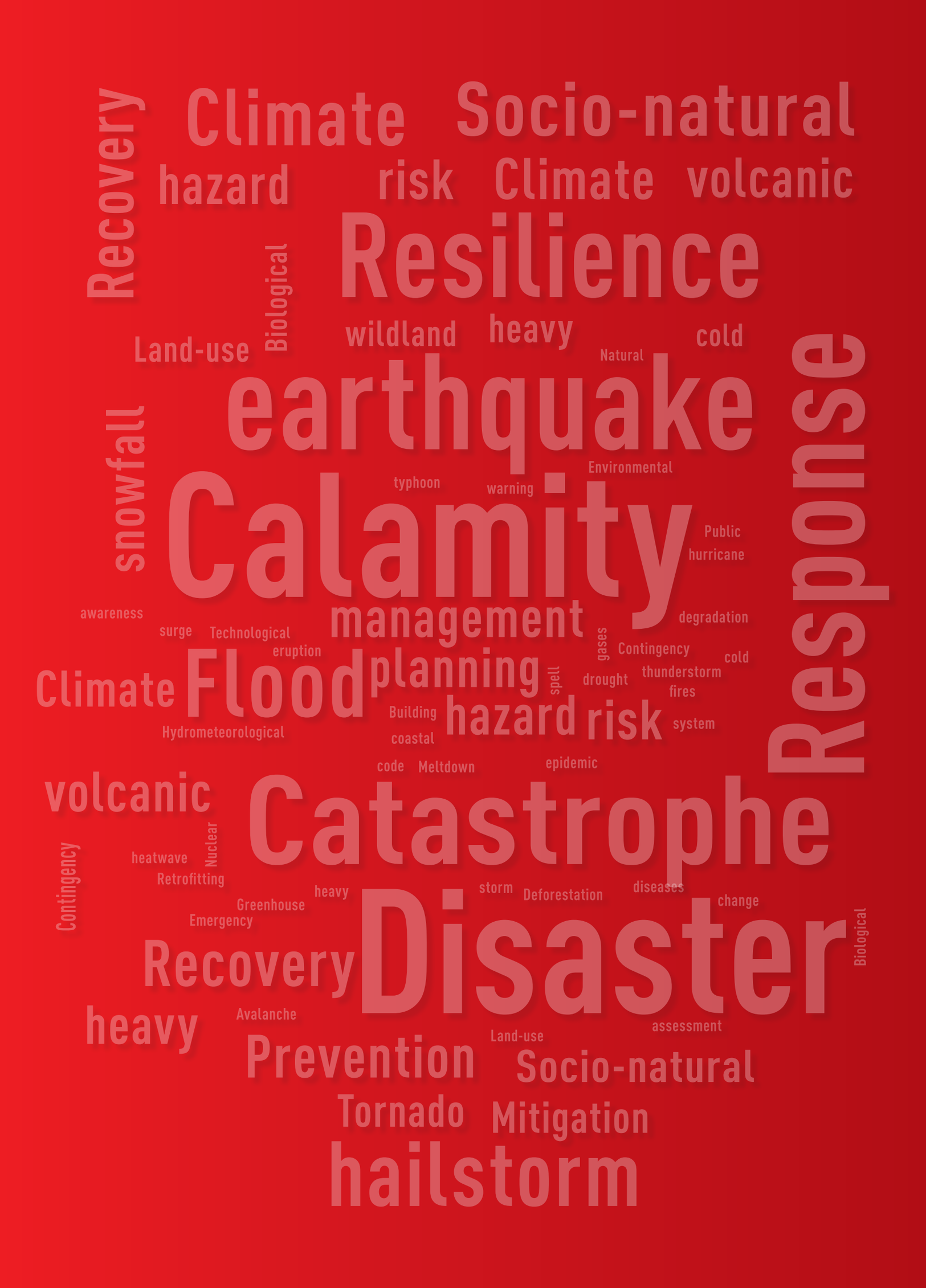
Common Audit Matrix of the International Parallel/Coordinated Audit on DRR

MAIN QUESTION 1: ARE THE ORGANIZATIONAL STRUCTURE AND STRATEGIES FOR DISASTER PREPAREDNESS ADEQUATE?		
Sub-Question	**Criteria**	**Methodology**
1.1. Within the framework of the integrated disaster management approach, are there any strategies and policies in place?	1.1.1 A national disaster strategy and action plan, encompassing all types of possible disasters, should be prepared and periodically updated: • duties, responsibilities and those entities concerned should be clearly defined; • duties should be prioritized and scheduled. 1.1.2 Disaster management should primarily focus on the strategies and activities oriented towards disaster risk reduction. 1.1.3 Goals, objectives and strategies established at national level should be reinforced with a sound financial and legal framework.	➢ All legal and administrative arrangements, particularly laws; ➢ Development Plans, Medium-Term Programs, Annual Programs, Government Programs; ➢ "National Strategy for Disaster Management" and "Urban Development Strategy and Action Plan"; ➢ Entities' budgets, documentation related to financial resources; ➢ Strategic plans, accountability reports and audit reports of entities; ➢ Meeting minutes and decisions of the boards specified in the law of coordinator entity; ➢ Internal and external correspondences; ➢ Publications and documents of associations, professional organizations and academics; ➢ Practices of other countries; ➢ Documents issued by international organizations.
1.2. Has an effective organizational structure been established for successful and coordinated implementation of disaster preparedness?	1.2.1 There needs to be a legal framework that clearly establishes the duties, competences and responsibilities of the coordinator entity. 1.2.2 The entity responsible for the coordination should be equipped with human, financial and other resources necessary to plan, coordinate and monitor disaster preparedness with an integrated approach.	➢ All relevant legal and administrative arrangements; ➢ Reports and other documents produced as well as correspondences of coordinator entity; ➢ Meetings with the personnel, the Treasury, State Planning Agency, universities and relevant NGOs; ➢ Examination of physical structure and technical infrastructure through observation; ➢ Examples of developed countries; ➢ Internal and external correspondences; ➢ Publications and documents of associations, professional organizations and academics; ➢ Organizations of other countries.
1.3. Are the management tools being effectively used in disaster preparedness?	1.3.1 An up-to-date, lucid, correct, complete, integrated and practicable system suitable for planning and directing disaster preparedness should be developed. 1.3.2 Integrated information systems both at national and regional level should be established in a manner to support decision making processes and be made readily accessible by relevant entities.	➢ Examination on the information systems of coordinator entity, the Ministry concerning environment and urban development, municipalities and other entities concerned; ➢ Examining and checking the up-to-dateness of data; ➢ comparing and testing data if there are more than one information systems; ➢ Examinations on data sharing amongst various information systems; ➢ Analysing information systems used by some countries and benchmarking on the basis of modules; ➢ Contracts and documents related to resources allocated to the information system; ➢ INSPIRE directive and INSPIRE Implementing Rules; ➢ Internal and external correspondences; ➢ Meetings with personnel of coordinator entity and municipalities and academicians.

MAIN QUESTION 2: ARE THE PREPARATORY WORKS FOR EMERGENCY RESPONSE ADEQUATE?		
2.1. Have the disaster and emergency aid plans been prepared at local level?	2.1.1 Local implementation plans should; • be prepared by considering local disaster risks. • comply with high level plans. • be realistic and feasible and tested to be feasible through field examinations. • be responsive to alternative scenarios and multiple disasters. • be prepared through high-level participation of all relevant entities (including NGOs and universities). • be up-dated periodically. 2.1.2 In the local implementation plans; • Roles and responsibilities should be explicitly defined. • The activities which the private sector and the NGOs will be engaged in should be determined. • Special groups (like the disabled, the aged and children) should be taken into consideration. 2.1.3 Plans should include an infrastructure operating with alternative systems, which would enable effective communication among relevant entities and inform the public on regular basis during the disaster.	➢ Disaster and emergency plans, civil defence plans of provinces/towns; ➢ Examination as to the level of achievement of objectives specified in the plans; ➢ Arrangements related to the alternative scenarios set forth in the plans; ➢ Internal and external correspondences; ➢ Observations on the site as to the consistency of the plans with actual situations; ➢ Interviews with the officials of the entities, academicians and NGOs. ➢ Projects performed in this field; ➢ Drills performed; ➢ Examples from developed countries; ➢ Sufficiency of communication means; ➢ Pilot practice of communications through single call number; ➢ Internal and external correspondences; ➢ Interviews with the officials of the entities, academicians and NGOs.
2.2 Are training and awareness raising activities adequate, which are organized within the scope of disaster response?	2.2.1 Trainings and awareness raising activities should be planned, conducted and monitored as part of the overall strategy. 2.2.2 Trainings should be organized within the framework of accredited training programs and materials to be designed in cooperation with relevant entities. 2.2.3 Initiatives taken towards raising the awareness of the society should be effectively managed and participation of volunteers should be handled according to a plan.	➢ Plans, training and other materials of coordinator entity, Ministry of Education and selected local administrations, universities and NGOs; ➢ Disaster and emergency plans, civil defence plans of provinces/towns; ➢ Examples of developed countries; ➢ Coordination of training events; ➢ Activities and training programs of NGOs, ➢ Documents pertaining to resources allotted to disaster training; ➢ Internal and external correspondences; ➢ Interviews with the officials of the entities, academicians and NGOs.

Background

MAIN QUESTION 3: WHAT IS THE EXTENT TO WHICH RESIDENTIAL AREAS ARE PREPARED TO DISASTERS?		
3.1. Is urban planning made with due regard to risk of disaster?	3.1.1 Construction plans should be prepared and adjustments to these should be made by giving due regard to disaster risks. 3.1.2 Disaster prone settlement areas should be identified in line with micro zoning maps and local integrated disaster maps, and conservation plans should be prepared for such areas.	➢ All laws and regulations granting the entities with the authority to perform construction works, particularly the Building Code and the Law on Housing Development Administration; ➢ Legislation regarding construction and building control; ➢ Provincial environmental plans and construction plans, all studies, plans and projects taken as basis for construction works at the provincial level as well as the Reports of the Municipal Construction Commissions; ➢ Reports produced by the relevant NGOs; ➢ Examination, through sampling, of the resilience of buildings constructed in the last 10 years in ...; ➢ Internal and external correspondences, other documents related to construction legislation and building control; ➢ Interviews with the officials of the entities, academicians and NGOs.
3.2. Are the efforts effective in ensuring current building stock to be resilient to possible disasters?	3.2.1 There should be a mechanism that ensures construction of buildings resilient to disasters. 3.2.2 Retrofitting and demolition-construction works should be conducted according to short and long-term plans and within the scope of priorities established based on risk assessments. Plans, targets and budget should be correlated. 3.2.3 The urban transformation projects should be implemented transparently and in a manner to contribute to disaster risk and hazard reduction.	➢ The law on transformation of disaster risk areas, and related by-laws; ➢ Records of urban information systems, hazard maps and contingency plans of municipalities; ➢ Presentations prepared by municipalities and their audit reports; ➢ Analysing ongoing and finalized urban transformation projects through observation, interviewing and document examination; ➢ Examination on Risk Reduction Projects; ➢ Examination of retrofitting and construction works through sampling; ➢ To look into the connection between the plans and the budget; expenditure documents related to retrofitting and construction works and other documents; ➢ Internal and external correspondences; ➢ Meeting with the Constructors Association; ➢ Interviews with the officials of the entities, academicians and NGOs.


Recovery
Climate
Socio-natural
hazard
risk
Climate
volcanic
Resilience
Biological
wildland
heavy
cold
Land-use
Natural
earthquake
snowfall
Response
Environmental
typhoon
warning
Calamity
Public
hurricane
awareness
management
degradation
surge
Technological
eruption
gases
Contingency
cold
Climate
Flood
planning
spell
drought
thunderstorm
fires
Building
hazard
risk
system
Hydrometeorological
coastal
code
Meltdown
epidemic
volcanic
Catastrophe
Contingency
Nuclear
heatwave
Retrofitting
heavy
storm
Deforestation
diseases
change
Greenhouse
Emergency
Disaster
Biological
Recovery
heavy
Avalanche
assessment
Land-use
Prevention
Socio-natural
Tornado
Mitigation
hailstorm

PART I

JOINT REPORT

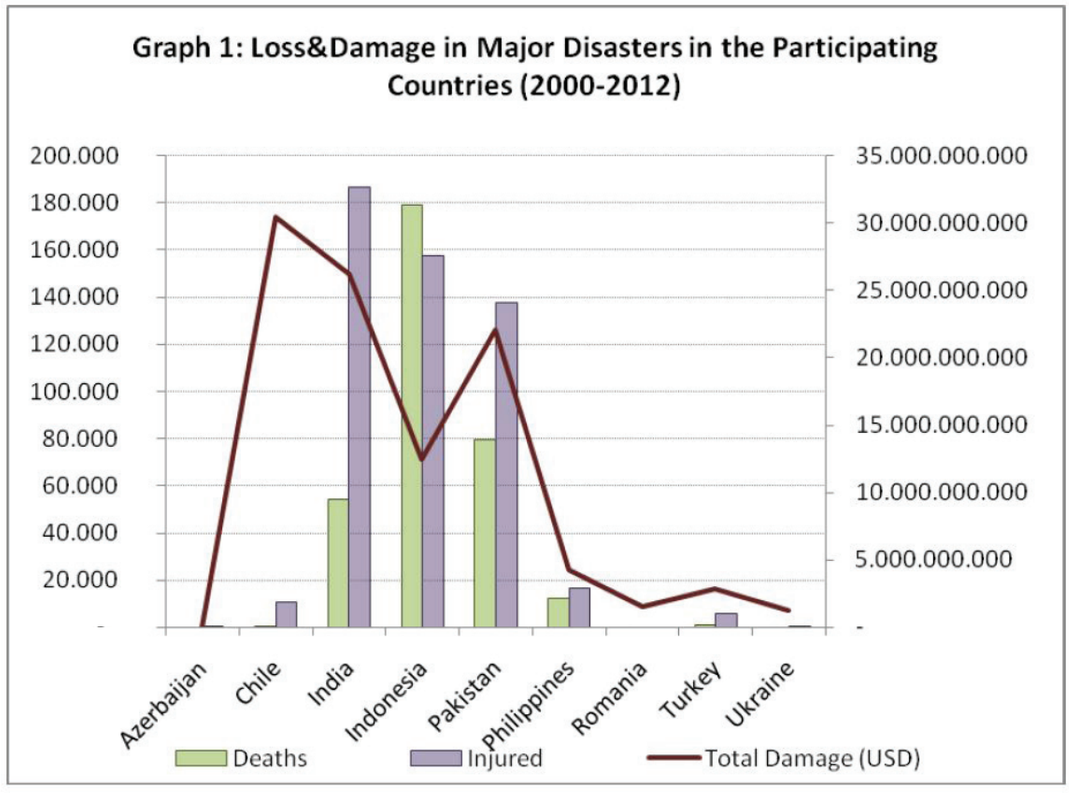
Audit of Disaster Risk Reduction

1. Joint Report

1.1 Event Analysis and Risk Assessment

Throughout the human history, natural hazards have occurred but they have recently started to turn into devastating disasters and their frequency has increased owing to social, demographic, political, and environmental factors. According to the scientists, the upward trend in disasters will increasingly continue in parallel with the growing impact of the climate change on a global scale. Every year, millions of people are affected by such natural disasters as earthquake, tsunami, flood and so on and lost their lives, homes, businesses, and belongings. According to the EM-DAT: The OFDA/CRED International Disaster Database; storm, earthquake and flood are the disasters causing the most damage, respectively.

The countries of the SAIs participating in the international parallel/coordinated audit on disaster risk reduction incurred significant losses of lives and economic damage on a different scale due to disasters. In fact, Pakistan (2010), the Philippines (2013) and Turkey (2011) were exposed to large-scale disasters within the last years that resulted in loss of life and significant damage. As seen in the following Graph 1, the annual estimated- average loss from disasters is approximately $ 100 billion in the countries of the SAIs participating in the international parallel/coordinated audit on disaster risk reduction. The information extracted from the Graph shows that disasters set back economic and social developments for years in these countries.



Taking into account this fact, international community started to give clear priority to the policies concerning DRR and these policies have been constantly gaining in importance. The realisation of these policies depends on all stakeholders' work together in coordination and within the framework of a sound strategy.

To specify a sound strategy, high probability hazards and types of disaster which countries would face in the near future should be analysed and the risks should be well-assessed. Therefore, the sufficiency of the hazard analysis and risk assessment works was firstly assessed in the international parallel/coordinated audit.

In almost all participating countries, the historical data concerning major disasters have been monitored and disaster risks have been assessed on the basis of these data. Only in Pakistan, international data were used. In this framework, it can be stated that there are some efforts and works to make risk assessment in a comprehensive and proper manner in all these countries. For example, in India, taking into account the goal of the Yokohama strategy of the United Nations (1994), the vulnerability atlas of India was first prepared in 1997 and revised twice in 2006 and in 2011. In Ukraine, risk assessment emergencies of natural origin set by:

- using the prognostic information of the Hydro-meteorological Centre and meteorological data sites through the Internet;
- using the statistics on the frequency and dangerous natural events (in the last thirty years) and information on occurrence of emergencies for the previous periods (15 years);
- monitoring data of exogenous dangerous geological processes, system of seismic observations, the state system of meteorological observations, surveillance systems for fire situation, information of sanitary-epidemiological and sanitary and veterinary services, etc.

Based on the analysis of these data and background materials on the state of the technological and natural safety of the regions, the national report on the state of technological and natural security in Ukraine which contains general information about the natural and technological hazards, occurrence of emergencies and their trends, risk assessment of response and state civil protection, actions on legal, organizational and technical measures aimed at improving the protection of population and territories from emergencies, preventing and reducing the scale of emergencies and improvement of their elimination and is available on the web site of the Ministry of Emergencies is prepared and published on an annual basis.

Similarly, in Indonesia, the National DMA publishes the disaster risk index including the results of the disaster risk assessment that classifies disaster risk level of each district in Indonesia. Factors taken into account are natural and human hazards, geographic locations, population, number of victims and buildings or infrastructures damaged in previous events. Romania has already drafted a Guideline for good practices in flood risk management based on the European Union Member States' experience. Turkey has been conducting projects to establish sound data centres for disasters such as Disaster Data Centre of Turkey and Earthquake Data Centre of Turkey.

In almost all participating countries, there are some information about all or a part of such issues as classification and frequency of disasters, geographical distribution of disasters, risk drivers, the number of disaster victims, economic losses caused by disasters, the number of buildings in need of retrofitting and etc.

But it is impossible to say that adequate disaster information systems including reliable, accurate and up-dated data for risk assessment have been established to date. Historical statistics relating to disasters are used as basis and accordingly, the probabilities of different types of disasters and levels of disaster risks are classified and assessments are made as regards to the probability of damage. The disaster risk reduction strategies and activities have focused on a few disaster types in which the probability of damage is high and damage is thought to exceed the ability of the affected community or society to cope with disasters by using its own resources at regional and national scale.

1.2 Summarized Findings/Conclusions

In the participating countries, the governments' concerns on disaster risk reduction have changed depending on the type, probability of occurrence and risk impact of the disasters. Soon after a devastating disaster, the concern on disaster risk reduction mostly increased and then dwindled away in the course of time. In these countries, several disaster risk reduction projects that are led and encouraged by the UN and/or financed mostly by such international organisations as World Bank have already been conducted.

On the other hand, the international policies concerning disaster management have been radically changed in the last decade under the leadership of the UN. Disaster risk reduction has taken priority within the new policies which require the transformation not only in governmental department but also in national and international society. In the participating countries, the precautions taken concerning disaster risk reduction show that the new policies have been constrictedly reflected in governments' approaches. In this situation, DRR would normally not be given priority within the audit studies of SAIs. However, taking into account the importance of the DRR for the whole community, the SAIs should give priority to this subject. In this perspective, the scope of the international parallel/coordinated audit was specified in a broad sense and in a way to cover all aspects of DRR from legal arrangement to building resilient community.

1.2.1 Legal Arrangement Related to Disaster Risk Reduction

It is clear that new disaster policies consisting of DRR required the reorganisation of the disaster management. In this framework, roles and responsibilities of central and local disaster management authorities should be re-defined and the participation of all stakeholders should be ensured. Besides, rules and principles and tools that will ensure the coordination among stakeholders should be specified. A new legal arrangement will be needed in order to meet these necessities.

In most of the countries participating in the parallel/coordinated audit on DRR, new disaster management laws addressing issues concerning disaster risk reduction entered into force in 2000s. For instance, the National Disaster Management Act was promulgated in India in 2005; in Indonesia in 2007; in Pakistan and Philippines in 2010 and in Turkey in 2009. As shown in Box 1, in some countries such as Chile and Turkey, the issues concerning DRR are addressed in the new disaster management act along with the other acts. As for some other countries such as Azerbaijan, Romania and Ukraine, issues related to DRR are addressed in numerous regulations.

Box 1: Relevant Legislation in Chile & Turkey (2013)

Chile	Turkey
• Decree N° 156, of 2002 is the main legal provision that contemplates emergencies. • Law N° 16.282, of 1965, of the Ministry of Finance, which sets rules in case of earthquakes or disasters. • Decree Law N° 369, of 1974, the Ministry of Interior, which created the National Emergency Office. • Decree N° 509, of 1983, of the Ministry of Interior, Regulation of the Organic Law of the National Emergency Office. • Law N° 19.175, Constitutional Law on Regional Government and Administration. • Law N° 18.695, the Constitutional Organic Law of Municipalities.	➢ Law No. 5902 on Organization and Functions of the Disaster and ➢ Emergency Management Presidency ➢ Law No.7269 on Measures and Assistances to Be Put into Effect ➢ Regarding Disasters Affecting the Life of the General Public ➢ Law No. 7126 on Civil Defence ➢ Law No. 5302 on Special Provincial Administrations ➢ Law No. 5216 on Metropolitan Municipalities ➢ Law No. 5393 on Municipalities ➢ Law No. 3194 on Land Development Planning ➢ Law No. 6305 on Catastrophe Insurances ➢ Law No. 6306 on Restructuring of Areas Under Risk of Disasters ➢ Law No. 4123 on Execution of Services Related to Damage and Disruption Caused by Natural Disasters ➢ Law No. 3634 on National Defence Obligation ➢ Law No. 2942 on Expropriation ➢ Law No. 5403 on Soil Preservation and Land Utilization ➢ Law No. 4342 on Pastures ➢ 1951 Geneva Convention Relating to the Status of Refugees

Sources: - Chilean SAI's reply for the survey made in the parallel/coordinated audit carried out within the scope of INTOSAI WG-AADA.

- The Strategic Plan of the Disaster and Emergency Management Presidency of Turkey (2013 – 2017, https://www.afad.gov.tr/UserFiles/File/STRATEJI, November 2013.

The new act generally provides for the legal and institutional framework for the effective management of disasters and mandates creation of new institutions and assignment of specific roles for central and local governmental institutions. In box 2, the major provisions in new disaster management acts in India and Turkey are comparatively handled as an example. As seen in this comparison, the new disaster management acts generally mandate creation of new institutions and assignment of specific roles and responsibilities for central and local disaster management authorities. Additionally, it specifies the procedures for preparing and approving of national disaster plan and the structure of executive and advisory board/committees, and also the arrangement related to disaster funds and disaster management authority's budget.

Box 2: Major Provisions of the DM Acts, India & Indonesia & Turkey

	India (2005)	Indonesia (2007)	Turkey (2009)
Responsibility	National Disaster Management Authority (NDMA) to be the apex body at national level for formulating disaster management policy and its monitoring. (Article 3 of Act)	Government establishes a National Disaster Management Agency for formulating and stipulating disaster management policy. (Article 10 – 13 of Act)	Disaster and Emergency Management Presidency of Turkey (AFAD) was established to take necessary measures for effective emergency management and civil protection throughout the country. The presidency conducts; pre-incident works such as preparedness, mitigation and risk management, during incident works such as response, post incident works such as recovery and reconstruction. (Article 1 of Act.)
	Prime minister to be the Chairman of NDMA. (Article 3(2) (a) of Act)		AFAD is affiliated to the Turkish Prime Ministry. (Article 1 of Act.)
Preparing and approving of National Plan	National plan to be prepared by National Executive Committee and approved by NDMA. (Article 10(2) (b) of Act)	Government and local government prepare a National Disaster Management Plan, coordinated by NDMA (Article 36 of Act)	National plan to be prepared by AFAD and approved by the Disaster and Emergency Supreme Board. (Article 3(1) of Act.)
National Policy	National Policy for Disaster Management to be prepared by NDMA. (Article 6(2)(a) of Act)	NDMA functions for formulating national disaster management policy. (Article 14 of Act)	The Disaster and Emergency Coordination Board is responsible for assessing information in cases of disasters and emergencies, identifying the measures to be taken, ensuring and inspecting their implementation, and ensuring coordination between public agencies and organizations and NGOs. (Article 4(1) of Act.)
Establishment of State Disaster Management Authorities	State Disaster Management Authorities to be established. (Article 14 of Act)	Local Governments establish regional DMAs at provincial and district levels. (Article 18)	Provincial Disaster and Emergency Management Directorates to be established within the structure of secretary general of special provincial administration. (Article 18 of Act.)
State Governments & Central Ministries' Disaster Management Plans	State Governments & Central Ministries to prepare their disaster management plans. (Article 23&37(1) of Act)	Government and regional governments stipulate disaster management plan in accordance with their authorities. (Article 36)	To prepare disaster and emergency response, risk management and hazard reduction plans which will be applied nationwide by Disaster and Emergency Management Presidency of Turkey, (AFAD) & which will be applied provincial-wide by Provincial Disaster and Emergency Management Directorates. (Article 8(1)(a) &18(2) (b) of Act.)
Funds	Central Government to institute a National Disaster Relief fund and National Disaster Mitigation fund. (Article 46(2)& 47(1) of Act)	Government and regional governments provide sufficient budget of disaster management. (Article 61)	Central government to the AFAD institutional budget and special funds for the activities of disaster and emergency. (Article 23 of Act.)
National Disaster Response force	To establish a dedicated force called National Disaster Response force(Article 44 of Act)	NDMA establishes an Emergency Response Unit.	The Civil Defence and Rescue Unit Directorates. (Article 23 of Act.)

Sources: - Report of the Comptroller and Auditor General of India on performance audit of Disaster preparedness in India, Report No. 5 of 2013.
- The Audit Board of The Republic of Indonesia
- The Law no 5902. in Turkey, 2009.

First of all, the SAIs specified that new disaster policies reflected in the new framework disaster laws or regulations related to DRR. It should be emphasized that it is a positive reflection of change and new objectives in the international policies concerning risk reduction and preparedness for potential disasters. Despite considerable progress related to legislative arrangements, the following major audit conclusions of the participating SAIs revealed some important weaknesses in this area;

- The legal framework regulating emergency situations is very branchy; it is not correlated and engenders bureaucracy. (Romania-flood)
- The legislation in force does not cover the management of the activities involving rehabilitation, reconstruction and subsequent risk mitigation as well as and some natural and man-made disasters such as chemical and biological. (India/Romania-flood)
- The existing legal framework limits the enforceability and compliance of the National Emergency Office in relation to the institutions that have to take preventive actions. (Chile)
- Along with the disaster management authority, another ministry is tasked as coordinator and assigned duties related to the coordination of certain DRR activities, which leads to overlapping and conflicting duties and responsibilities. (Turkey)
- National Executive Committee did not meet the expectations although the country faced many disasters during this period. This affected the evaluation of the DRR at all levels of the Government. (India)

In the field of DRR, the major problems arise from providing coordination among a vast number of stakeholders, defining the function, authority and responsibility of all stakeholders clearly and ensuring accountability in the working environment that requires the participation of almost all public institutions and those concerned and so on. The principles of these issues should be clearly specified in the legal arrangements. However, the new framework laws related to disaster management are mainly to arrange the matters concerning role and function of disaster management authority rather than ensuring the coordination and participation of all stakeholders and actors. The examples of audit findings/conclusions point out that the legal frameworks have in practice remained limited with the empowering and restructuring of the disaster management authority in a manner to encompass the DRR policies and to meet needs in many countries.

1.2.2 Organization & Coordination Structure

Disaster risk reduction is a cross-cutting issue in which many stakeholders from public institutions to private sector, from international institutions to NGOs and even individuals get involved. In such an area, ensuring good governance depends on creating an organisation for proper planning and coordination of the activities and a sound coordination structure clearly specifying the roles and responsibilities of all stakeholders.

In most of the countries participating in the parallel/coordinated audit on DRR, the new institutional structure intended for the management and coordination of disasters by a single hand has been re-organised after the promulgation of the new disaster management acts. The responsibilities of the primary entities are, in brief, as follows:

- Setting up substructure for specifying and conducting general policies in the field of disaster management in the pre-disaster phase;
- taking necessary precautions for community empowerment and effective provision of services related to disaster and emergency as well as civil defence;
- ensuring coordination among institutions and organizations that are responsible for pre-disaster preparedness and risk reduction, response to disaster and post-disaster recovery activities.

Examining the examples of the organisation charts, it was seen that a separate department/ unit was established and named as preparedness, response, prevention and mitigation which are the components of DRR. This is undoubtedly evidence to raising awareness related to new disaster policies. Despite this positive progress concerning the main responsible organisation for disaster management, the following major audit conclusions of the participating SAIs display that an institutional structure which completely fulfils all duties and functions has not been set up so far:

- An institutional structure appropriate for effective, continued and coordinated conduct of activities has not entirely been established. Firstly, a tripartite structure was established. Later, these three entities were merged in to establish a single entity. Two years later, legal arrangements were made to grant another entity with certain authorities for making cities resilient to disasters. Throughout this process, the data and knowledge related to disasters were substantially lost. (Turkey)
- At present, the previous structure and the new one, which is still evolving, co-exist. In 2002, the Disaster Management Division was shifted to another Ministry and a hierarchical structure evolved for disaster management at national, state and district levels. Three years later, a new set-up for institutional, legal, financial and coordination mechanisms at the national, state and district levels was laid down. (India)
- The roles and responsibilities of each entity involved as a technical or support organism are not specified. There is no institutional framework related to the body having the faculties to monitor, control and protect the entire area associated with the emergencies, independently from the prosecutorial functions of this SAI. (Chile)
- There is not an optimum level of coordination, cooperation and information exchange among the national disaster management authority, municipalities, and provincial units of the Ministries. Disaster Management Authority has not coordinated the other institutions in an appropriate manner. There is no memorandum of understanding or other documented agreements among them to specify their responsibilities in the disaster preparedness activities. There is no legal mandate to enforce the rules; there exists only a voluntary agreement with the entities. (Chile/Indonesia/Turkey)
- Unclear roles and responsibilities. There was ambiguity in demarcation of roles and responsibilities between various stakeholders in disaster management in the country. (Chile/India)

- The mismatch between institutional responsibilities and capacities, particularly at the local level, has been identified as a major impediment to effective implementation of disaster risk reduction and management facilities. Escalation procedures at local, regional and national levels are unclear or are not properly followed. (Philippines/Turkey)

The conclusions of the international parallel/coordinated audit show that the disaster managements re-organised with the aim of planning the actions and leading and coordinating all stakeholders related to DRR remain inadequate for meeting the expectations in this field due to the lack of capacity, problems of authority, and uncertainties in authorities and responsibilities.

Assessing the major audit conclusions, it is understood that there are still important constraints and challenges to ensure good governance. In the new institutional structure, the bodies such as executive and advisory boards or committees have vital functions for specifying policies, leading and supervising the execution, ensuring the participation of institutions such as NGOs, academicians, and even individuals in decision making and implementing processes. As previously mentioned, the advisory/executive committees have never or seldom been held in many of these countries participating in the parallel/coordinated audit since the enactment of the Disaster Management Act. This means that governance structure, designed in the scope of the new disaster policies, doesn't work well.

Despite the organisation restructured in accordance with the new disaster policies, the Disaster Management Authorities (DMAs) coexist with the previous ones and/or the previous sense of work still continues. There is overlapping and ambiguity in demarcation of roles and responsibilities between various stakeholders in disaster management. Furthermore, relations among the local, regional and national authorities are not clearly defined. The institutional capacity remains inadequate for the fulfilment of the responsibilities particularly in relation to the planning, coordination and monitoring of the disaster which is a cross-cutting and interdisciplinary issue in nature.

1.2.3 National Strategies, National and Local Planning

National disaster strategies and national and local plans are the most important tools in leading and evaluating the activities related to DRR as a whole. In the corporate disaster plans; the corporate aims and goals and risk assessments etc. are determined in accordance with the national strategy. According to new legal arrangements in the field of DRR, one of the main duties of DMAs is to plan the actions to be included in each integrated disaster management phase and to ensure that these plans are implemented. The national disaster plan will outline the business processes and mechanisms and define vertical and horizontal relations among stakeholders to facilitate an integrated government response to a disaster. Besides National Disaster Plans, the institutions with disaster management duties make plans and programs related to their respective responsibilities.

In almost all countries participating in the international parallel/coordinated audit, the determination of the National Disaster Management Strategy and the preparation of Action Plan have started after the enactment of the disaster management law. Since then, as seen in Box 3, national disaster management strategies & plans have not been finalized in most of these countries. Nevertheless, the emergency/response plans have been prepared at different levels, mostly regional and local. It can be said that the preparation of emergency/ response plans has been given priority in all these countries.

Box 3: Strategies and Plans

Azerbaijan	National Security Conception of the Republic of Azerbaijan (approved in 2007). The disaster management policy and strategies were identified. For implementation of this policy and strategies, a State System which embraces the prevention of emergencies and operation during such cases was developed.
Chile	National strategy relating to emergencies National strategies made at communal, provincial and regional levels were developed in accordance with the regulations of the Decree N° 156, 2002.
India	National Plan for Disaster Management (Disaster Management Act, 2005) It is still underway.
Indonesia	National Action Plan for Disaster Risk Reduction 2010-2012 Priorities (NAP DRR 2010-2012)
Pakistan	There is no National Plan for disaster management.
Philippines	National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028 The plans to be developed are as follows: • Joint work plans for disaster risk reduction and management (DRRM) and climate change adaptation (CCA) • Local DRRM plans • National Disaster Response Plan (to include a system for Search, Rescue and Retrieval SRR; scenario-based preparedness and response plans).
Romania	Earthquake: Building Consolidation Programme (2000-..) For the design and execution of the consolidation works involving multi-floor buildings which are under the 1st rank seismic risk according to technical appraisal report and are subject to public hazards. Plan for Sustainable Development of Bucharest Municipality (2009 – 2012) • to make an expert appraisal of 10 – 15 buildings a year; • to draft and contract 10 consolidation technical projects a year; • to contract the execution of the consolidation works of 10 buildings a year; • to complete the consolidation works of 112 buildings falling under the 1st rank seismic risk, with a height of over ground floor + 4 floors, built before 1940." Flood: The Preventive National Strategy of emergency situations, elaborated, based on the Strategy on Security of Romania (2008) Medium and Long Term National Flood Risk Management Strategy and the Action Plan (approved 2010-2035) Comprising the activities scheduled to be performed.
Turkey	National Earthquake Strategy and Action Plan (2012-2023)) (finalised in 2011) Disaster Response Plan of Turkey (DRPoT) (finalised by 2013) For the purpose of defining the roles and responsibilities of the service groups and coordination units that will take part in response works related to disasters and emergencies and identify the basic principles of response planning before, during and after disasters. Strategy Plan of AFAD (2013-2017) (finalised in 2013) To determine the duties, powers and responsibilities of all stakeholders. National Recovery Plan (Underway) With the aim of increasing the speed of recovery. National Risk Reduction Plan (Underway) Aiming at increasing the public's capacity to cope with disasters.
Ukraine	Emergency Response Plan at the state level (approved 2001) To organize and implement mutually complex organizational and practical measures; to conduct rescue operations in relation to disaster management; to ensure security in the event of a threat or emergency; to maintain rapid response of the control capabilities of functional and territorial subsystems of civil protection; to prevent loss of lives;, to reduce material losses; to organize timely assistance to the prioritised groups among the affected population and.

Within the scope of the international parallel/coordinated audit, the conclusions reached concerning disaster strategies, programmes and plans can be summarised as follows:

- In many of these countries, national disaster strategy and action plans have not been prepared and/or finalised. As a result of this, there is generally no link between plans at different levels, especially between upper scale plans and the others. Besides, state, provincial government and municipalities are not directed to draw up their own plans in accordance with the National Plan.
- National disaster strategy and relevant strategies and action plans are not prepared in a manner being a part of an overall DRR strategy and linked to each other. Strategies, programmes and plans are not integrated into the other strategies such as the strategy related to the climate change as well as such plans as development plans at the national level, annual and medium term programmes, specific plans and local government plans. In this way, each one of risk reduction programmes and plans stand by themselves and are not mainstreamed into regular development programs.
- Strategies and plans are not based on sound risk assessment. All the risks associated with where the plan is being developed are not considered. Especially, in the local disaster management plans, all the risks have not been considered.
- The roles and responsibilities of the various agencies involved in DRR are not clearly defined in all the plans; also, the participation of disaster-related NGOs is not taken into consideration. The guidance of the plans for private sector and civil society etc. is limited.
- A monitoring mechanism which covers all stakeholders has not been installed.
- The plans, especially emergency plans are not continuously updated in time.

The conclusions of the international parallel/coordinated audit revealed that national disaster strategy and relevant strategies and action plans have not been prepared and/or finalised in a manner that they constitute a part of the overall DRR strategy although it has been a long time since the enactment of the Disaster Management Acts. Moreover, the draft strategic plans are not based on sound risk assessment. This points out to the fact that the most important tool for implementing the works in a planned manner, specifying the roles and responsibilities of all relevant stakeholders, ensuring the coordination and participation, monitoring the activities, and taking corrective measures, in a word, for materializing the DRR's policies has not worked well.

1.2.4 Disaster Management Tools and Early Warning Systems

Geographic Information System (GIS) is a significant tool that can be used in all types of disaster to collect and analyse various types of data and to ensure the communication among the relevant bodies. A GIS may be of great help in making risk analysis, preparing hazard maps and putting the planning efforts and decision making processes into practice. Additionally, GIS will increase communication and improve cooperation among the users of the information and make it easier for civil society to have access to information. In the field of DRR, the usage of Geo-science technologies

has rapidly become widespread. However, the efficient use of GIS will depend on the reliability, accuracy and adequacy of the data and elements of these systems and benefitting from them will be closely related to the extent to which these data contribute to the decision-making process.

In the countries participating in the international parallel/coordinated audit, there have been some efforts to benefit from Geo-science technologies, collect data and establish a data repository for developing GIS and meeting the needs of disaster management in decision-making process. GPS subsystems are widely, but with limited capacity, used in ambulances and fire departments. Early Warnings Systems have also been set up in many countries.

The conclusions of the international parallel/coordinated audit show that there have already been many problems in the use of Geo-science technologies in the field of DRR, some of which are as follows:

- GIS based data repositories to support disaster management in the country have yet to be made fully operational. (India)
- The satellite communication which is being set up for facilitating secure data access through a dedicated electronic network connecting all the key players of disaster management in times of emergency, was not fully operational after more than six years of receipt of the communication equipment. (India)
- National Disaster Communication Network and National Disaster Management Informatics System projects of the National Authority were still at the planning stage after several years of conceptualization. (India)
- Information that has to be presented by each responsible body has not been provided at the correct time and in accordance with the requirements; and there are no basic protocols and standards for delivering. (Chile)
- Lack of trained technical experts, principally in provinces and regions, endangers promptness and efficiency in the use of the aforementioned information service.(Chile)
- The general problem in the use of technology tools in disaster management is that data are available but centralized repositories recording datasets are often not in place. (Indonesia, Turkey)
- Disaster Management Information System does not include sufficient and appropriate information to plan and coordinate DRR. Moreover, it lacks the capacity of analysis and reporting to support decision making processes. (Turkey)
- Lack of awareness about GIS and its benefits as it is seen and used only as a tool for producing maps; and bureaucracy to make provision to obtain the data required. (Indonesia)
- Although risk maps do exist for critical rainfall and overflow areas, there are no concrete measures in place to reduce the severity of a disaster in possible emergency situations. (Chile)

- Many signs warning about volcanic risks have been installed at national level; however there was no coordination with the technical entity with regards to their placement. (Chile)
- Any Disaster Management Information System had not been developed and no tools such as GIS, GPRS and GPS had been used by the end of 2012. (Pakistan)
- Frequent changes in the institutional structure in the past decade have led to losses in the database, which will form the basis of the information system. (Turkey)

These conclusions showed that the GIS application and early warning systems have not been implemented and used efficiently in many countries because of the shortage of technical expertise, insufficient financial resource for set-up and operational cost etc. Excluding certain local practices such as natural gas and water management, early warning systems are not fit for purpose. Thus, the National and Provincial Contingency Plans have not been prepared and/or finalised and disaster prone settlement areas have not been identified completely in many countries.

All these technologies have been transferred into these countries mainly through outsourcing. Several entities (municipalities, special provincial administrations, and provincial directorates of DMA) have their own information systems. This may lead to duplications. It can be said that the establishment and use of Geo-science technologies have not been taken as part of overall strategies. The integration and sharing of information systems among entities are very limited. Moreover, in the past decade, the decisions as to how the information systems are to be developed and used as well as which data should be collected by which entity have not been taken.

1.2.5 Training and Public Awareness Campaigns

In recent years, large-scale disasters have enhanced better understanding and closer relations between national and international actors and also encouraged a degree of participation and awareness-raising. As a result of this understanding; exercises, trainings and community preparedness against disasters have important place within the efforts concerning DRR. Owning to these activities in which civil society can participate, a majority of national and international funds is routed to the bodies such as NGOs.

In most of the countries participating in the international parallel/coordinated audit, National Disaster Management Authority is the main responsible agency for both vocational and awareness raising trainings, especially after the new legal arrangement. It is also charged with the preparation of training plans and documentation. In all these countries, there are some limited efforts to spread the new conception concerning DRR to the education system and to raise public awareness about emergency preparedness and response, principally the highest potential disasters. It can be said that training programmes/projects and/or single attempts usually focus on spreading the precautions related to civil defence and emergency situations. Trainings may be provided in different formats, some of which are as follows:

- face-to-face training, mostly implemented at school.
- web-based training, preparing and publishing some documents such as "first 72 hours" etc.

• capacity building programme for engineers, architects and staff of fire departments etc.

• exhibitions disaster photos for raising public awareness.

Commonly, the activities related to training and public awareness campaign was realised mostly by NGOs. While some countries are performing some single attempts, some others such as India, Indonesia and Turkey have been implementing some programmes mostly funded by international institutions and organisations such as the World Bank, European Bank, International Federation Red Cross (IFRC) and Cooperation with Danish Red Cross (DRC) and so forth. For example:

- In India, National School Safety Programme, National programme for capacity building of engineers in order to ensure seismically safe construction and for capacity building of architects to ensure seismically safer habitats in Earthquake Risk Management.
- In Indonesia, Integrated Community Based Risk Reduction Program (ICBRR). Its aim is to make tsunami-affected people resilient to future disasters and create risk culture at the local level.
- In Turkey, Istanbul Seismic Risk Mitigation and Emergency Preparedness (ISMEP). Its aim is to make Istanbul prepared for a probable earthquake.

When the activities related to training and public awareness were examined within the scope of the international parallel/coordinated audit, it appeared that sound monitoring and evaluation systems were not established. For example, in Turkey, there are no data about which schools performed education programme on life-safety in schools. There are few training events (practical-theory) and these are not monitored and adjusted according to necessities. In India, the Comptroller and Auditor General specified that the physical and financial targets were not achieved in the projects implemented for capacity building of engineers and architects and the schemes were shelved without analysing the reasons for their failure. In addition to these, the conclusions of the international parallel/coordinated audit revealed deficiencies, some of which are as follows;

- Trainings and awareness raising activities, which are limited in number, have not been planned and conducted as part of the overall strategy. (Pakistan)
- Training documents related to disaster preparedness and responses are not standardized; a large number of entities (universities, NGOs, public entities, etc) conduct different training activities. (Turkey)
- Given the fact that particularly NGOs operate in this field with external aid, it is evidently important that they are accredited according to a specific program. However, there are no rules and principles in place regarding the accreditation of NGOs. (Turkey)
- Universities and NGOs are not involved in these activities an optimum level under a specific plan.
- Awareness raising efforts are not effective enough to create social consciousness and encourage individuals to take voluntary action. (Turkey)

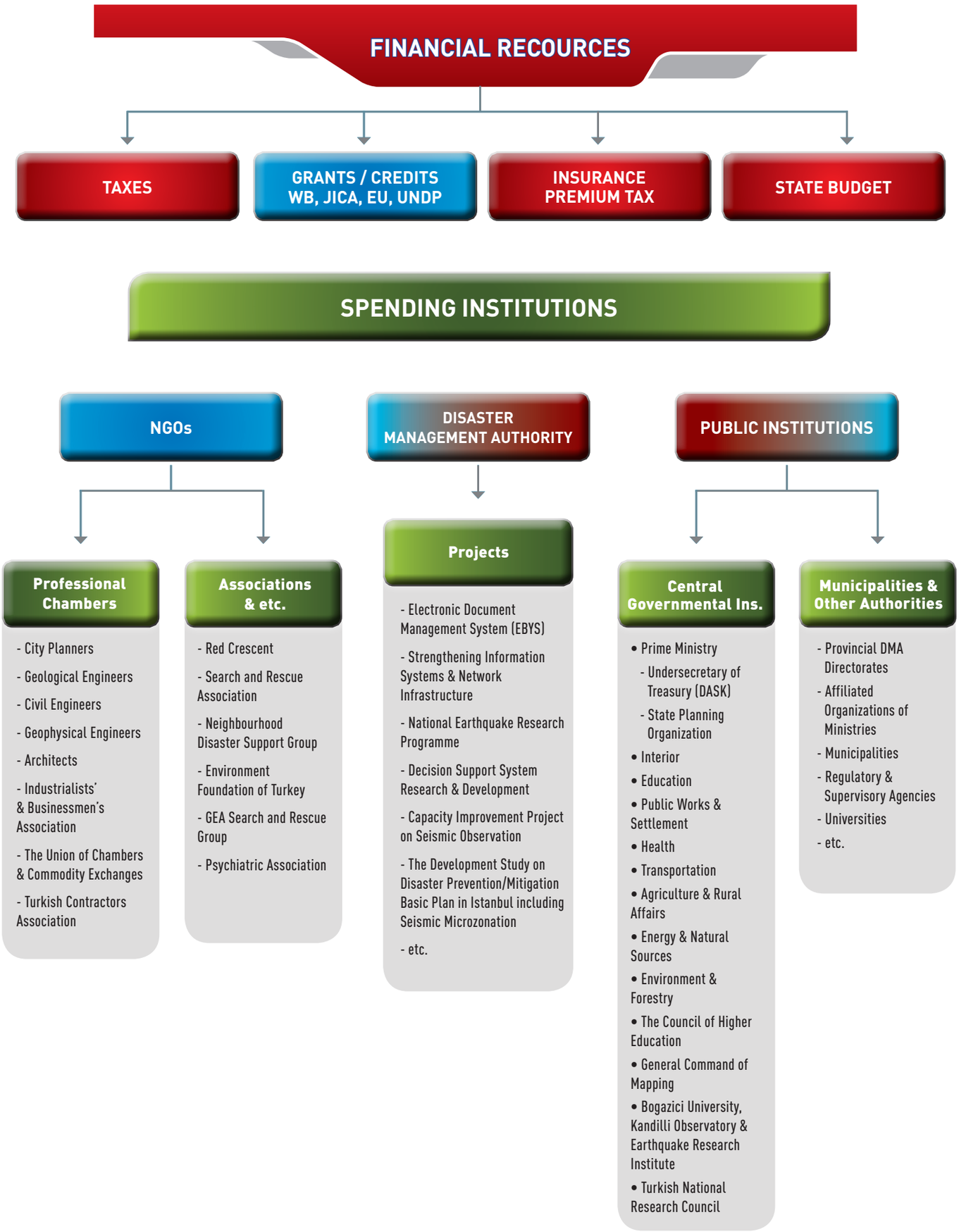
- Particularly the mass media is not used effectively. (Turkey)
- Training and drills aimed at increasing disaster awareness at schools are not performed systematically. (Turkey)
- So far the information related only to certain aspects of disaster management has been disseminated among the public sector, private sector, media, NGOs and community organizations through short-term courses. (Pakistan)
- There is no national, regional, provincial or community plan that includes training the public on every one of the risks that exist. (Chile)
- The subjects dealt with do not correspond to all the risks that may affect the target groups, whether the emergencies arise in the form of natural or man-made disasters. (Chile)
- Some members of the National System of Civil Protection (SNPC) bodies do not disseminate information. These include hospitals that do not share emergency plans with the general public, which is not conducive to community participation, awareness or large-scale guidance in the face of possible emergencies.(Chile)
- Most SNPC members do not perform drills in a periodic, consistent and coordinated manner, participating only in those that are programmed by ONEMI. (Chile)

These conclusions point out to the fact that creating public awareness and organising training activities are not generally part of strategic national efforts but the results of single projects. Due to this approach, each attempt is launched single-handedly and depending on the possibility of finding financial resources. Therefore, the possibility of duplication is particularly high in these areas. Also, it makes difficult to assess whether or not the organizations and individuals have, through training, gained the necessary knowledge and skills to effectively respond to and quickly recover from various types of disaster. It is clear that there is need to strengthen the capacity of planning and monitoring and to promote public accountability in this area.

1.2.6 Financial Structure

There are a number of institutions and organizations having responsibility and providing funds in DRR. In Figure 1, the institutions and organizations which receive and provide financial resources in Turkey are shown as an example. This structure makes it difficult to quantify the resources allocated to that specific area. In addition to resources included in the State budget, credits and grants are received from foreign countries and international organizations. A wide range of entities as well as non-governmental organizations can benefit from these resources.

Figure 1: Financial Resources and Spending Institutions in Turkey



While special funds are constituted in some of the participating countries like India and Philippines, there are reserve funds or special accounts etc. in the others. For example, in Azerbaijan, funds are allocated from the Reserve Fund of the President of the Republic of Azerbaijan and from the state budget while fund users are determined and financial provision for the activities carried out are clearly defined regarding the process of disaster prevention and disaster preparedness. This is a kind of transfer/reserve budget. Amounts are transferred from this account to accounts of other public entities and local administrations.

In many examples, amounts transferred are not registered as revenue to the budgets of relevant entities and local administrations, and can be traced in special accounts. Additionally, the use of these funds extends to years. In addition, DMAs do not have information about financing of DRR because of the insufficient follow-up mechanism on funds concerning DRR and/or the poor relation between plan/programme and budget or the absence of national plan.

Some audit conclusions given below point out that financial resources allocated for DRR are not sufficient and following resources and expenditures are almost impossible since plans and budgets are not interrelated:

- There is no specific funding structure directed at financing measures to prevent emergencies. (Chile)
- Amounts spent on DRR are not precisely known; plans and budgets are not interrelated. Budgets of the provincial directorates of DMA are not prepared based on the needs and resources. Instead, they are determined by taking a certain percentage (at least 1%) of budgets of special provincial administrations without considering the level of risk involved. (Turkey)
- The funds allocated from the State Budget for the DRR correspond only to 0.3 % of all budget expenditures. (Azerbaijan)
- The management of State Disaster Response Fund in the States (SDRF) was poor and utilized for various purposes other than those stated in the Government of India guidelines. The States did not regularly send the details of utilization and unspent balances under SDRF to the Central Ministry. There were delays and mismanagement in respect of Disaster Response Fund. (India)
- National Disaster Mitigation Fund has yet to be established at the national level. Most of the states have also not established State and District level Disaster mitigation funds. (India)
- Insufficient funds which prevented the agency from effectively are carrying out its functions and responsibilities. (Philippines)
- DMA manages its financial resources effectively, but there are still some shortcomings for some activities. It is because of the lack of regional government's interest in providing the appropriate budget. (Indonesia)

- The consolidation programme was not efficient in Municipality (Bucharest) since the amounts allocated from the state budget were not integrally used; on a yearly basis, only about 30 % of the transfers' value was used. (Romania)
- For reinforcement and/or reconstruction works, no appropriation is allocated within the budget of any public entities. Such works are mostly financed through and depend on external resources. (Turkey)

Resources allocated for this specific area are predominantly regarded as a contingency reserve to be used in times of disasters rather than a fund to be used for the implementation of an integrated plan for disaster risk reduction. Like installation of an early warning system, there are some individual initiatives mostly funded by grants and loans of international organizations. Then again, it is extremely difficult to detect the resources used in such activities that are not planned and coordinated and where a number of institutions and organizations share roles and responsibilities. For that reason, the SAIs could examine only some projects or programme expenditure within the scope of the parallel/coordinated audit or some of them audited the annual transaction of DMA as a part of annual financial audit.

1.2.7 Making Urban Area Resilient

As it is well known that one of the most significant risk drivers is unplanned settlement. In many rapidly growing cities over the last decades, much of the urban expansion takes place outside the official legal building codes, land use regulations and land transactions. Existing construction plans based on this unplanned settlement have not been revised by taking disaster risk into account so far. Therefore, urban risk, city planning and the role of local governments in dealing with risk reduction have been recognised as key factors in the International Strategy for Disaster Reduction the Hyogo Framework for Action 2005-2015 to build resilient communities. In line with this framework, some projects and studies have been conducted in some of the participating countries of the international parallel/coordinated audit for the preparation of hazard maps and microzonation of major cities as well as the upgrading of critical infrastructure and public buildings such as education and health facilities.

Within the scope of the international parallel/coordinated audit, some of the SAIs examined this subject inclusively starting with assessing whether construction plans are prepared and adjustments are made by giving due regard to disaster risks. Vulnerability analysis, hazard maps, microzonation of major cities and urban transformation projects are included. According to the audit findings/conclusions, although there is a legal obligation, construction plans are not designed by taking disaster risks into account sufficiently in some of the participating countries. Although, the studies related to hazard mapping and microzoning have been continuing in almost all countries since the beginning of 2000s, they have not been finalized yet. Some audit conclusions in relation to making urban areas resilient are given below:

- In January 2004, Ministry of Home Affairs suggested model amendments in town and country planning Acts, land use zoning regulations and building regulations to include the elements of safe construction, retrofitting of lifeline and critical buildings and other key infrastructure. This is underway. (India)
- A pilot project for Earthquake Risk Mitigation was prepared by National Authority and was under examination in the central ministry. We further noted the following shortcomings in the efforts for ensuring that buildings are resilient to possible disasters:
  - √ Identified dilapidated buildings were not demolished.
  - √ Development Control Regulations for city were not updated in line with the revised National Building Code, 2005 to provide protection against natural hazards.
  - √ Adequate steps were not taken to amend the building by-laws and regulations as a step to make urban areas disaster resilient. In the selected districts, no amendment had been made in their building regulations.
  - √ Activities for institutional strengthening, capacity building and mainstreaming for development were not executed in the state for Disaster Risk Reduction.
  - √ The National Authority had been requested to review all major ongoing national projects to include structural requirements for disaster reduction. However, this task was not carried out by the Authority. (India)
- The fact that several entities such as Housing Development Administration, Ministry of Environment and Urban Development, Disaster Management Authority, Municipalities etc are responsible in the same area hinders making an integrated planning and impairs their disaster responsiveness. (Turkey)
- Towns and cities were built without prior planning. Construction plans were based on this unplanned settlement. Moreover, constructions prepared afterwards were not based on detailed ground studies and not revised taking disaster risks into account. (Turkey)
- There is no comprehensive plan in place to identify disaster prone settlement areas in line with microzoning maps and local integrated disaster maps, and conservation plans have not been prepared for such areas. Even in cities, which have the highest level of disaster risk, microzoning has not been completed and hazard maps and conservation plans have not been prepared. Besides, most of provincial directorates do not have adequate personnel and capacity to finalize these studies. (Pakistan/Turkey)
- At most of the regions with high levels of disaster risk, the existing building stock and the number of buildings in need of retrofitting are not known. Therefore, decisions as to reinforcement and reconstruction are not based on reliable information and the financial costs thereof cannot be calculated precisely. (Turkey)

- There are no effective controls that would prevent unlicensed or illegal housing while the existing legislative provisions aimed at preventing settlement in houses without an occupancy permit are not enforced. For instance, after the earthquake in 1999, it was reported that the rate of unlicensed housing in Istanbul was 70 %. Although it has been 13 years since the earthquake took place, the rate is reported to be the same. (Turkey)
- Currently there is no mechanism in place to ensure that the constructions of buildings are resilient to disasters although the Building Code has already been amended. (Pakistan)
- Transformation areas were identified without knowing how such identifications will be made, which criteria will be used and what the prioritization requirements are if any. (Turkey)
- Regulatory plans and regulations related to construction prevents building construction on disaster zones, but this rule applies only to new projects of health, education and security, leaving the other constructions out of scope by endangering the lives of individuals. The regulatory plans do not cover all the vulnerabilities that constructions could eventually face. (Chile)
- The building consolidation is a very slow process. Therefore, the Programme shall be implemented in about 100 years' time. (Romania)
- The norms do not provide for the measures, steps and actions to take in case owners refuse consolidation works which results in the blocking or indefinite postponement of the Program. (Romania)
- Dwellers are generally not satisfied with the works completed. (Romania)
- Owners consider that the consolidation works take too long. Besides, the costs of the consolidation works were modified in all instances; it reached over 40 % as compared to the initial value, which is unsatisfactory. (Romania)
- Though information campaigns were conducted, they did not reach the target. It is noticed that a large share of the population is not aware of the danger of not taking the measures to diminish seismic risk of the existing buildings. (Romania)
- Ensuring resilience of education and health facilities owned by private sector is left to their own discretion. The public authorities do not make any investigations in this respect. (Turkey)

In almost all countries examined within the scope of the international parallel/coordinated audit, such studies as vulnerability atlas, hazard mapping, ground studies and microzonation as well as the determination of the existing building stock and the number of buildings in need of retrofitting that create the infrastructure of urban transformation have not been completed in the last decade. Besides, the activities concerning retrofitting, reconstruction and urban transformation have been conducted as individual projects, not as a part of overall urban transformation strategy that takes key risk considerations into account and integrates all efforts related to urban development. It can be concluded from the audit findings that the actions aimed at making cities resilient have not been prioritised and built on a sound basis. For that reason, there needs to focus on the requirements of sustainable urbanization in near future.

1.3 Lessons Learnt

As emphasised in the ISSAI 5510, in cases where disaster risk reduction policies are new for government or there is lack of awareness about the need for disaster risk reduction measures, SAIs may formulate audit objectives and make recommendations with the aim of raising the interest and understanding of the parliament on the issue.

As it is well-known that DRR is an area involving a number of stakeholders, namely national and state/provincial governments, international institutions, municipalities, and even individuals. Within this scope, SAIs should adapt bottom up perspective, namely "client/citizen oriented perspective" into the audits to be planned, conducted and reported in a manner to meet the expectations of citizens supporting this process in the field of DRR. Citizen oriented perspective can be regarded as a re-interpretation of the audit mission which enables the SAIs to address the issues of critical concern both for the individuals and the society as a whole in a manner that would live up to the expectations and needs of the citizens. This perspective should also be seen as a reflection of the responsibilities of SAIs vis-a-vis the citizens and the international community.

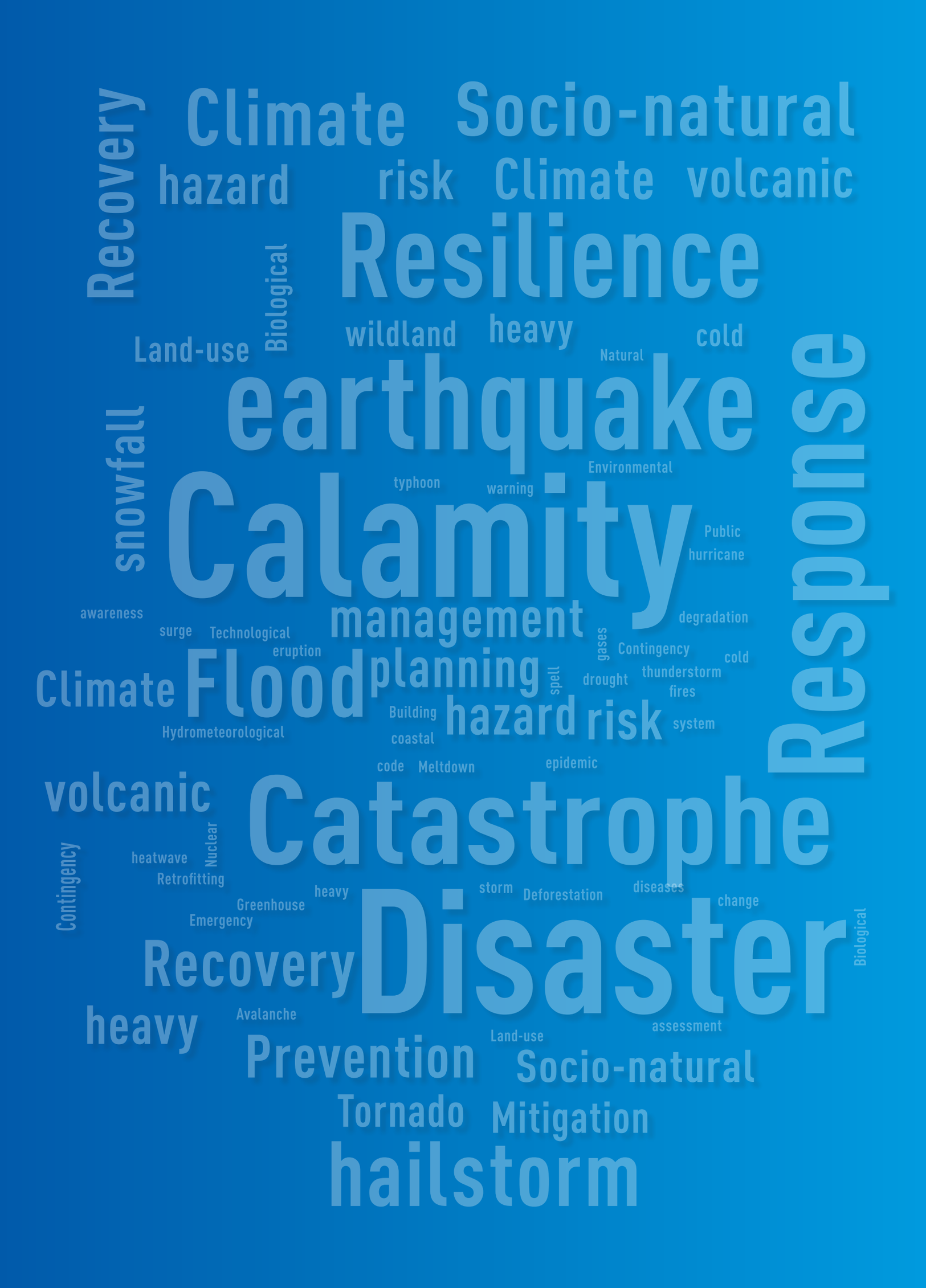
The audits on DRR could be planned and conducted as a joint audit in cooperation with the other relevant SAIs by taking the fact that DRR is a global and regional issue and has regional dimensions into account. This approach will help SAIs better perform their tasks towards the citizens and the international community by addressing the areas of common concern.

Having recognised that DRR is a cross-cutting issue, broader audit scopes should be specified in the audits concerning DRR in accordance with the ISSAI 5510 and in a manner that would enhance the accountability at national and international levels.

It is advised that succeeding audits in the field of DRR should be conducted in the form of joint audit wherever it is found beneficial. One of the important difficulties encountered in this international parallel/coordinated audit was to ensure synchronisation and to combine the audit results. In the international parallel/coordinated audit on DRR, each SAI specified a different audit scope and audit term in accordance with their national requirements and mandates and they carried out audits with different perspectives. This, however, enriched the process of formulation of ISSAI 5510 because different audit perspectives and experiences of SAIs were reflected in the final draft of ISSAI 5510. However, after publication of the ISSAI 5510, conducting the audit studies with a common understanding and in a timely manner and obtaining combinable audit results will be easier in the international audit studies with respect to DRR.

Prior to the joint audit, the audit teams of the participating SAIs should be trained for addressing the modalities, integrating the efforts and fostering their audit capacities.

SAIs should improve partnership with other audit institutions, if any, with the purpose of obtaining information in an easy and accurate manner about the activities of the other preeminent actors and contributing to enhancing performance accountability in the field of DRR.


Recovery
Climate
Socio-natural
hazard
risk
Climate
volcanic
Resilience
Biological
wildland
heavy
cold
Land-use
Natural
earthquake
snowfall
Environmental
typhoon
warning
Calamity
Response
Public
hurricane
awareness
management
degradation
surge
Technological
eruption
gases
Contingency
cold
Climate
Flood
planning
thunderstorm
spell
drought
fires
Building
hazard
risk
system
Hydrometeorological
coastal
code
Meltdown
epidemic
volcanic
Catastrophe
Nuclear
heatwave
Contingency
Retrofitting
heavy
storm
Deforestation
diseases
change
Greenhouse
Emergency
Disaster
Biological
Recovery
heavy
Avalanche
assessment
Land-use
Prevention
Socio-natural
Tornado
Mitigation
hailstorm

PART II

SUMMARIES OF NATIONAL AUDITS ON DISASTER RISK REDUCTION

AZERBAIJAN

Chamber of Accounts

Analytical Reference on the
Audit of Preparation for
Natural Disasters

Audit Objective

The purpose of the audit is to investigate the status of preparation for natural disaster in Azerbaijan.

Audit Approach/Scope

The existence and adequacy of preparation system for natural disasters that likely to occur in Azerbaijan

Audit Methodology

The collection and analysing of information; monitoring, observation and investigation of specific issues; assessment of the adequacy of management tools, maps of areas that may be affected by the natural disasters; studying of database on the damage caused by the disaster etc. During a planning, implementation and reporting of this disaster risk reduction parallel audit in Chamber of Accounts were used the standards prepared by INTOSAI Working Group on Accountability for and Audit of Disaster-related aid and like a basis was taken "ISSAI 5510-Audit of Disaster Risk Reduction" prepared by the Court of Accounts of Turkey.

Audit Criteria

Criteria on the requirements in the existing legislation related to the preparation for natural disasters and to the application of preparation system for natural disasters on advanced international practice.

Identification of the Characteristics of the Disaster

The probability of occurrence of flood, fire, earthquake, slip and landslides, volcano, stream, snow slides and natural disasters of anthropogenic origin, chemically hazardous in Azerbaijan is very high.

Legal Arrangement

Legislative basis for disaster preparedness are the Constitution of the Republic of Azerbaijan, Laws of the Republic of Azerbaijan "On Emergency Situations", "On basis of urban planning", "On Civil Defence", "On Fire Safety", Conception of National Security, National Conception on prevention and elimination of consequences of emergency situations. New Conception on mitigating of the consequences of emergency situations, state programs and Necessary Action Plan on increasing of seismically stability of buildings and facilities in seismically active zones and other relevant normative acts. Analysis of these documents shows that the duties and responsibilities of relevant state bodies on preparedness for and elimination of results of emergencies had clearly determined.

The Ministry of Emergency Situations and its units prepare the plan on disasters and execute this plan. In accordance with this plan the regional, urban and municipal institutions also prepare the disaster plans. It's provided a consistency and compliance between national and different regional emergency plans. Emergency plans and programs prepare, review and periodically refresh in all levels, with paying attention to weak territories.

During an audit the Plan on Civil Defence was reviewed and identified that the plan had developed satisfactory and it includes all preparedness works and dates of their implementation.

Disaster management skills in Republic of Azerbaijan includes civil defence, protection of people and territories from emergency situations, coordination of activities of central

and local executive bodies in a framework of single government system in areas of fire safety, human safety in water basins, also preventing and eliminating of consequences of emergency situations, exchange of information on prevention and elimination of consequences of emergency situations in a single state management framework, evacuation of population from disaster zones, rescue activities and first aid services, protection of properties and public safety at disaster zones together with relevant state bodies.

Organisation and Coordination Structure

The Ministry of Emergency Situations prepares, regulates and implements the state policy in the field of civil defence, protection of population and territories against emergencies, providing fire safety, people safety on water basins, preventing and eliminating of consequences of emergency situations, creating of state material stocks. There is a special commission on emergencies in each region of the republic headed by First deputy of the Head of Executive power of this region and this commission includes the heads of all relevant state bodies of this region.

In accordance with its Regulation the main tasks of the Ministry of Emergency Situations relating preventing and eliminating of consequences of emergency situations are: providing of preparation and implementation of National Conception of the Republic of Azerbaijan; preparation of draft plan on mutual action of executive bodies during the preparation of civil defence plan, human searching and rescuing in water basins; preparation of monitoring, forecasts and other preventive actions on informing of population and territories about emergencies; defining of indicators on dividing of organizations into categories on civil defence and risky levels of territories and objects; preparation of annual plans of actions and instructions on preparation and implementation of trainings regarding provision of population rescue; management of humanitarian aids in cases of emergencies; creation and management of state material stocks; together with relevant executive bodies: participation in preparation of main plan on urban-construction and populating in territories of the country; organization of issuing of main scheme on construction of defence tools from geological and hydro-geological emergencies; issuing of necessary action plan on increasing of seismic sustainability of buildings and facilities in seismically active zones; organization of designing and controlling of construction of protected areas for identification of flood areas and implementation of river bank protective works; provision of operation of emergency rescue service; provision of creation and keeping prepared of the systems on technical management of civil defence and emergency warning; provision of creation of local warning system in a territories with potentially risky objects; provision of the creation of massively used special defined automated electronic information system with the aim of implementation of forecasting and preventive actions; provision of the issuing of "Geographic Information System of Management of Emergencies" in a whole territory of the Republic of Azerbaijan; organization of enlightenment of population, etc.

Findings/Conclusions; (Organisation and Coordination Structure)

- *Functions, powers and duties of the Ministry of Emergency Situations were clearly and precisely stated in the Regulation of the Ministry of Emergency Situations and other legislative acts. Communication between the Ministry of Emergency Situations and its regional offices is in good condition.*
- *Through an integrated approach the coordinator was provided with financial, human and other necessary resources required for planning, monitoring and control of disaster preparedness.*
- *Meetings are held in planning the budget, but the opportunities of the non-governmental organizations are not fully utilized during disaster preparedness planning.*
- *Technical indicators of bank protection works, dams, dikes established in flood-prone areas to prevent natural disasters are studied. Publications of respective Associations and scientists are used.*

Recommendations;

- *Increasing opportunities of relevant non-governmental organizations to participate in discussions.*
- *Intensifying involvement of professional organizations and scientists to this issue.*

National Strategies and Action Plans

The disaster management policy and strategies are identified by the National Security Conception of the Republic of Azerbaijan, approved in 2007. For implementation of this policy and strategies had created State System which embraces the prevention of emergencies and operation during such cases. Taking into account the diversity of geographic and geological situations, destructive disasters, including earthquakes, flows, floods, landslides and mud volcanoes and ways of elimination of their results are always under attention. The findings/conclusions on national strategies and action plans are as follow:

Findings/Conclusions; (National Strategy)

- *In disaster the main attention is focused on elimination of consequences of natural disasters. Preparations for occurrence of these cases in future are implemented within the strategies which cover these disasters.*
- *To establish a warning system as a measure of national importance in flood experiencing areas is considered in Actions Plans on "State Program on social and economic development of regions of Republic of Azerbaijan in 2009-2013".*
- *Strategy of disaster preparedness is reflected in the social and economic development plans and other government programs and designed to reduce the risk of the occurrence of natural disasters.*
- *Amounts expended for disaster preparedness in Azerbaijan is reflected in the state budget and approved by the relevant law. Funds are allocated from the Reserve Fund of the President of the Republic of Azerbaijan and from the reserve fund of the state budget, fund users are determined and financial provision for the activities carried out are clearly defined regarding the process of disaster prevention and disaster preparedness.*

- *Implementation Plans at local level are prepared considering local disaster risks, the possibility of implementation from practical point of view, as well as reflects the reality.*
- *Preparedness for several potential natural disasters that may occur is taken into account while preparing plans. As a rule, involvement of respective organizations is provided in preparation of implementations plans.*
- *While preparing implementation plans at the local level the action plans are prepared on duties and responsibilities, private sector involvement is identified, age groups of the population is considered but the opportunities of the non-governmental organizations are not fully utilized.*
- *Trainings are conducted in enterprises, organizations, schools, at densely populated areas in order to improve community preparedness to disasters.*
- *Communication system is good enough.*
- *Mechanism to promote effective communications between the institutions is defined in preparation of plans. Mutual interaction of the infrastructure that constantly informs the public at the event of disasters with alternative systems is considered.*

Recommendations;

- *Increasing the involvement of NGOs.*
- *Achievement on trainings to cover larger area and attract more population.*

Management Tools Such as GIS, GPRS, GPS, Early Warning Systems

In 1992, special warning and communication system of civil defence was created by the decree of Cabinet of Ministers and this system regularly operated since its creation. Warning and communication system in our republic includes the leadership of the Ministry of Communication and Information Technology, heads of its units and organizations, the leadership of State Television and Radio Company and heads of all ministries, state committees, units and companies which possesses internal means of communication. The main task of this system is a providing regular work of existing communication and warning systems, informing the leadership of the country and the people about emergencies.

For the timely informing of people and regularly informing them about current situation in emergency situation it is used management warning centre, all television channels, radio network, all phone facilities and loudspeakers which installed in all squares of all cities and regional centres.

Geo-science technologies are being used for the preparedness to disasters. Through GIS the whole information regarding meteorology, topography, land characteristics, vegetation, hydrology, residential areas, transport, population, social economy and material recourses is analysed, for the purpose of understanding the results of short and long-term floods and for the relevant planning. Actions are taken for the purpose off improvement of adequacy of disaster management information system and adequacy of communication between relevant bodies.

Findings/Conclusions; (Management Tools)

- *GIS system has been established and is being effectively used for disaster preparedness.*
- *Information systems are not different. Databases are updated regularly.*

Training Activities and Public Awareness

Trainings were conducted, by the participation of the Apparatus of the Ministry of Emergency Situations and its units, also by the participation of the Ministry of Ecology and Natural Resources, the Ministries of Education, Health, Internal Affairs, Defence, the "Melioration and Water Economy" Company, "Azerenergy" Company and Non-governmental organizations, on public awareness and taking actions on protection of teachers, students, older people and children. Had organized successful awareness and propaganda work.

Findings/Conclusions; (Training activities & public awareness)

- *Trainings are conducted on the basis of the work plan which is planned in advance by the relevant structural units.*
- *A joint action plan programs regarding civil defence was signed between the Ministry of Emergency Situations and Ministry of Education in 2006.*
- *Trainings are conducted within the scope of training programs. Most of the trainings are both theoretical and practical. The coordination of training activities is controlled by a single centre.*
- *Staff of headquarter of the Ministry of Emergency Situations on Awareness About Disaster and its other departments constantly carry out informative activities on "How to deal with natural disasters" in schools and universities. The purpose of these activities is to educate the pupils and students regarding the man-made and natural emergencies, as well as to teach them the rules of how to act at the occurrence of emergency which may arise in our country.*
- *NGO such as Emergency Association (association of specialist on emergency situations and life safety) which represents Natural Disaster Volunteers is operating.*
- *There is information to raise awareness on mitigating the disasters in the textbooks of secondary schools and in high schools and colleges, but there is a need to increase a number of specialized courses conducted in this regard.*
- *NGOs attend the training activities and the following work has been done with their participation: System to continuously develop qualification of specialists and managers in pre-schools, secondary and high schools has been established in the field of Safety of Life (SOL).*
- *Training programs, textbooks and monographs were prepared in the field of SOL for emergencies. Development of specialized managers was organized in higher educational schools in regards to emergency situations. National and international symposiums and conferences were organized related to SOL.*

Recommendations;

- *Increasing the number of practical trainings.*
- *Use of the opportunities of special courses.*
- *Intensify participation of NGOs in training*

For the purpose of effective performance on awareness the Ministry cooperates with some other state bodies. Action Plan on organization of civil defence was signed with the Ministry of Education in 2006. Because of the provision of effective performance in elimination of material and moral damages of the people in a result of disasters Memorandum of Understanding was signed between the Ministry of Emergency Situations and the Red Crescent Society.

Financial Structure

Despite the fact that the funds allocated from the State Budget for the preparedness for the prevention of emergency situations (also, expenditures on natural disaster preparedness, maintaining of mobilization resources stock, on reserve management points, on creation of state material resources) makes only 0,3% of all budget expenditures, for prevention and elimination of results of disasters and also for elimination of results of floods in Kura and Aras Rivers and earthquake, additional funds in sufficiently big amounts was allocated from Reserve Funds, investment projects and other resources.

Making Urban Area Resilient

During a construction, capital repair, restoration and strengthening works of buildings, capital repair works of roads by the finances of centralized and local budgets, its keeping in control the disaster sustainability requirements. Building works of all types of buildings in Azerbaijan Republic start after an approval of all project-budget documents and getting positive opinion of state expertise in accordance with the decree of Cabinet of Ministers. There are regularly special requirements on high standard of building works during construction. It includes identification of construction of buildings and facilities in accordance with current building norms and rules, approval of project documents, specification of equipment and building materials, disaster sustainability, etc.

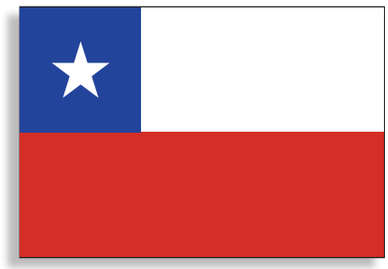
Findings/Conclusions; (Making Urban Area Resilient)

- *Construction plans are designed and amendments are made to them taking into account risks of disaster. Rules on implementing measures to secure territories and settlements, getting protected from the impacts of natural and man-made disasters and eliminate the consequences of catastrophes are considered in all kinds of documentation in the field of urban planning.*
- *Relevant executive authorities conduct monitoring over living and labour conditions of the population in the settlements and territories impacted by natural and man-made disasters and the results of this monitoring is included in urban planning cadastre.*
- *Zones where disasters occur frequently are determined in accordance with the maps of different zones, as well as local integrated maps of natural disaster and conservation plans are prepared for these zones.*
- *Priority is given to the risk of natural disaster while preparing construction plans by licensed entities. Relatively less attention is given to the risk of natural disaster in illegal buildings and constructions carried out by entities without license.*
- *Such constructions make it difficult forthe existing building stock in determining the quality and quantity.*
- *The use of standards for building materials and construction are under control.*
- *Based on the compiled maps of individual zones and similar disaster maps, the living areas prone to disasters were determined and contingency (actions) plan was developed for these areas.*
- *Prioritization criteria (how to act in a natural disaster?) were defined to react to the disaster and decrease the risks of the disaster.*
- *Construction and installation works are carried out within the generalplan of the city; plans, goals and budgets are coordinated.*
- *Urban transformation projects are implemented in a manner that will reduce the risk of natural disaster and contribute to disaster preparedness.*

Recommendations;

- *Fight against illegal construction. Strengthening control over deprivation of organizations without a license from construction.*


CHILE



CHILE
General Comptroller
Republic of Chile

Programme 13.022

CONSOLIDATED FINAL REPORT No. 219, 2012, ON THE AUDIT OF THE NATIONAL EMERGENCY OFFICE OF THE MINISTRY OF THE INTERIOR AND PUBLIC SECURITY, INTENDANCES, GOVERNORATES, MUNICIPALITIES AND OTHER CONSTITUENT PARTIES OF THE NATIONAL CIVIL PROTECTION SYSTEM.

SANTIAGO

In exercising the powers conferred to it by law 10.336 concerning the organization and functions of the Office of the Comptroller General of the Republic, and in the framework of the control plan, this control body undertook an audit of the National Emergency Office, from now on referred to as ONEMI, of the Ministry of the Interior and Public Security, including its regional offices, and of the various services that are part of the National System of Civil Protection, SNPC, namely the intendancies, governorates, municipalities, as well as some validations of other public and private services related to the provision and measures implemented by each entity to prevent emergencies or disasters.

GENERAL BACKGROUND

Decree No. 156, 2002, of the former Ministry of the Interior, approved the "National Civil Protection Plan" whose overall objective is to have multi-sectoral planning for civil protection, of an indicative nature, aimed at developing ongoing activities for the prevention of, and attention to, emergencies and/or disasters in the country, based on a comprehensive view of risk management.

TO

RAMIRO MENDOZA ZÚÑIGA

COMPTROLLER GENERAL OF THE REPUBLIC

The aforementioned regulatory framework establishes the specific objectives of the cited national plan, namely:

- To provide a national management framework for civil protection which, with a decentralised administration approach, serves as a structured basis for regional, provincial and municipal planning, according to the respective realities of risks and resources.

- To establish the overall scope of coordination between the different sectors and actors.

- To define the political, legal, scientific, technical, and operational responsibilities of the SNPC in each of the stages of the risk management cycle.

- To establish the scope of global action to address the various stages of the risk management cycle in a systematised manner.

- To normalise the basic elements to be considered in a response plan in the face of an emergency or disaster.

For its part, ONEMI must develop its civil protection mission through the framework plan approved by Decree No. 156 of 2002, cited, according to the provisions of the mentioned Decree-Law No. 369 of 1974 that created the National Emergency Office and Decree No. 509 of 1983 which approves the regulation for the implementation of Decree-Law No. 369, both of the former Ministry of the Interior.

To fulfil these objectives ONEMI has a regional civil protection and emergency office in each of the country's regions, whose purpose is to deal with emergency situations in general. In this regard it is worth noting that its mission relates to planning, promoting, coordinating and implementing actions for prevention, response and rehabilitation in the face of collective risk situations, emergencies, disasters or catastrophes, both natural and those caused by human action.

In each of the above instances, coordination mechanisms have been established with other public and private organizations that provide support (of a technical nature if required), such as the Armed Forces, National

Forestry Corporation, General Water Authority, Carabineros de Chile (police), Firefighters, Red Cross, state universities and companies amongst others.

Similarly, it should be noted that the aforementioned Decree No. 156 of 2002 stipulates that the management of Civil Protection must respond to the reality of a particular jurisdictional area, interrelating threats, vulnerabilities and resources, to guide action taken in terms of prevention, mitigation, preparedness, response and recovery, as a participatory and ongoing process of review and improvement. As such, the structure of human, technical and material resources of the Civil Protection System is configured for the management of each individual municipality, province, region or country as follows:

Civil Protection Committee: Geared to prevention, mitigation, preparedness and compliance with plans and programmes, having an extensive range and as such involving, in accordance with local realities, stakeholders from the sectoral, technical and scientific bodies and from community services, under the direction of the respective authority, whether at national, regional, provincial or communal level.

Emergency Operations Committee: concerned with the entities, agencies, and services necessary for coordinating the response to and recovery from an adverse or destructive event, whether it is an emergency, disaster or catastrophe, either national or regional.

Finally, for disasters and catastrophes affecting a province or commune, it will be necessary for the Civil Protection Committees, as permanent working bodies, to form Provincial or Communal Emergency Operations Committees, as appropriate.

Objective

The work was geared essentially to verifying preventive efforts in emergency matters made by ONEMI, an entity that is a fundamental part of the SNPC as established by Decree No. 156 of 2002 and in the Law-Decree No. 369 of 1974 which brought into existence the above office, and Decree No. 509 of 1983 which regulates it, all of the former Ministry of Interior, and the provisions of Decree No. 38 of 2011 of the Ministry of the Interior and Public Security, which amends Decree No. 156, already cited.

Also, to corroborating the level of preparedness for a disaster of other agents such as municipalities, governorates, intendances and other public and private members of the SNPC in the country.

Methodology

The audit was conducted in accordance with the principles, standards and control procedures approved by this Oversight Body. It included the analysis of records and documents as well as validation in the field and the application of other techniques as considered necessary in the circumstances.

Universe and Sample

The inspection included an analysis of all collected background information on the procedures and measures taken to prevent emergencies or disasters in each of the intendances, governorates, municipalities, regional and central offices of ONEMI, all of which is detailed in the annex attached to this report and summarized in the following table:

Table 1

REVIEWED ENTITY	NUMBER OF REPORTS
National Emergency Office	15
Intendances	15
Governorates	21
Municipalities	32
SNPC Members	10
Total reports	93

Source: Information based on the reviewed entities.

Another 16 public and private institutions were visited for the verification purposes, the results of which are included in the summary of reports in the table above, bringing the total to 109 bodies.

Audit Results

Executive summaries on situations identified in the inspection are provided below. These summaries are based on the national level audit carried out on the different institutions listed in the attached annex which refers to disaster prevention efforts undertaken by some members of the SNPC and coordinated by ONEMI, on matters such as: the national civil protection system; early warning centre; supplies; communications and dissemination; human resources; coordination at international level; projects; research and studies; hyogo framework for action; and the draft law establishing the national system of emergency and civil protection that establishes the National Civil Protection Agency.

1. National System for Civil Protection

1.1 Emergency Plans

It was noted that there are emergency plans for all the regions, however at national level, of those corresponding to the provinces and communes - and others developed by educational institutions and public services that are part of the field of study - not all have been drawn up, updated or formalised. The following situations are of note:

Table 2

N°	OBSERVATIONS RELATED TO EMERGENCY PLANS	CONSIDERATIONS
1	Most do not specify refuge areas	Necessary information for the civil community when dealing with an emergency, in order to be directed in a timely manner to places duly authorized for this purpose.
2	They have not been comprehensively tested through drills and simulations with the participation of the corresponding authorities.	.A procedure to test level of knowledge and effectiveness of the plans by those authorities who are responsible for acting in the case of a catastrophe.
3	There are no guidelines designed by ONEMI regarding their preparedness.	The existence of common guidelines brings about homogeneity and a standardised language used in cases of disaster.
4	Their design has not taken into account the different interest groups or the information necessary for the civil community according to the type of event that may occur.	In this way the sphere of action and information needs would be focused for each case, that is to say the general public, government authorities and technical and support entities.
5	No consideran la realidad geográfica del lugar sobre el cual estos se desarrollan, es decir no especifican los distintos tipos de emergencia que se puedan suscitar. They don`t consider geographical realities, i.e. they don't specify the different types of emergency that may take place.	It is important to be aware of the different vulnerabilities that affect different geographical areas in order to obtain quicker, more efficient and knowledgeable answers from those actors involved in an event.
6	In most cases SNPC members have not passed plans to ONEMI.	This allows ONEMI to respond and coordinate in an efficient and effective manner in the case of an event, thus complying with its role of advisor.
7	Information is omitted on head members and deputies of the civil protection and disaster operations committees	It is of great importance to have details of every head and deputy of the committees mentioned due to the facilitation of the communication of replies.
8	The roles of different actors are not stated.	Prior knowledge of the role of every actor of the SNPC allows for an emergency to be attended to in a coordinated fashion as in this way every member will know the function they should develop.
9	Emergency plans are not ancillary to other SNPC members.	Coordination should be strengthened between different actors to facilitate timely action in the face of catastrophes and protocols should be familiar to, and approved by, the different members.
10	In general communication between actors is not visualised.	
11	Generally there is no evidence that plans for communes, provinces and regions have been shared with members of the committee for emergency operations or the civil protection committee.	Each actor should be familiar with the general guidelines that allow them to act in an efficient and effective manner in the face of possible vulnerabilities.
12	Hardly any of the plans indicate where the committees for emergency operations should convene, or the committees for civil protection in the case of prevention.	Establishing agreed primary, secondary and tertiary meeting places for any eventuality facilitates both the coordination and the faster assembly time of authorities.

Source: Based on nationwide reports, as set out in the attached annex.

It should be mentioned finally that it was not possible in some provinces and municipalities to check the competence of the staff that carry out tasks of prevention of, and response to, possible catastrophic events, and/or in other circumstances it was found that the same staff carry out other tasks in parallel, i.e. they are not dedicated exclusively to prevention and response functions.

1.2 Emergency Operations Committee, COE

Through the aforementioned Supreme Decree No. 38 of 2011, which amended the National Civil Protection Plan, it was determined that COEs would be created as coordinating bodies, executors of response actions and disaster rehabilitation at national and regional level. Moreover, this ruling

establishes that the central and regional offices of ONEMI shall provide guidelines that specify the way to implement, and the practical operation of, the committees, in answer to which ONEMI issued its "Implementation and Operation Guidelines" of May 2011 which stipulate where and how to assemble, and contingency plans in case of inaccessibility to the designated site; communication system; logistics and availability of resources; modes of transportation of authorities to affected areas in cases of emergency; and other matters necessary for proper functioning.

Without prejudice to the foregoing, regarding the matter under analysis the following situations were found:

Table 3

No	OBSERVATIONS RELATED TO THE COE	CONSIDERATIONS
1	Representatives of the fire service, Ministry of Mining (SERNAGEOMIN), the Seismological Service of the University of Chile, Investigative Police of Chile, Red Cross along with other relevant actors are not part of the COE.	It is fundamental to precisely identify all relevant actors - technical and support – to attend to possible emergencies in a timely and coordinated manner.
2	The regulations and instructions examined refer to the national and regional COEs without considering governorates and communes, which is why in most of these jurisdictions they do not exist.	It is necessary for every level of the state administration – national, regional, provincial and communal - to receive instruction on the guidelines in order to carry out their work in a coordinated and participative manner.
3	In general, minutes are not taken at COE meetings and when they are they are not passed on to all members.	The different actors should be informed of actions planned regarding emergencies in order that their actions can be performed in a timely and effective manner.
4	In most cases the names of the deputies of some of the COE members have not been updated.	The timely provision of this information facilitates efficient and effective action in the face of catastrophes.
5	The role of every actor is not defined.	

Source: Based on reports made at national level, as set out in the attached annex.

1.3 Civil Protection Committee

We verified that ONEMI's Early Warning Centre, CAT, has a direct and constant radio link with some members of the Civil Protection Committee in order to provide fluid and constant information and communication and facilitate immediate coordination for response actions. However, the following situations were found:

Table 4

No	OBSERVATIONS RELATED TO THE CIVIL PROTECTION COMMITTEE	CONSIDERATIONS
1	The absence of guidelines for setting up and running regional, provincial and communal civil protection committees. These should be oriented to developing all actions and procedures for reducing the risk of disasters. Also, the roles of members are not defined.	To carry out work in a participative and coordinated manner, instruction of guidelines is necessary at national, regional, provincial and communal level.
2	There is no participation from relevant actors - namely public or private technical or support bodies - with the jurisdictional levels in matters of emergency prevention.	
3	In most of the meetings, no written verification is made of the topics dealt with or agreed upon and as such participants of the committee cannot receive minutes.	Keeping a register of each meeting and giving a copy to participating actors would be for control and follow-up of any actions carried out.
4	On the whole in the committees, names of the deputies of some of the members have not been kept up to date.	Having this information available facilitates more efficient and effective action in the face of a catastrophe.
5	There are provinces and communes where no committee has been set up.	

Source: Based on reports made at national level, as set out in the attached annex

1.4 Dissemination of Emergency Plans

It was verified that the procedures carried out by ONEMI for this purpose are channelled primarily through the meetings held between its regional directorates and the various SNPC member bodies, in which matters relating to the regional plan and coordination is addressed.

Also, according to information provided by ONEMI, the following dissemination campaigns have been carried out concerning possible vulnerabilities identified in the country.

Table 5

CAMPAIGN	PERIOD	COST $
ONEMI and CONAF, "Prevention of Forest Fires".	January 2011.	2,732,459
ONEMI and SERNATUR, under the concept of safe tourism, "Que el paisaje sea lo único que te sorprenda" (May the landscape be all that surprises you).	January and February 2011.	70,000,000
ONEMI carried out stunts with prevention in mind at mass events, "No seas tú quien de un espectáculo" (Don't you be the spectacle).	December 2010 – December 2011.	19,000,000
Operation "Chile preparado". (Chile Prepared.)	May to December 2011.	191,339,180
"Campaña protégete del hanta". (Protect Yourself from Hanta Virus Campaign.)	October to December 2011.	54,000,000
"Campaña prepárate y previene para este invierno". (Prepare yourself and Ward off Winter.)	May to August 2011.	39,854,290
Launch of "Plan familia preparada ONEMI." (Prepared family plan.)	November 2011.	145,000,000
Operation using volcano risk awareness signs.	Started by ONEMI November 29, 2011.	3.000.000
Operation "Alto a los incendios forestales".(Stop forest fires)	November 2011 to March 2012.	93.199.500
ONEMI and SERNATUR, focusing on safe tourism, "Que el paisaje sea lo único que te sorprenda". (May the landscape be all that surprises you.)	January to February 2012.	11,000,000
To strengthen preventive cultura at mass events. "No seas tú quien de un espectáculo" (Don't you be the spectacle.)	Enero a septiembre de 2012.	18,000,000
Preventive stunts, "Chile preparado". (Chile prepared.)	May to October 2012.	30,000,000
"Prepárate y previene para este invierno" carried out by ONEMI. (Prepare yourself and Ward off Winter)	May and August 2012.	1,000,000
"Alto a los incendios forestales". ("Stop Forest Fires" campaign.)	November 2012 to February 2013.	-
"Chile preparado". (Chile prepared.)	November 8, 2012.	-

Source: Based on reports made at national level, as set out in the attached annex.

Prevention campaigns conducted by ONEMI differ from communal, provincial or regional emergency plans in that they do not have the same focus or the same way of dealing with prevention, as the plans are not guided by stakeholders or the types of disasters that exist due to geography, which the cited document is addressing. It should be added that the municipalities that have emergency plans, generally make them public through websites, lectures and pamphlets.

It should be mentioned that some SNPC bodies do not disseminate information. These include hospitals that do not share emergency plans with the general public, which is not conducive to community participation, awareness or large-scale guidance in the face of possible emergencies.

Of the analysis performed on preventive campaigns carried out by ONEMI, along with SNPC actors, it was noted that those concerning the highland winter were not included, and in terms of the risk of volcanic activity, not all the regions that experience such events participate. There was also no evidence that dissemination has been conducted regarding possible chemical or toxic gas disasters; nor was there effective coordination between ONEMI and the Ministry of Agriculture.

1.5 Flood Letters (Risk Maps)

1.5.1 Risk Maps

Here we found that although risk maps do exist of critical rainfall and overflow areas, there are no concrete measures in place to reduce the degree of a disaster in possible emergency situations. This should be addressed and technical solutions found by each responsible agency.

It was also found that in some of the audited communes, such as Antofagasta, Caldera, La Serena, Pichilemu, Saavedra, Corral and Maullín, building permits have been granted even though territorial programming instruments and/or existing risk maps of coastal areas state that these areas are tsunami hazard zones:

1.5.2 Integrated System for Emergency Information, SIIE

Table 6

ORIGIN	MEMBERS	LINK	SUPPORT MECHANISM
To establish a modernization, reformulation and restructuring process of the emergency and civil protection system nationwide.	Defence Subsecretariat, ONEMI and the incorporation of the Geographic Military Institute, IGM.	It has direct access to information from physical, road, aviation and urban maps and a server with satellite images. It also has access to the IGM's map base of worldwide data, territorial information on national entities and online services.	It has graphic tools for planning and applications that perform simulations of situations of natural hazards such as earthquakes, volcanic activity, tsunamis and floods caused by rains, visualizing and modelling the effects of these phenomena in their respective areas of impact.

Source: Based on reports made at national level, as set out in the attached annex.

After making the relevant validations in the Hydrographic and Oceanographic Service of the Navy (SHOA), it was observed that of the 34 flood risk maps produced by SHOA - available to any user on the website of the National Tsunami Warning System, SNAM - just 7 of them are up to date according to the real mapping of each geographical area.

Additionally, the information provided shows that in accordance with the flood risk maps defined by SHOA and the safety line established by ONEMI according to international standards, there are six hospitals located in the floodplain and 15 in the safe zone, along with other public and private institutions including educational institutions and kindergartens, for which preventive and mitigative measures should be redoubled.

Finally, it is noted that although ONEMI has trained personnel to operate the system, in some regions only one official was trained with no back up with no deputy to provide back up in the case of contingencies.

1.6 Signage

It was found that many signs warning of volcanic risk have been installed at national level, however in the review carried out by this control body, it was found that there was no coordination with the technical entity - in this case SERNAGEOMIN - with regards to their placement.

In turn, in 2011 and 2012, through a contribution from the Secretariat for Regional and Administrative Development, tsunami warning signs were placed in coastal areas of the country. Sirens were also installed and safety zones identified. During this process the existence of old signs came to light, mostly rusty, faded, and in poor condition, or stockpiled in warehouses.

It is relevant to mention that ONEMI has not worked with other technical agencies in the installation of signposts relating to overflow from rivers due to rainfall. Similarly, in several visits to hospitals and educational centres, a lack of signs indicating escape routes and demarcation of safety zones was noted.

1.7 Protocols

In this regard, various agreements signed by the National Emergency Office with members of the SNPC were detected, however these have not been signed by other institutions such as the Ministry of Health, Civil Defence of Chile, the Directorate General of Civil Aviation (DGAC), the Chilean Air Force, amongst others, which could aid the civil protection system and strengthen the appropriate response in the event of a disaster.

Similarly, there is no evidence of the existence of protocols regarding maintaining an adequate level of coordination between the regional offices of ONEMI and the DGAC, specifically relating to vulnerabilities at aerodromes and airports and other types of incidents that may occur in each region. The same situation can be found in some governorates, intendances and municipalities that have not signed agreements or memoranda of understanding with other members of the SNPC.

2. Early Warning Centre

ONEMI's Early Warning Centre, CAT, is responsible for the constant monitoring of risk conditions, maintaining close communication with all regions and technical and support bodies, 24 hours a day, seven days a week.

2.1 Amount of Resources

For the continuity of communications, receiving and delivering alerts, CAT's communications equipment includes VHF radios, operation and programming screens, generators, connection to the Torrente network of the Telecommunications Command of the Chilean Army, a link to the Alfa network, HF backup with the ALE network, HF equipment with three output frequencies, satellite phones and internet.

It was found that the majority of municipalities, governorates and intendances have a primary means of communication, for example a satellite phone or VHF radio. However they do not have a system that backs up communications continuity in an emergency. It was also found that there was no log to give an account of link testing performed to prevent possible system failures.

2.2 Communication Tests

This control body attended communications tests at national and regional levels at Early Warning Centres and in the intendances and some governorates and municipalities. The tests were carried out using VHF and HF systems and satellite phones, during working and non-working hours, and proved that they functioned correctly, at least in non-emergency situations.

Regarding communication links, it was found that nationally ONEMI has no connection with hospitals or regional health secretariats (SEREMIS de Salud), however it was clear that the Ministry of Health is preparing an operative communications network for emergencies. It was also found that there is no primary radial link between the Seismological Service of the University of Chile, SERNAGEOMIN, and the central level of ONEMI. Nor is there a secondary connection with the regions.

With regards to the visit to the Radio Club of Chile, their Director of Emergencies said it is not normal procedure or practice for ONEMI to perform radio testing with amateur radio enthusiasts, although in some cases these have been conducted.

2.3 Internal Instructions of ONEMI

ONEMI developed instructions in order to perform its functions in a uniform manner and improve the internal processes of CATs, both at national and regional levels. Instructions include a list of "characteristics of national calls"; an alphabet to identify SNPC actors; protocol for earthquakes and tsunamis in daytime and night shifts, including the procedures to be performed by the CAT in the first 50 minutes; duties of the regional offices to prevent emergencies; establishing and standardisation at national level of technological tools for planning and decision-making. They also outline the most relevant steps and the standards to be followed by those persons or officials responsible in emergencies caused by earthquakes likely to cause tsunamis.

2.4 Communications Centres

In accordance with the validations carried out this area and the information provided by some organizations such as the Chilean Air Force, the Directorate General of Civil Aviation, and Radio Bío Bío, there is no evidence of activity by ONEMI to make agreements with these bodies or develop protocol that complements and strengthens the current communications system, with the ultimate goal of possessing diverse mediums of communication to enable timely and continuous responses in possible emergency situations.

It should be added that the Director of Emergencies of the Radio Club of Chile pointed out there was no way of ensuring communication at all times, adding that it would best for ONEMI to have equipment available for the open use of radio enthusiasts in all its regional offices (CAT), making communication more timely. It was also suggested that there should be a central telecommunications expert at ONEMI 24 hours a day, seven days a week, for the effective and efficient communication with the SNPC.

3. Supply

3.1 Resources for the Prevention of Emergencies

It was established that the Directorate General of Civil Aviation, the Chilean Meteorological Office, the Hydrographic and Oceanographic Service of the Navy, the Ground Operations Command of the Army of Chile, governorates, intendances, municipalities and other public entities visited, do not have resources allocated for emergency prevention and as such are not addressing the reduction of disaster risk in a concrete manner.

3.2 Financial Resources for Critical Stock

It was found that ONEMI, through Exempt Resolution 1.581 of September 4, 2013, determined critical stock at national level, which is acquired and controlled through the budget assigned each year.

Notwithstanding, uniform criteria has not been determined for maintaining minimum stocks for the municipalities, governorates and intendances according to the geographical area in question and any possible vulnerabilities that may affect them. Also, the agencies mentioned do not, in general, have accurate information or records on existing availability.

3.3 Single Form for Receipt, Delivery and Availability of Relief Items (REDES)

It was verified that ONEMI, the municipalities and governorates do not comply with the provisions of Annex 8 of Decree 156 of 2002 of the former Ministry of the Interior, as they have not employed the REDES form, providing documentary support for the meeting of the needs of people, property and the environment arising from a destructive event, keeping the relation between relief items received, delivered and available up to date, a function that is the responsibility of the director of civil protection and emergencies at each jurisdictional level.

In this regard, quarterly reports should be made by the directors of civil protection and emergencies, at communal to regional levels, and then at national level, remitting the REDES form, in the prevention phase, on the first day of the months of March, June, September and December of each year.

3.4 Capabilities Control and Available Resources

It was verified that ONEMI has internal procedures for receipt and dispatch and to prepare the physical inventory of emergency items, which are described in narrative form and through flow charts in the document entitled "Manual of Warehouse Management for Emergency Resources" which brings together the relative criteria for the physical and procedural treatment of the aforementioned products. For this, the National Emergency Office has a computerized system in which the stocks held by their institution are controlled at national level and for each office.

It should nevertheless be mentioned that ONEMI does not possess a record of the capabilities and resources of the public and private services that will eventually be part of the SNPC, a situation that does not allow for carrying out coordination and technical assistance in a timely manner, which is necessary for maintaining an adequate level of recruitment for possible disaster situations.

3.5 Contracts for acquiring critical emergency stock

ONEMI has signed agreements with Incal Desarrollos Alimenticios S.A. and Colchones Mantahue in order to keeping a critical stock of mattresses, beds and blankets. However it was ascertained that both their central office and branches are in the Metropolitan Region and as such a study should be carried out to identify strategic points throughout the country so that in the case of an emergency, response will be timely and effective.

3.6 Equipment

In the inspection visit by this Comptroller's Office to entities of different types, the following weaknesses in terms of preparedness in the face of an emergency were found:

Table 7

ENTITY VISITED	OBSERVATIONS
Civil Defence of Chile	The infrastructure of the premises is in precarious conditions
Metropolitan Health Service, North, South and Central	No power generators.
Health Services and Regional Health Secretariats (SEREMIS de Salud)	No register of quantity of generators.
IDOP School, Santiago	No sprinkler system
Agriculture and Livestock Service	The satellite telephone system, "Iridium" brand, model 9505A, does not have a SIM card due to their high cost. As such the telephone is unusable.
Legal Medical Service	Has just 15 generators for 40 branches countrywide.
Chilean Broadcasters Association, ARCHI	Non-compliance with convention as ONEMI does not have the budget.

Source: Based on reports made at national level, as set out in the attached annex.

4. Communications and Dissemination

4.1 Prevention Campaigns

It is noted that ONEMI has developed numerous prevention campaigns related to the launch of the winter plan in 2011 and 2012 and the forest fire season for the periods 2010 to 2012, a fuller background of which is given in section 1.4 of this report. However, with respect to chemical and toxic gas emergencies, ONEMI has not conducted technical coordination with SEREMI. It has not carried out training activities in the field of volcanic hazards in the Metropolitan regions, Antofagasta, Tarapaca, La Araucanía, Los Ríos and Aysen for the effective and timely response to potential disasters.

However it was found that Civil Defence of Chile disseminates preparedness measures through educational presentations to the community and participates in various campaigns with other organizations, namely ONEMI, the Police Department, the National Commission on School Safety and intendances.

It should be noted that most of the members of the SNPC, such as municipalities, governorates, intendances, among others, said they do not carry out prevention campaigns or dissemination of plans since such activity is centralised in ONEMI.

In this regard it should be borne in mind that Decree 156 of 2002, mentioned earlier, stipulates that the activities referred to are the responsibility of each jurisdictional level and coordinated by the National Emergency Office.

4.2 Drills

It was verified that the National Office of Emergency organised drills at national level in which different SNPC actors participated. However not all support institutions were advised, including the Red Cross, Civil defence of Chile, the Legal Medical Service, the Police Department, Radio Enthusiasts, amongst others. Notably, these events were focused on earthquakes and tsunamis without considering other vulnerabilities in the country such as chemical emergencies, toxic gases, volcanoes, landslides, floods, forest fires, amongst others, providing evidence of the omission of policies and a programme for their implementation.

In light of the above it can be stated that most SNPC members do not perform drills in a periodic, consistent and coordinated manner, participating only in those that are programmed by ONEMI.

4.3 Simulations

From May 2011 to August 2012, four simulations were conducted at national level, relating to earthquakes, which were held in the regions of Atacama, Coquimbo, Los Ríos, La Araucanía and Los Lagos. It was found that in the events held in the latter two regions, authorities from Civil Defence of Chile, the Red Cross, Radio Enthusiasts Chile, amongst others, did not take part.

It should be noted that earthquake simulations have not been performed along the whole of the national coastline, nor indeed have activities relating to other hazards that affect the country. In this regard it is appropriate to mention that one of the main objectives of simulations is to drill decision-making on the part of the authorities in the face of possible emergencies, and as such the participation of all SNPC members is extremely important.

For its part, the Academy of War stated that the Chilean Army, in line with its principle known as "institutional social responsibility and cooperation with citizenship", in 2003 created the Management and Training System, SIGEN, which, as stated by the expert in risk and emergency management of the aforementioned academy, aims to provide training in the process of decision-making for the authorities responsible for disaster management at communal, provincial, regional, national and international level, and/or any organization that needs to substantiate and validate structured planning for facing a crisis, aimed at reducing the risks of disaster.

In this context, the military institution was asked if coordination with ONEMI exists for the joint use of the SIGEN system, or for planning simulations to test the internal plans of the National Emergency Office, or indeed for the planning of some exercise related to matters in which the staff of that entity participates. It was indicated that no coordination has been programmed or requested.

Considering that to carry out a simulation, a number of procedures must be performed, including visiting each of the participating sectors, meeting with the authorities, simulating some kind of emergency that might arise in the area, analysing statistics of previous catastrophic events, inter alia, It is a lengthy

procedure and as such the whole of the SNPC should be incorporated, in accordance with the specifications of the Hyogo Framework and the provisions of Annex 4 of Decree 56, cited above. As such the incorporation of the War Academy in the SIIE is recommendable.

4.4 Training Undertaken by ONEMI

In matters of civil protection, ONEMI has carried out a number of training programmes, as shown in the table below:

Table 8

NAME OF TRAINING PROGRAMME	TARGET AUDIENCE	COURSE DETAILS	OBSERVATIONS
Comprehensive Plan for School Safety, PISE, held jointly with the Ministry of Education	Educational establishments across the country.	The programme involves training, workshops held during the working day, led by the National Emergency Office and executed by each of its regional offices, in coordination with the respective regional ministerial secretariat of education.	A total of 616 educational units across the country have received instruction, which equates to 5.17% of all such units. It was also noted that no training was given in the regions of Coquimbo, Libertador General Bernardo O'Higgins and Maule. It was not possible to identify the criteria used in selecting educational units or any programme to reach 100% of them. .
Face-to-face Courses	Communal civil protection directors.	Two strands of the course were identified: • Emergency response teams. • Emergency operations at local level.	Regarding the response teams classes, these were not given in the regions of Tarapaca, Valparaiso, La Araucanía, Los Ríos, Los Lagos, Aysen and Magallanes, also, in the regions where the classes were held, not all communes received instruction. For the operations course it is noted that the region of Maule received no training. In the remaining 14 regions, not all the communes received instruction.
e-learning courses	SNPC members.	Course names: • Operations Systems for Regional COEs. • Emergency Operations at Local • Prepare and Learn.	It should be noted that there is no information on those who took the course or those who finished it.
Work meetings and coordination programmes	SNPC members.	Classes developed by ONEMI regional directors together with CONAF, Fire Service, Chilean Red Cross, Civil Defence, Investigative Police, provincial and communal civil protection directors.	Not all the relevant civil protection actors attended.

Source: Based on reports made at national level, as set out in the attached annex.

It should be noted that the lack of evidence to the contrary suggests most of the entities that make up the SNPC do not hold regular training sessions on emergency plans for the community or technical and support bodies. This is critical in order to keep up an adequate level of warning and coordination in the face of emergencies.

4.5 Cross-training

The National Emergency Office has signed cooperation agreements and protocols with various technical agencies for coordination and training to develop and promote a culture conducive to the prevention of disasters that contributes to the wellbeing of the community.

On this issue, it was found that there is no timetable for short-, medium or long-term cross-training between ONEMI and the services involved in one way or another in emergency response or in the various fields of disaster risk reduction, namely the Ministry of National Defence, the Ministry of Health, the Ministry of Agriculture, the Ministry of Energy, the Ministry of Justice, Carabineros de Chile (police), the Fire Service, Investigative Police, SERNAGEOMIN, inter alia. Moreover it was found that in some entities the training provided did no constitute a formal procedure as it was imparted through seminars and workshops in conjunction with the staff of ONEMI and other institutions.

5. Human Resources

5.1 Availability of Personnel

It should be noted that nationally CAT has shift operators and heads working 24 hours a day, seven days a week, in order to maintain an adequate warning level. It also has many professionals in other areas of the institution.

When looking at the hiring fees of radio operators, those who provide technical and professional support, the operators of CAT Nacional's emergency alert system, and the Coordinator of Emergency Funds, it was found that they not conform to the provisions of Article 11 of Law 18.834 of the Administrative Statute, since the work performed is not temporary but rather part the everyday work of the institution.

It was shown that some entities do not possess emergency professionals 24 hours a day, seven days a week, namely hospitals at regional and national level, the health SEREMIS, the National Agricultural Emergency and Agro-Climatic Risk Management Unit of the Ministry of Agriculture, CONAF, the Legal Medical Service and the Red Cross, municipalities, intendancies, governorates and others. It should be noted in this regard that the necessary coordination and arrangements must be made by the National Emergency Office for the SNPC to operate 24 hours a day, 7 days a week, so that all that entities that comprise it can respond adequately to a disaster.

5.2 Training ONEMI Staff

On this matter it was observed that ONEMI trained its regional managers and radio operators through an e-learning course entitled "Emergency Operations System for Regional COEs". They were awarded a certificate entitled "Radio Operator for ONEMI Emergency Telecommunications". CAT professionals were provided with the following training by technical bodies:

a. Classes from the Hydrographic and Oceanographic Service of the Chilean Navy, SHOA, and the Hydrology Division of the Directorate General of Water, held in July 2012. These classes were not attended by professionals from the various regional offices of the country's National Emergency Office.

b. Civil protection conferences, held in July 2012, on earthquakes and wildfires, with the participation of ONEMI's National Directorate according to the respective attendance lists.

c. Eight-hour course on "Effective Communication and Tackling Conflictive Situations", conducted by the consultancy "Transform Training Ltda." in May 2012. Certificates awarded to participants verified that it was only attended by

officials of the CAT of the National Directorate and the Communications and Dissemination Department.

Moreover, officials of the national and regional CATs are not advised of training in matters such as crisis management, leadership, chemical and volcanic emergencies, inter alia, which are necessary for responding to disaster situations and are skills every ONEMI official should possess.

5.3 Training at International Level

As part of its institutional strengthening process, ONEMI has sent various professionals abroad on secondments in the framework of preventing catastrophes and financed, in some cases, by the institution itself and in others by the inviting entity.

In this regard it was found that of a total of 40 officials who were part of secondments abroad between 2011 and 2012, 35% of them were no longer part of the institution. These commissions were required, as set out in the respective decrees that authorize such activities, to issue a report detailing results. Failure to do so constitutes a breach of these provisions.

5.4 Level of professionalism in the work carried out

It is noted that according to data from the Plans and Files Unit, ONEMI upholds16 accords, 34 protocols, one letter of agreement, two commodata, one letter of intent and one framework of understanding. It was noted that the accords were set out in general rather than specific terms, providing no evidence of internal instructions on how to operate in the face of emergencies other than other earthquakes and tsunamis.

On the other hand, it should be stated that a manual of job descriptions is being put together by the Administrative Division of ONEMI, which is currently in the stage of validation and review by the head of the National Emergency Office. It should also be mentioned that it was not possible the job experience of most of the professionals working in the municipalities, intendances and governorates.

6. Coordination at National Level

Under the provisions of Article 7 letter c) of Decree Law 369 of 1974, ONEMI has made agreements with international organizations, namely:

Table 9

TYPE OF DOCUMENT	ENTITY	SUBJECT
Regulation	Joint Chilean-Argentine Commission.	Cooperation on catastrophes.
Joint Declaration	State of California and Chile.	
Letter of Intent	Chile and the European Commission through DG ECHO.	
	Emergency Management Australia and ONEMI.	Cooperation on emergency management.
	Chile and the Secretariat General of the Organisation of American States (GG/OEA).	To support implementation of the Inter-American Network for Disaster Mitigation (RIMD).
	The United States Geological Survey (USGS) of the United States Department of the Interior and ONEMI.	To create an investment plan for the development of the workforce responsible for the functioning of the National Network of Seismic Monitoring, RNMS, through coordination and cooperation activities.
Memorandum of Understanding	Federal Emergency Management Agency, Homeland Security USA, FEMA, and ONEMI.	To help reduce the risk of, and build resilience to, disasters in both countries as well as improving response and recuperation capacity in the face of hazardous events.
	International Humanitarian Network, RHI, in Chile.	Socialize policies, strategies and actions in disaster preparedness and response in coordination with the Ministry of Foreign Affairs, ONEMI and international humanitarian actors in the country.
Accord	ONEMI and HUAWEI Chile.	Donation of telepresence system.
Letter of Understanding	Office of Foreign Disaster Assistance, Office of the US Agency for International Development (USAID/OFDA) and ONEMI.	Interinstitutional cooperation, technical assistance and complementation.
Memorandum of Cooperation	Ministry of External Relations of Chile and the Japanese International Cooperation Agency (JICA).	To realize technical cooperation projects in the areas of anti-seismic structures, early warning systems, seismological observation and tsunami evacuation signage.

Source: Based on information provided by ONEMI.

In reviewing each of the documents listed in the table above, it was verified that ONEMI has not taken additional specific actions to strengthen disaster risk reduction.

7. Projects

7.1 Emergency Alert System (SAE)

Table 10

DETAILS	CONDITION
It is comprised of the Central Unified Platform (PCU), the means of detecting warnings and disseminating georeferenced messages which transmit warning messages generated by the PCU within the geographical area specified by ONEMI, with the aim of alerting the public to an emergency by sending messages directly to their cell phones (sending mass messages, different to SMS, to the population at risk), by which means it is hoped to reduce the chances of collapse in an emergency.	To ensure proper operation of the system, 24-hour shifts are taken, seven days a week, at the CAT and the Technology Management Unit of the National Emergency Office. Also, rules for interoperability and dissemination of warning messaging, reporting and receipt of critical telecommunications infrastructure and information on significant flaws in communication systems were adopted. In this regard it should be noted that the SAE is not operational nationwide.

Source: Based on information provided by ONEMI.

7.2 Project for an Institutional Building

Table 11

DETAILS	CONDITION
The planned property is a total of 5,695 m2 and aims to meet all the standards of current building regulations and be able to resist and continue functioning after a seismic event of great magnitude.	The project is already underway and is to be finished in September 2014.

Source: Based on information provided by ONEMI.

7.3 Trucking Network P25

Table 12

DETAILS	CONDITION
The outcome of the agreement signed between the ONEMI and the Department of Telecommunications, SUBTEL, - the objective of which was that SUBTEL should draw up an action plan to ensure that telecommunications services can operate in emergency situations - was the conclusion that Trucking Network P25 of the Carabineros de Chile (police force) is the emergency network that has the highest degree of standardization and coverage, and that its nationwide deployment meets the communication needs of the Investigative Police and ONEMI. The investigation concludes that interoperation with other entities is feasible, such as with the Emergency Healthcare System, the Fire Service, inter alia. As such an agreement was signed between Caribineros de Chile and the National Emergency Office, taking into account the recommendations made by SUBTEL.	Checks indicate that the National Emergency Office is not connected to Trucking Network P25

Source: Based on information provided by ONEMI.

7.4 National Seismological Network

Table 13

DETAILS	CONDITION
In 2007, the Seismological Service of the University of Chile presented the former Ministry of the Interior with a proposal to improve the quality and accessibility of national seismic information. The proposal has three related areas, namely services to be delivered, institutional organization, and the instrumentation network, designed to reduce the impact of losses caused by earthquakes, both in terms of lives and in the development of the country. The objective of the project is to obtain national seismic coverage that generates, in the short term, timely information for national institutions, and in the medium and long term, a quality and easy-to-access database that contributes to knowledge of danger and the reduction of seismic risk for the country. The information will be directed at risk management institutions, especially the National Emergency Office, SHOA, SERNAGEOMIN.	Analysis carried out would indicate the following: There were numerous delays in the administrative acts of approval. • The project presented by the University of Chile in 2007 indicated duration of four years, in which period real-time information would be gathered of possible earthquakes that had occurred. This has not been accomplished • Teams from the university were requested by the National Emergency Office which installed 21 of the 65 acquired teams, as found in the in-the-field validation, taking into account that the technical body is the university of Chile • The new agreement signed on December 2012 has a duration of four years, and states that the University of Chile will install and operate each of the stations • Goods acquired have no safeguard guarantees.

Source: Based on information provided by ONEMI.

It should be noted that the Office of the Comptroller General will conduct an administrative investigation to determine the possible administrative responsibilities for the situations described above, which has meant that more than six years after presenting the project it has not been finished, with the consequent obstruction to the conveyance of information to SHOA and the other services.

It might also be stated that the National Emergency Office transferred resources to the University of Chile to fund the following items: Installation of IRIS seismic stations; 24/7 monitoring of system; strengthening of seismic stations installed in the country and increasing connections that exist nationwide.

8. Research and Studies

Study on Risk and Modification of the Santiago Metropolitan Master Plan (SMMP), San Ramón Fault, conducted by the Ministry of Housing and Urban Development, (MINVU).

Table N° 14

CONTEXT OF THE INVESTIGATION	RECOMMENDATIONS		ACTIONS TO TAKE
The report, issued in January 2012, focused on the development of management guidelines and proposals for the subsequent incorporation of risk regulations associated with the fault in the SMMP, as well as other instruments or legal resources, taking into account that the phenomena described present two different issues that must be addressed. On one hand, the potential effects of an earthquake generated by the activation of the San Ramón Fault, and on the other, the effect of surface rupture on the fissure trace.	• Inclusion of the San Ramon fault into the SMMP; • Amendment of the General Construction and Urban Development Ordinance (GCUO); • Amendment of the General Construction and Urban Planning Act (GCUP Act); • Amendment of the NCh 433 standard; • Postponement of urgent construction permits; • Creating a geo-site; • That the MINVU starts an urgent process of coordination to avoid the installation of new infrastructure elements in the short-term, at least on the rupture strip, and coordination and institutional linkage.	The report indicates that in Chile "there is no government body responsible for convening and coordinating the private sector, professionals and researchers from universities, and public officials who take decisions on these matters. This becomes clear when institutional roles and responsibilities are reviewed, and in the lack of legal binding between them. Consequently, while SERNAGEOMIN and universities generate knowledge and recommendations, it is not required to incorporate them as part of the instruments, as in other countries".	ONEMI, together with the SNPC, should consider the recommendations for future planning in the metropolitan area as a guide in the establishment of mitigation and appropriate prevention measures and to respond assertively to any emergency, in accordance with the role of coordinator and technical advisor of the National Emergency Office, enshrined in the Law Decree No. 369-1974 and Decrees 509-1983 and 156-2002, already mentioned. It is also worth mentioning that no other research on geological faults in Chile is available, namely Chile Ridge (Dorsal de Chile); Futrono Fault (Falla Futrono); Peru-Chile Trench (Fosa de Perú-Chile); Lanalhue Fault (Falla de Lanalhue); Ofqui-Liquiñe Fault (Falla Liquiñe-Ofqui); and others.

Source: Based on information provided by ONEMI.

8.1 Analysis of Disaster Risk in Chile (VI DIPECHO Action Plan)

Table 15

CONTEXT OF THE INVESTIGATION	RECOMMENDATIONS	ACTIONS TO BE TAKEN
It corresponds to a programme that focuses on reducing the vulnerability of the population to natural disasters and aims to improve the capacities of communities exposed to these risks. The programme seeks to ensure that risk reduction becomes an integral part of sustainable development policy, to achieve this goal all stakeholders, governments, communities, partners and donors must work together.	• Strengthen initiatives related to prevention, recovery and reconstruction. This will be achieved with cross-institutional management, avoiding sectoral approaches. It is also necessary to promote efforts with regard to the education of the population exposed to different types of threats, which, as indicated, is a weakness in Chile. • Strengthen the study of hazard maps of the country as these are limited and do not meet the requirements demanded by urban planning as there is no institutional agreement on variables to be considered in grading vulnerability, which results in the absence of appropriate indicators at regional and local scale, and consensus methodologies. • With respect to land use, it states there is a lack of baseline information that makes it difficult to measure risk, accompanied by weak legislation which is evidenced by the existence of numerous human settlements in areas at risk of disaster. As such it is recommended to strengthen the generation of, and access to, baseline information for risk modelling. • Regulations related to risk management should be strengthened, not forgetting that there are numerous laws, rules and regulations concerning anti-seismic design, however there is a gap for a whole set of other hazards.	ONEMI is the technical advisor and coordinator of the National System of Civil Protection, and as such it has the responsibility and duty to carry out the necessary actions to meet the recommendations made by DIPECHOin order to maintain an adequate level of preparedness in the population, in accordance with the provisions of Decree Law No. 369-1974 and Decrees 509-1983 and 156-2002, already mentioned.

Source: Based on information provided by ONEMI.

8.2 Final Report on Diagnostic Project and Strengthening of ONEMI's Academy of Civil Protection, Conducted by the Accrediting Agency QUALITAS

Table 16

CONTEXT OF INVESTIGATION	RECOMMENDATIONS	ACTION TO BE TAKEN
Carry out a diagnosis on programmes and courses offered by the Civil Protection Division in order to make the necessary recommendations to modernise teaching methods and the main aspects of programmes and courses offered in line with modern criteria on disaster risk reduction.	• The Academy of Civil Protection must be supported by an educational project to plan their strategy for dissemination and the training of communities with different levels of vulnerability. To do so, risk profiles, living conditions and skills must be considered. • To ensure a level of organizational culture in the National Emergency Office, the measured implementation of systematic and regular mechanisms should be encouraged, involving exchanges and reflections about its practice amongst members. • It is necessary to plan a short-, medium- and long-term strategy for the dissemination and training of communities with different levels of vulnerability, considering the different risk profiles, living conditions, previous skills, expectations and motivation.	In this context it can be stated that historically the main vulnerabilities that affect the national territory are covered by Decree 156 of 2002, already quoted, compliance with which rests with the entity to the entity.

Source: Based on ONEMI information.

9. Hyogo Framework for Action, HFA

Table 17

GOALS	MEMBERS	PRIORITY ACTIONS
The Hyogo Framework for Action is the most important tool for the implementation of disaster risk reduction, adopted by the Member States of the United Nations. Its overall objective is to increase the resilience of nations and communities to disasters by proposing, for 2015, a significant reduction of losses caused by disasters, both in terms of lives and in terms of the social, economic and environmental assets of communities and countries.	Consequently, in January 2005, during the World Conference on Disaster Reduction held in Kobe, Hyogo, Japan, 168 governments, including Chile's, adopted a 10-year plan to achieve a safer world in the face of natural hazards.	a. Ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation; b. Identify, assess and monitor disaster risks and enhance early warning; c. Use knowledge, innovation and education to build a culture of safety and resilience at all levels; d. Reduce the underlying risk factors; e. Strengthen disaster preparedness for effective response at all levels.

Source: Based on information provided by ONEMI.

In this regard the Secretariat of the International Strategy for Disaster Risk Reduction of the United Nations, UNISDR, released a report following a request by the National Emergency Office through the Resident Coordinator of the United Nations in Chile, following the earthquake and tsunami in February 27, 2010, which is summarized as follows:

Table 18

PURPOSE AND OBJECTIVE OF THE REPORT	OUTCOME	GRADO DE CUMPLIMIENTO LEVEL OF COMPLIANCE	CONCLUSIÓN CONCLUSION
The purpose was to support the Government of Chile in its evaluation process, consequently the UNISDR collaborated in the organization and implementation of an interagency assessment mission, as well as preparing a report on the progress made by the country in implementing the HFA. The objective was to provide an overall assessment and recommendations of a general nature - the most concrete, relevant, appropriate and fitting to the context of the country.	A total of 75 recommendations were made which are designed to comply with the five HFA priorities for 2015.	The National Emergency Office has sent two reports reflecting the progress in the implementation of the HFA. The first of them on April 28, 2011, and the second on October 11, 2012, covering 2009-2011 and 2011-2013, respectively. These reports inform on the progress of five priorities and 21 indicators set out in that HFA, three years from the end of the period agreed in 2005.	While measures have been taken by both ONEMI and members of the SNPC, comprehensive progress in complying with each of the priorities and their respective indicators has not been made. In this sense, the performance of ONEMI does not fully cover what was set out in Decree-Law 369 Art. 1 of 1974, mentioned above, for which the provisions of Law N ° 18.575, Art. 3, cited above, must be taken into account.

Source: Based on information provided by ONEMI.

10. Bill That Establishes The National Emergency and Civil Protection System and Brings Into Existence The National Agency for Civil Protection

In this regard, the bill introduced to Congress on March 22, 2011, which establishes the National Emergency and Civil Protection System and brings into existence the National Agency for Civil Protection, Bulletin No. 7550-06, future successor to the National Emergency Office, was analyzed in order to verify that it includes the recommendations made to the current system and also verify the changes made by the Commission of National Defence. As a result of the analysis carried out, it is necessary that ONEMI and the Interior Ministry take the necessary steps to ensure that the topics and actions for each are incorporated, as detailed below:

10.1 The National Agency for Civil Protection Framework for Action

Table 19

ASPECT	RECOMMENDATION
The National Agency for Civil Protection institutional framework	As recommended by the UNISDR, create a body with the necessary hierarchical level and the corresponding technical and political weight.
National Director profile	Appropriate for the efficient performance of functions, as stated by UNISDR.
Provision of human resources	Strengthen the provision of human resources of ONEMI's successor.
2007 Bill	Weigh the proposals of the bill that the National Emergency Office made in 2007 which was not submitted to Congress.

Source: Based on ONEMI information.

10.2 Financial resources

Table 20

ASPECT	RECOMMENDATION
National civil protection fund	UNISDR indicates that specific budget lines for disaster risk reduction should be created within the FNDR, FRIL, FOSIS and others.
Provision of human resources	Strengthening the provision of human resources of municipalities.

Source: Based on ONEMI information.

10.3 Participatory, Inter-institutional and Inter-sectoral Coordination

Table 21

ASPECT	RECOMMENDATION
Members of the National Civil Protection Council	To consider each of the relevant public or private technical actors as well as supporting actors in emergency matters, such as: CONAF, General Directorate of Water, Chilean Nuclear Energy Commission, Amateur Radio Enthusiasts, Legal Medical Service, National Customs Service, Secretariat of Environments, (Subsecretaría de Medio Ambientes), and others.
Defining roles and functions of each of the members of the National Civil Protection System.	UNISDR states it should "develop a national bill for the reduction of risk with a systemic approach, integrating regional and local levels and determining the responsibilities and powers of each of the actors involved in the different territorial levels. This bill should be consistent with the Hyogo Framework for Action" and other international reports on prevention of emergencies and disasters.
Active role of municipalities in civil protection committees.	UNISDR recommends incorporating disaster risk reduction as one of the local powers in the Organic Law of Municipalities.
Emergency Operations Committees.	Evaluation of technical and supporting actors forming emergency operations committees at national, regional or community level, according to the geographical area, adhering to the principle of intersectoral articulation.
National Seismic Monitoring Network.	Consideration of the Seismological Service of the University of Chile as the technical body, bearing in mind that it is responsible for warning of all seismic events.

Source: Based on information provided by ONEMI.

10.4 Communications

Table 22

ASPECT	RECOMMENDATION
National early warning system.	Establishment of an integrated communications system and a common language between all levels and actors of the system, allowing for efficient coordination and action in the event of an emergency.
	Incorporating all the technical actors who can raise the alert, estimate level, breadth and coverage and communicate this to the agency, considering the General Directorate of Water, Chilean Nuclear Energy Commission, Seismological Service of the University of Chile and others.

Source: Based on information provided by ONEMI.

Conclusions

As a result of the audit on the organization of, and measures provided by, the various entities that make up the National Civil Protection System, relating to the prevention of emergencies or disasters, various observations were made. These are contained in each of the reports listed in the attached annex and must be addressed by the services mentioned in order to comply with the duties stated in Decree 156 of 2002 of the former Ministry of the Interior, that brought into existence the National Civil Protection Plan.

Also, the National Emergency Office should comply with its role as coordinator and technical adviser on the matter, according to the provisions of Decree Law 369 of 1974 which created the office and Decree 509 of 1983 and 156 of 2002 of the former Ministry of the Interior, already mentioned.

Notwithstanding the above, the Comptroller General shall instruct a summary proceeding to determine the administrative responsibilities for the delay and lack of receipt of equipment purchased for the Seismological Network of the University of Chile, as detailed in Table No. 13, which has meant that after more than six years the project has not been completed, resulting in an obstruction to the conveyance of relevant information to SHOA and other services for whom real-time information on earthquakes is relevant.

ANNEX

NUMBER OF REPORTS BY REGION	REGION OF INTENDANCE		PROVINCIAL GOVERNMENT		MUNICIPALITY		ONEMI	
	NOMBRE NAME	REPORT No.	NAME	REPORT No.	NAME	REPORT No.	NAME	REPORT No.
4	Arica y Parinacota	13	Arica	11	Arica	10	Arica y Parinacota	12
4	Tarapacá	14	Iquique	15	Iquique	16	Tarapacá	13
4	Antofagasta	18	Antofagasta	17	Antofagasta	19	Antofagasta	21
4	Atacama	10	Copiapó	9	Caldera	11	Atacama	8
4	Coquimbo	12	Elqui	13	La Serena	14	Coquimbo	11
6	Valparaíso	13	Valparaíso	17	San Antonio	12	Valparaíso	23
			San Antonio	11	Puchuncaví	15		
8	Libertador General Bernardo O'Higgins	50	Cachapoal	51	Rancagua	53	Libertador General Bernardo O'Higgins	35
					Pichilemu	54		
			Cardenal Caro	52	Navidad	55		
					Paredones	56		
6	Maule	13	Curicó	9	Constitución	11	Maule	14
			Talca	10	Licantén	12		
4	Bío-Bío	33	Concepción	37	Tomé	32	Bío-Bío	36
5	La Araucanía	20	Cautín	21	Melipeuco	18	La Araucanía	17
					Saavedra	19		
4	Los Ríos	18	Valdivia	17	Corral	19	Los Ríos	16
4	Los Lagos	19	Llanquihue	18	Maullín	17	Los Lagos	16
4	Aysén	8	General Carrera	10	Chile Chico	9	Aysén	7

NUMBER OF REPORTS BY REGION	REGION OF INTENDANCE		PROVINCIAL GOVERNMENT		MUNICIPALITY		ONEMI	
	NAME	REPORT No.	NAME	REPORT No.	NAME	N° DE INFORME OF REPORT	NAME	REPORT No.
12	Magallanes Antártica Chilena	17	Última Esperanza	9	Cabo de Hornos	15	Magallanes y Antártica Chilena	18
					Laguna Blanca	13		
					Natales	14		
			Magallanes	10	Porvenir	11		
					Primavera	8		
			Tierra del Fuego	16	Punta Arenas	12		
					Torres del Paine	7		
10	Metropolitana	167	Cordillera	131	Vitacura	16	Metropolitana y Dirección Nacional	219
					Padre Hurtado	17		
					Lo Prado	18		
			Talagante	132	Lo Espejo	19		
					Buin	20		
					San Ramón	22		

ENTITY TO WHICH THE REPORT WAS ISSUED	MEMBER ENTITIES OF THE ENTITY TO WHICH THE REPORT WAS ISSUED AND VALIDATIONS WERE MADE	REPORT No.	ENTITY TO WHICH THE REPORT WAS ISSUED	MEMBER ENTITIES OF THE ENTITY TO WHICH THE REPORT WAS ISSUED AND VALIDATIONS WERE MADE	REPORT No.
Dirección de Fronteras y Servicios Especializados de Carabineros de Chile (Borders and Specialized Services Directorate of Carabineros de Chile)	Dirección de Fronteras y Servicios Especializados de Carabineros de Chile (Borders and Specialized Services Directorate of Carabineros de Chile)	226	Ministerio de Defensa (Ministry of Defence)	Estado Mayor Conjunto (Joint Chiefs)	230
Ministerio de Agricultura (Ministry of Agriculture)	Unidad Nacional de Emergencias Agrícolas y de Gestión del Riesgo Agroclimático (Agricultural Emergencies and Agro-climatic Risk Management National Unit)	227		Instituto Geográfico Militar (Military Geographical Institute)	
	Corporación Nacional Forestal (National Forestry Corporation)			Academia de Guerra (War Academy)	
	Servicio Agrícola Ganadero (Livestock Service)			Comando de Operaciones Terrestres del Ejército (Land Operations Command of the Army)	
Policía de Investigaciones de Chile (Investigative Police of Chile)	Policía de Investigaciones de Chile (Investigative Police of Chile)	229		Defensa Civil de Chile (Civil Defence of Chile)	
Ministerio de Justicia (Ministry of Justice)	Servicio Médico Legal (Legal Medical Service)	228		Dirección General de Aeronáutica Civil (Civil Aviation General Directorate)	
	Servicio Nacional de Menores (National Service for Children)			Dirección Meteorológica (Meteorological Office)	
Ministerio de Salud (Ministry of Health)	Subsecretaría de Redes Asistenciales (Subsecretariat of Health Aid Networks)	231		Fuerza Aérea de Chile (Chilean Air Force)	
	SEREMI de Salud de la Región Metropolitana (Metropolitan Region Health SEREMI)			Servicio Hidrográfico y Oceanográfico de la Armada de Chile (Hydrographic and Oceanographic Service of the Chilean Navy)	
	Instituto Psiquiátrico doctor José Horwitz Barak (Dr. Joseph Horwitz Barak Psychiatric Institute)		Subsecretaría de Transportes (Subsecretariat of Transportation)	Subsecretaría de Transportes (Subsecretariat of Transportation)	6
	Complejo Hospitalario San José (San Jose Hospital Center)		Subsecretaría de Telecomunicaciones (Subsecretariat of Telecommunications)	Subsecretaría de Telecomunicaciones (Subsecretariat Telecommunications)	7
	Consultorio CESFAM Ignacio Domeyko (Ignacio Domeyko CESFAM Surgery)		Ministerio de Obras Públicas (Ministry of Public Works)	Ministerio de Obras Públicas (Ministry of Public Works)	13
	Consultorio Benjamín Viel (Benjamin Viel Surgery)		Subsecretaría de Vivienda y Urbanismo (Subsecretariat of Housing and Urban Development)	Subsecretaría de Vivienda y Urbanismo (Subsecretariat of Housing and Urban Development)	Minute

CHILE

List of institutions where validations were made but no report was issued:

N°	INSTITUCIONES INSTITUTIONS
1	Asociación de Radiodifusores de Chile (Association of Broadcasters of Chile)
2	Bomberos (Firefighters)
3	Centro educativos (educational centres) (3 visited)
4	Comisión Chilena de Energía Nuclear (Chilean Commission for Nuclear Energy)
5	Cruz Roja (Red Cross)
6	Jardines Infantiles (Kindergartens) (3 visited)
7	Junta Nacional de Jardines Infantiles (National Kindergarten Board)
8	Ministerio de Educación (Ministry of Education)
9	Ministerio de Medio Ambiente (Ministry of Environment)
10	Radio Bío – Bío (Radio Bío - Bío)
11	Radio Club Chile (Radio Club Chile)
12	Servicio Nacional de Geología y Minería de Chile (National Geology and Mining Service of Chile)
13	Servicio Sismológico de la Universidad de Chile (Seismological Service of the University of Chile)
14	Servicio Nacional de Turismo (National Tourism Service)
15	Servicio Nacional del Adulto Mayor (National Service for the Elderly)
16	Subsecretaría de Desarrollo Regional y Administrativo (Department of Regional and Administrative Development)

Abbreviations

ARCHI: Chilean Broadcasters Association

CAT: Early Warning Centre of ONEMI

COE: Emergency Operations Committee in Chile

CONAF: National Forest Corporation

DGAC: Directorate General of Civil Aviation

FEMA: Federal Emergency Management Agency in the USA

HFA: Hyogo Framework for Action

ONEMI: National Emergency Office in Chile

MINVU: Ministry of Housing and Urban Development

PCU: Central Unified Platform

REDES: Single Form for Receipt, Delivery and Availability of Relief Items

SAE: Emergency Alert System

SEREMIS de Salud: Regional Health Secretariats

SERNAGEOMIN: Ministry of Mining

SHOA: Hydrographic and Oceanographic Service of the Navy

SMMP: Santiago Metropolitan Master Plan

SNAM: National Tsunami Warning System

SNPC: National System of Civil Protection

SUBTEL: Department of Telecommunications

USAID/OFDA: Office of Foreign Disaster Assistance, Office of the US Agency for International Development

USGS: The United States Geological Survey

INDIA

Supreme Audit Institution - India

Audit of Disaster Preparedness in India

What is a disaster?

A disaster is an event or series of events, which gives rise to casualties and damage or loss of property, infrastructure, environment, essential services or means of livelihood on a scale that is beyond the normal coping capacity of the affected community.

Disaster Preparedness includes organizational activities which ensure that the systems, procedures and resources required to confront a natural disaster are available in order to provide timely assistance to those affected, using existing mechanisms wherever possible e.g. training, creation of awareness, establishment of disaster plans, evacuation plans, pre-positioning of stocks, early warning mechanisms, strengthening indigenous knowledge, etc.

In recent years, the concept of Disaster Preparedness has emerged as an umbrella concept including risk assessment, disaster prevention and disaster mitigation. It also involves analysis of disaster response as it provides a useful testing of preparedness.

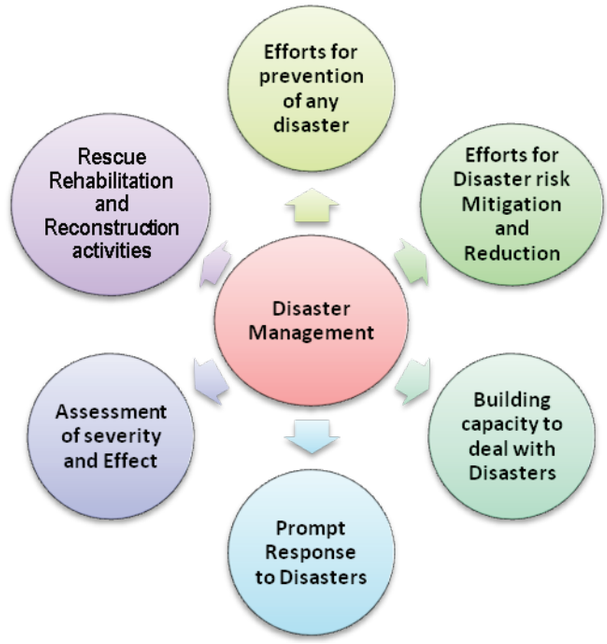


Chart 1: Components of Disaster Management

India is one of the most disaster prone countries in the world. This is largely due to its geo-climatic conditions combined with high population density and other socio economic factors. India is vulnerable, in varying degrees, to a large number of natural as well as man-made disasters. The risk of widespread loss of lives and property in the event of disaster is high due to the population density and tendency of people to return to areas prone to such disasters.

Increased vulnerability to disaster risks can be related to expanding population, urbanization and industrialization, development within high-risk zones, environmental degradation and climatic changes.

Increase in terrorism around the globe has also contributed to higher risks.

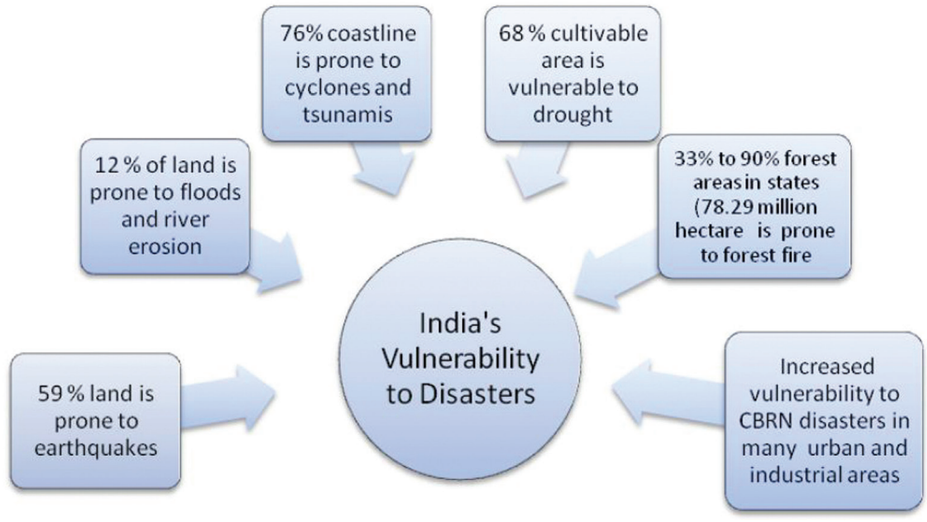


Chart 2: India's Vulnerability Profile

1.1 Audit Objectives

In India, the performance audit was undertaken to review:

- **Planning for disaster preparedness**: If national disaster preparedness strategy, actionable plans and policies had been prepared and reviewed periodically at all levels to counter the threat of disasters and mitigate their consequences.
- **Identification of disasters and early warning system:** Whether various types of disasters, their extent of damage and requisite mitigation efforts had been identified and whether efforts had been made to make urban areas/cities disaster resilient and early warning systems and mechanisms were in place to predict calamities.
- **Institutional mechanisms**: If institutional, legal and coordination mechanism had been put in place and an integrated approach was being followed with regard to disaster preparedness.
- **Resource utilisation and funding arrangements:** Whether the financial arrangements to govern, allocate and utilization of funds were adequate and effectively implemented and whether financial arrangements ensured timely availability of funds and their effective and economic utilization.
- **Risk assessment and mitigation efforts:** If disaster management tools for analyzing risks and planning of the disaster efforts to mitigate the impact were effective and efficient.
- **Capacity building efforts:** If training and emergency exercises for disaster preparedness had been conceived, disseminated and conducted at all levels.

1.2 What were the sources of Benchmarks and Criteria for audit

The Parallel Audit of Disaster Preparedness in India was conducted during May 2012 to September 2012. The report emanates from scrutiny of files and documents pertaining to Ministry of Home Affairs, National Disaster Management Authority, National Institute of Disaster Management, National Disaster Response Force, eight States, one Union Territory and nodal ministries and departments viz. Ministries of Environment and Forest, Health and Family Welfare, Earth Sciences, Indian Meteorological Department, Departments of Agriculture and Cooperation, Atomic Energy and Space. In every state, multi hazard prone districts were covered to assess district level preparedness. This selection of states and districts covered the range of disasters to which India is vulnerable.

The results of audit, both at the Central level and the State level, were taken into account while arriving at the audit conclusions.

We derived our criteria from the following sources:

a. Disaster Management Act, 2005

b. National Policy on Disaster Management, 2009

c. National disaster plan, guidelines and other instructions issued by Ministry of Home Affairs and NDMA

d. Crisis management plans of different Ministries

e. Scheme, guidelines and laws for preparedness of various types of disasters

f. Policies, plans and guidelines on disaster management issued by different State Governments

2. Evolution of Disaster Management in India

The General Assembly of the United Nations declared the decade of 1990s as the 'International Decade for Natural Disaster Reduction'. Following the UN Declaration, in India a permanent setup was institutionalised with the establishment of a disaster management cell under the Ministry of Agriculture. This was also the decade in which the country faced a series of disasters, such as, Latur Earthquake (1993), Malpa Landslide (1994), Odisha Super Cyclone (1999), etc.

In August 1999, a High Powered Committee (HPC) was constituted to review the existing arrangements for preparedness and mitigation of natural disasters. HPC was chaired by the Secretary, Ministry of Agriculture and was mandated to recommend measures for strengthening organisational structures at the national, state and district levels. The HPC was also to formulate a model plan for natural as well as manmade disasters for drawing up a systematic, comprehensive and holistic approach towards disasters.

In 2002, the disaster management division of the Ministry of Agriculture was shifted to Ministry of Home Affairs and a hierarchical structure evolved for disaster management at the national, state and district levels.

2.1 Disaster Management Act, 2005

HPC submitted the report in October 2001. Following the HPC Report on Disaster Management, on 23 December 2005, the Government of India enacted the Disaster Management Act. The Act laid down institutional, legal, financial and coordination mechanisms at the national, state and district levels. This new framework led to a paradigm shift in disaster management. From a relief-centric approach, the Government moved to a more proactive regime laying greater emphasis on preparedness, prevention and mitigation.

2.2 National Policy on Disaster Management

In accordance with the DM Act, National Policy on Disaster Management was prepared by the National Authority which was approved by the Union Cabinet in October 2009. The policy envisaged a holistic approach to disaster management, encompassing the entire disaster management cycle (prevention, mitigation, preparedness, relief, response, rehabilitation and reconstruction). It also attempted to address all aspects of disaster management covering institutional, legal and financial arrangements, capacity building, knowledge management, research and development. It focused on the areas where action was needed and the institutional mechanism through which such action could be channelized.

3. Results of Our Audit

3.1 Planning of Disaster Preparedness

3.1.1 Absence of Disaster Management Plan

The DM Act provided that a National Plan for disaster management be prepared by the National Executive Committee and approved by the National Authority. The National Plan is structured into three parts:

The National Plan for Disaster Management had not been formulated as yet (October 2012)

The DM Act also provides that there should be a disaster management plan for every State. It also directs the departments of the State Governments to draw up their own plans in accordance with the State plan. The States had not been able to finalise the State Disaster Management Plans.

3.1.2 National Guidelines On Specific Disasters

As per the DM Act, the National Authority was to prepare guidelines on various aspects of disaster management to be followed by different Central Ministries. The National Authority had formulated and issued 17 National Guidelines on various types of disasters and related issues. The prime aim of these guidelines was to ensure integrated disaster management. However, there were no provisions to make these guidelines binding on various stakeholders. Thus, the National Authority failed to ensure compliance on the guidelines issued by it.

3.1.3 Demarcation of Roles And Responsibilities

There was ambiguity in demarcation of roles and responsibilities between various stakeholders in disaster management in the country. Further, there were significant deviations from the prescribed roles and practice of various authorities like Ministry of Home Affairs, National Executive Committee and National Authority.

3.2 National Authority

The National Disaster Management Authority (National Authority) was constituted in May 2005 as an apex body for laying down policies and guidelines on disaster management. The National Authority was mandated to deal with all types of disasters, natural or man-made. We noted that:

- There was no Advisory Committee of the National Authority since June 2010.
- The National Authority had undertaken projects on vulnerability assessment and microzonation of major cities, mitigation activities, communication network and other projects. None of the major projects taken up by the National Authority was, however completed. We noted that the National Authority started the projects without proper preparation. As a result, either the projects were abandoned midway or were still incomplete after lapse of a considerable period. Details are in Annex.
- The National Authority was not performing several functions as prescribed in the DM Act. These included (i) recommending provision of funds for the purpose of mitigation and (ii) recommending relief in repayment of loans or for grant of fresh loans.
- The National Authority had not started the work of systematic assessment of major national projects to include structural requirements for disaster reduction.
- Several critical posts in the National Authority were lying vacant.

3.2.1 Efforts of National Authority for disaster planning in urban areas

In January 2004, an Expert Committee of MHA suggested model amendments in town and country planning acts, land use zoning regulations and building regulations to include the elements of safe construction, retrofitting of lifeline and critical buildings and other key infrastructure. The model amendments were circulated to all states and UTs in September 2004. The model amendments in the existing regulations were yet to be carried out by the states.

3.3 Resources and Funding Arrangements

Ministry of Home Affairs (MHA) is the nodal Ministry responsible to provide the financial assistance in the wake of natural calamities. State Disaster Response Fund (SDRF) and National Disaster Response Fund (NDRF) were constituted for a five year period operative from 1 April 2010 to 31 March 2015.

3.3.1 State Disaster Response Fund

Till 2010, there was a Calamity Relief Fund (CRF), the balance of which was merged into the State Disaster Response Fund (SDRF) from 2010-11. The amount of annual contribution to the SDRF of each State for each of the financial years 2010-11 to 2014-15 were recommended by the Thirteenth Finance Commission. Accordingly, the Government of India (GoI) approved allocation of US $ 6174.21 Million to all the States under SDRF for the five year period. The year-wise shares of the Government of India and the State Governments of 2010-11 and 2011-12 are given in table below:

Financial Year	Central Releases (US $ Million)
2010-11	797.52
2011-12	786.82

The management of State Disaster Response Fund in the States was poor. The States were not regular in sending the details of utilization and unspent balances under SDRF to the Central Ministry. The States did not invest the unspent balances under SDRF as per the guidelines. This resulted in potential loss of interest of US $ 87.88 million in 5 out of 9 test checked states.

3.3.2 National Disaster Response Fund

National Disaster Response Fund (NDRF) came into force from 2010-11 onwards. The existing National Calamity Contingency Fund (NCCF) was merged with NDRF. Natural calamities, considered by the Government of India to be of severe nature and requiring expenditure by a State Government in excess of the balances available in their own State Disaster Response Fund, qualified for immediate relief assistance from NDRF. Details of funds released under NCCF/NDRF for the last five years are shown in table below:

Financial Year	Amount Released Under NDRF/NCCF to States (US $ Million)
2007-08	68.65
2008-09	419.19
2009-10	581.00
2010-11	654.54
2011-12	452.10

'National Disaster Response Fund' was utilized for various purposes other than those stated in the Government of India guidelines. We noted that out of US $ 1693.05 million approved for release to States during September 2010 to March 2012, funds amounting to US $ 568.21 million were provided to States for repair and restoration in various sectors. This accounted for 34 *per cent* on inadmissible items of total approval. We also found 'On account' releases of US $ 120.25 million to three States, from NCCF (now NDRF) were lying unspent.

3.3.3 Mitigation Fund

'National Disaster Mitigation Fund' was yet to be established at the national level. Most of the states had not established State and District level Disaster mitigation funds.

3.3.4 National Disaster Response Reserve

Due to delays by the National Authority in finalizing the guidelines, National Disaster Response Reserve for maintaining inventory of items required for immediate relief after disasters could not be operationalised.

3.4 Communication Systems For Disaster Preparedness

Early warning systems and communication networks are an important ingredient for disaster preparedness. In India various Central Ministries and their associated agencies like Central Water Commission, India Meteorological Department, Indian National Centre for Ocean Information Services, etc. are providing early warning support for specific disasters (e.g. Cyclones and Tsunami).

3.4.1 Disaster Management Support (DMS) Programme

Department of Space in India is implementing the Disaster Management Support programme to harness the benefits of the space based technology for applications in disaster management. We noted that:

- Under DMS programme National Database for Emergency Management (NDEM) was to be completed by August 2011. NDEM was conceived as a Geographic Information System (GIS) based repository of data to support disaster management in the country. This was however, yet to be made fully operational.
- For providing emergency communication, a satellite based Virtual Private Network was set up for facilitating secure data access through a dedicated electronic network connecting all the key players of disaster management. However, this network was not fully operational even after more than six years of receipt of the communication equipment.
- Indian Space Research Organisation (ISRO) formulated a programme for creation of a digital, thematic and cartographic data base for hazard zonation and risk assessment. Under this programme ISRO and National Remote Sensing Agency planned to cover one lakh sq km every year for the development of close contour information of ground using the Airborne Laser Terrain Mapper system, thereby envisaging coverage of all the priority flood prone areas (five lakh sq km). However, less than 10 per cent of the flood prone area of the country was mapped to generate close contour and detailed topographic information.
- Disaster Management Synthetic Aperture Radar operating in C-Band was used to acquire aerial radar data during natural disasters when no satellite data coverage was available. It was used for purposes like flood mapping and damage assessment. The project was approved in February, 2003. However, the envisaged objectives could not be materialised even after six years from the scheduled date of completion.
- For the surveillance and monitoring of severe weather system such as cyclones, ISRO planned to develop and establish Doppler Weather Radars (DWRs). The DWR systems were to substantially increase the lead-time for cyclone warning by providing quantitative information on the intensity and radial velocities of cyclones. These were also to improve the understanding and forecasting of thunderstorms, hailstorms, tidal waves, wind turbulence and shear. The Doppler Weather Radars for surveillance and monitoring of severe weather system could not fructify.

Doppler Weather Radar

3.4.2 Other communication networks

During a disaster, the existing terrestrial communication networks are prone to failure. To address this risk, National Authority decided to set up the National Disaster Communication Network (NDCN). National Authority also proposed to establish the National Disaster Management Informatics System (NDMIS) for utilizing the GIS platform tool in disaster management. NDCN and NDMIS projects of the National Authority were still at the planning stage after several years of conceptualization.

3.5 Response System for Disasters

The efficacy of the government's role in disaster management is judged largely by the quality of 'response' and its effectiveness in minimizing loss of life and property of affected people. The response to disasters also tests the level of preparedness and provides valuable lessons for future planning.

We noted that:

3.5.1 National Disaster Response Force

In India National Disaster Response Force (NDRF) was formed in 2006 as a specialist force with the capability to deal with all types of natural and man-made disasters. NDRF has 10 battalions spread all over the country. The Standard Operating Procedures for deployment of NDRF had not been approved. Effectiveness of the National Disaster Response Force was hampered by shortage of trained manpower, absence of required training facilities, infrastructure and equipment. The preparedness on part of NDRF was thus, not adequate.

NDRF Battalions at the disaster site

3.5.2 State Disaster Response Force

In India each state was to aim at equipping and training one battalion equivalent force known as State Disaster Response Force (SDRF). Only 7 states had raised their State Disaster Response Forces. In the absence of properly trained and equipped SDRF personnel, states were sending requests for NDRF deployment for small and localised disasters.

3.5.3 Regional Response Centres

Regional Response Centres (RRCs) were established to provide links for enabling NDRF battalions to respond to local flood, cyclone and other natural disaster situations. However, there was no clear policy or guidelines for the functioning of Regional Response Centres. We noted that RRCs were ineffective and were hardly utilised in disaster response.

3.5.4 Fire and Emergency Services

Fire and Emergencies services were not adequately staffed in various states to provide immediate and quick response in case of any disaster.

3.5.5 Medical Preparedness

In India medical preparedness for disasters aims to create an institutional mechanism and systems that would result in the coordinated working of emergency responders, hospital managers and local and regional officials. However, the medical preparedness was found lacking in terms of capacity and infrastructure at both central and state level.

3.6 Capacity Building

In the backdrop of the International Decade for Natural Disaster Reduction, a National Centre for Disaster Management was established at New Delhi in 1995. It was re-constituted as National Institute of Disaster Management in February 2007. National Institute of Disaster Management is the apex institute for training and research in the area of Disaster Management. The different format in which training is imparted by the Institute includes:

- face-to-face training,
- web- based training,
- satellite based training, and
- capacity building programme for engineers and architects in earthquake risk management.

The Institute imparts training on various aspects of DM to Central and State Government officers, engineers, architects, civil defence volunteers, public health workers, grass root level functionaries, teachers and school children etc.

We noted that:

- Ministry of Home Affairs launched National Programme for Capacity Building of Engineers in Earthquake Risk Management and National Programme for Capacity Building of Architects in Earthquake Risk Management for ensuring seismically safer habitats by training of practicing architects and engineers. The schemes failed to achieve its targets. The schemes were shelved without analyzing the reasons for its failure.
- The scheme for extending financial assistance to develop Centre of Disaster Management for imparting training in Disaster Management in the States ended with huge shortfalls.
- India Disaster Resource Network project to build up organized information system of specialised equipment and expertise for disaster response was operational only on ad-hoc basis.
- The coverage of training programmes was hampered by vacancies in critical posts at the National Institute of Disaster Management.

3.7 Disaster Specific Observations

3.7.1 Earthquakes

The nodal Ministry did not prepare the disaster management and mitigation plans for earthquake. The National Earthquake Risk Mitigation Project taken up by NDMA in August 2007 was still in the preparatory phase. We further noted the following shortcomings in the efforts of the states in ensuring that buildings are resilient to possible disasters:

- Master plan of towns was not revised.
- Identified dilapidated buildings were not demolished.
- Development Control Regulations for city were not updated on the lines of the revised National Building Code, 2005 to provide safeguards against natural hazards.
- State Disaster Management Policy lacked the aspects of adoption of safe construction practices and retrofitting of life line buildings.
- Adequate steps were not taken to amend the building bye-laws and regulation as a step to make urban areas disaster resilient. In the selected districts, no amendment had been made in their building regulations.
- Activities for institutional strengthening, capacity building and mainstreaming for development were not executed in the state for reduction of Disaster Risk.

3.7.2 Floods

Only 8 states had prepared Emergency Action Plans for 192 large dams against the targeted 4728 large dams in 29 states as of September 2011. There were 4728 reservoirs and barrages in the country as on September 2011. Inflow forecasts to only 28 reservoirs and barrages were provided. Shortcomings reported in the evaluation study of scheme for flood control was not rectified by the nodal Ministry.

3.7.3 Cyclones and Tsunami

The Indian Tsunami Early Warning Centre in India was involved in continuous monitoring of tsunamis and issuing advisories to the coastal region. However, no specific programs related to the assessment of risk, hazard, vulnerability, damage and loss were initiated by the nodal Ministry as required under the national guidelines issued by the National Authority.

3.7.4 Droughts

The activities envisaged in the national guidelines of the National Authority on drought management were yet to be carried out to further strengthen disaster preparedness by the nodal Ministry. There were delays in providing immediate relief to states from response fund.

3.7.5 Forest Fires

There was no laid down strategy to combat forest fires including co-ordination among various concerned departments. Only five states and one UT had submitted forest fire crisis management plans and these were also pending approval at the nodal Ministry.

3.7.6 Chemical Disasters

We noted that:

- Compliance of the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 and the amendment (MSIHC Rules) was not adequate as Off-site and On-site emergency plans for the Major Accident Hazardous Units were not prepared.
- Similarly, compliance of the Chemical Accidents (Emergency Planning, Preparedness and Response) Rules 1996 [CA (EPPR) Rules] was also not adequate as progress reports were not being received from the State Crisis Groups by the Central Ministry. The list (Red Book) of Members of the Central, State and District Crisis Group in the country was not updated.

- States and UTs are required to furnish the information pertaining to the chemical accidents that occurred in their States in the Chemical Accident Information and Reporting System (CAIRS) implemented by the nodal Ministry. However, CAIRS was yet to generate adequate response. Updated information of chemical accidents was not available in the country.

3.7.7 Biological Disasters

We noted that:

- The core function for preparedness for biological disasters was surveillance which was undertaken through Integrated Disease Surveillance Project (IDSP).This project was run by National Centre for Disease Control (NCDC). However, IDSP did not have regular reporting of data from all states.
- In India, health is a State subject and the primary responsibility of dealing with biological disasters rests with the State Governments. The Epidemic Diseases Act, 1897 provides the states the authority to designate any of its officers or agencies to take measures for prevention and control of epidemics. However, the Epidemic Diseases Act, 1897 requires reviewing and updating. We noted that a draft Public Health (Prevention, Control and Management of Epidemics, Bio-terrorism and Disasters) bill was still under consideration of the nodal Ministry.
- The lab facilities and surveillance at national entry points like airports were found absent or lacking in facilities.

3.7.8 Nuclear Disasters

The Atomic Energy Regulatory Board had issued consents for transport of radioactive material for safe disposal had been given. However, there was no proper mechanism to verify whether the sources had actually been disposed of. The regulatory response mechanism to trace and discover lost or orphan radioactive sources in the country was also not effective.

4. Conclusions

On the basis of this Performance Audit, we have the assurance that there was an increased awareness about disaster preparedness and the need for disaster risk reduction in the country. However, the National Authority's project management capacity was deficient. As a result, none of its mitigation and vulnerability mapping projects was completed. The important aspect of mainstreaming disaster preparedness with the major national projects/ schemes was yet to be taken up by the National Authority.

Certain issues relating to funding arrangements needed to be streamlined by the nodal ministry. Delays in submission of Utilisation Certificates by states and utilisation of National Disaster Response Fund for work other than response were few areas of concern. In our opinion, the establishment of specific Disaster Mitigation funds at the national, state and district levels, as envisaged in the DM Act, would be a significant step towards achieving the goal of disaster mitigation.

Response to a specific disaster is perhaps the best test of the level of disaster preparedness. We looked into the disaster response efforts to ascertain their effectiveness. The reaction of the National Disaster Response Force was an essential element of our tests. We noted that it was not yet established as a well equipped, well trained specialised force. Further, the Force Standard Operating Procedures were yet to be finalised and communicated to the states. Diversion of this Force for non-disaster events needs to be checked.

We noted that India Meteorological Department, Indian Space Research Organisation and other agencies had established early warning systems for tsunami, cyclones, etc. However, we found that due to lack of monitoring and timely inputs from all participants, most projects regarding the dissemination of data to stakeholders were still incomplete. In many cases, the equipment procured for these projects were lying uninstalled.

We noted deficiencies in preparedness for manmade disasters. The nodal ministries had established structures but their functioning needed to be strengthened at the ground level. To ensure effective control over these disasters, vigilance at the entry points to the country needed to be further strengthened and laboratory facilities also needed urgent upgradation.

To consolidate the efforts already made for disaster preparedness, it is essential that the National Authority effectively discharges its statutory responsibilities and the roles and responsibilities of other entities are clearly demarcated, documented, disseminated and monitored.

5. Recommendations

- National Executive Committee and Ministry of Home Affairs (MHA) should ensure that a comprehensive National Plan for disaster management was developed at the earliest.
- Roles and responsibilities of various stakeholders should be specified for clear demarcation of functions.
- MHA should strengthen its monitoring mechanism, so that states regularly send the details of utilization and unspent balances under State Disaster Response Fund.
- The National Authority should ensure early constitution of its Advisory Committee of experts.
- The National Authority needs to review and strengthen its project execution capacities. Better coordination is required with nodal ministries to avoid duplication of efforts.
- Disaster Mitigation funds at national, state and district level should be created to boost mitigation activities.
- Department of Space should ensure that the National Database for Emergency Management is operationalized at the earliest.
- The standard infrastructure for the National Disaster Response Force should be created at the earliest. The Standard Operating Procedures for deployment of the Force should be firmed up and circulated to all stakeholders.
- The academic and training programmes of National Institute of Disaster Management need to be evaluated for providing an assurance that stated objectives and value for money had been achieved.

Annex

Project Implementation by National Authority (At a glance)

Vulnerability Atlases projects	•**Incomplete** for earthquake, flood and landslides. •Not started for cyclone and tsunami.
Microzonation of Major cities	•Probabilistic Seismic Hazard Analysis Maps completed after a delay of six months. •Geotechnical Investigations left midway. •NDMA noticed overlap with Ministry of Urban Development and states after Phase-I of the project.
National Earthquake Risk Mitigation Project	•Project approved in August 2007. • December 2008- PricewaterhouseCoopers appointed consultant. •May 2010- Expenditure Finance Committee note sent by NDMA, not approved by MHA. •May 2012- Revised proposal only for preparatory phase.
National Landslide Risk Mitigation Project	•Project initiated in 2007. •September 2008-decision to appoint a project specific consultant. •August 2011- project shelved. •November 2011- Task force for site specific studies constituted.
National Flood Risk Mitigation Project	•2007- Detailed Project Report preparation started •2008-Consultant appointed to select project consultants •January 2009- Draft Request For Proposal submitted •NDMA noticed Ministry of Water Resources already has a scheme for this work •Scheme being redesigned with narrowed scope
National School Safety Programme	•Project conceived in 2008. •Project approved in June 2011. •2012- many core activities yet to start
Mobile Radiation Detection System	• In principle approval of project in May 2011. •Procurement of equipment yet to begin.
National Disaster Communication Network	•Concept paper sent to MHA in October 2007. • PricewaterhouseCoopers appointed as consultant in April 2009. •Detailed Project Report and Expenditure Finance Comittee memo were sent to MHA in December 2011 after several revisions.
National Disaster Management Informatics System	• Project conceived in March 2008. •Concept note prepared in April 2010. •January 2012- National Remote Sensing Centre became the implemneting agency to avoid duplication with National Database for Emergency Management. •Project was yet to be approved by MHA.
National Cyclone Risk Mitigation Project	•Phase-I was approved in January 2011 and financed through World Bank assitance in cyclone prone states/UTs. •Project was under implementation.

Abbreviations

CA (EPPR): Chemical Accidents (Emergency Planning, Preparedness and Response)

CAIRS: Chemical Accident Information and Reporting System

CRF: Calamity Relief Fund

DMS: Disaster Management Support

DWRs: Doppler Weather Radars

GoI: Government of India

HPC: High Powered Committee

IDSP: Integrated Disease Surveillance Project

ISRO: Indian Space Research Organisation

MHA: Ministry of Home Affairs

MSIHC: Manufacture, Storage and Import of Hazardous Chemicals

NCCF: National Calamity Contingency Fund

NDCN: National Disaster Communication Network

NCDC: National Centre for Disease Control

NDEM: National Database for Emergency Management

NDRF: National Disaster Response Fund

NDMA: National Disaster Management Authority

NDMIS: National Disaster Management Informatics System

RRCs: Regional Response Centres

SDRF: State Disaster Response Fund

INDONESIA

The Audit Board of Republic of Indonesia

Audit Objective

To assess the management effectiveness of preparedness activities as well as equipment and logistics in the pre-disaster phase. To achieve this objective, the audit evaluate whether:

- The organizational hierarchy system of DMA has supported the preparedness activities and equipment and logistics management effectively;
- DMA has sufficient legal framework for preparedness activities and equipment and logistics management in the pre-disaster phase;
- The financial budgeting system has effectively supported the preparedness activities and equipment and logistics management;
- Procurement of logistics and equipments for preparedness activities complies with the regulations, as well as economy and effectiveness principles;
- DMA has managed equipments/ logistics effectively;
- DMA has monitored and evaluated preparedness activities and equipment/ logistics management adequately.

Audit Approach/Scope

- Identifying potential audit topics by identifying key issues in pre disaster activities considering the greatest importance for DMA
- Selecting key areas to audit: Having identified potential topics or key issues in pre disaster and considering the availability of audit resources, we identified the potential risk(s) / key areas which mostly influence the direction and aims of both the audit and the work of each topic.
- Formulating the audit topic(s), risk(s), researchable questions, criteria, and audit procedures into an audit design matrix
- Conducting the field audit to gather the audit evidence
- Reporting

The audit covers the implementation of preparedness activities and equipment and logistics management in the pre-disaster phase of years 2009, 2010, and semester I of 2011. It includes the financial budgeting process, organizational hierarchy system, legal framework, and activities as well as monitoring and evaluation of disaster management activities in the pre-disaster phase. Additionally, the audit also assessed the achievement and outcome of these disaster management activities in the pre-disaster phase.

Audit Methodology

Interview, questionnaire, observation/ physical examination, analysis, and confirmation.

Audit Criteria

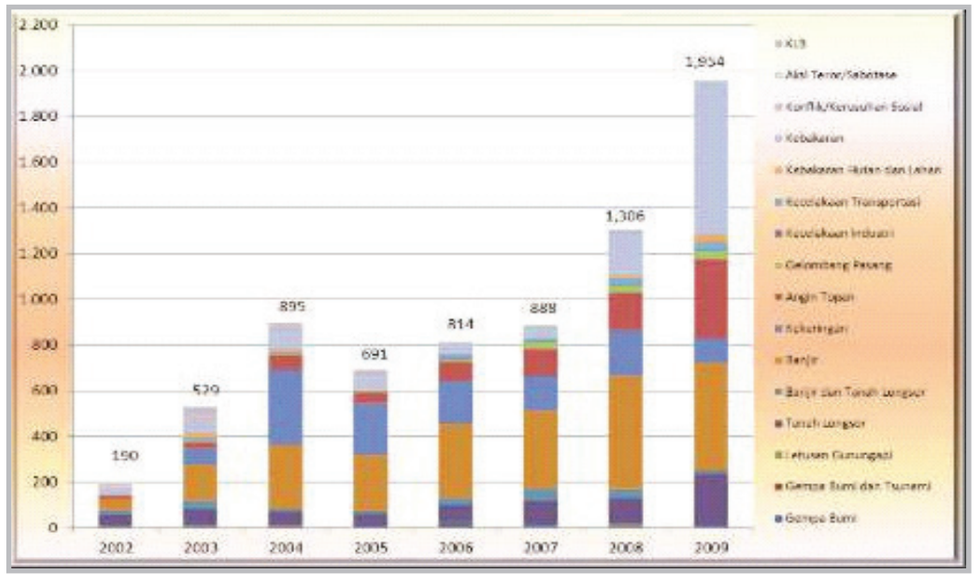
The audit matrix included main and subquestions and criteria is as follow:

AUDIT OBJECTIVE: TO ASSESS THE MANAGEMENT EFFECTIVENESS OF PREPAREDNESS ACTIVITIES AND EQUIPMENT AND LOGISTICS IN THE PRE-DISASTER PHASE	
AUDIT TOPIC: 1. DISASTER PREPAREDNESS	
MAIN QUESTION: 1. DOES DMA MANAGE İTS FİNANCİAL RESOURCES, ORGANİZATİON, AND REGULATİON EFFECTİVELY	
Sub Researchable Questions	**Criteria**
Does DMA manage its financial resources effectively?	DMA takes effective actions to ensure that it has adequate budget/fund
	DMA has an effective budgeting mechanism
	DMA spends budget/money effectively
Does DMA run its organization effectively?	DMA has clear job descriptions for each unit within the organization and delegates functions and responsibilities effectively among the units
	Coordination among the units within DMA and with other related institutions has been effective
Does DMA manage regulations effectively?	DMA sets adequate and effective policies and regulations regarding to disaster preparedness and equipment and logistics management
	DMA takes effective actions to settle the external/internal regulation issues that are not in line with disaster preparedness program and equipment and logistics management.
THE MASTER PLAN	
MAIN QUESTION: 2. DOES DMA IMPLEMENT DISASTER PREPAREDNESS ACTIVITIES IN ACCORDANCE WITH MASTER PLAN?	
Does DMA have an effective disaster emergency plan?	DMA has a clear contingency plan
	The contingency plan requires risk assessment and resources availability analysis
Does DMA effectively organize an early warning system?	DMA coordinates with research institutions, consultants, and universities in order to introduce disaster risks
	DMA coordinates with institutions which has authorization to issue an early warning system and make it known
	There is an appropriate early warning system
DMA organizes, socializes, and trains the emergency response simulation effectively	The emergency response simulation is performed in disaster prone areas appropriately
	The emergency response simulation can improve participants' understanding
Has an evacuation location been effectively prepared?	Preparation of evacuation location is based on the resources and disaster risk analysis
	Evacuation routes have been socialized

Identification of the Characteristics of the Disaster

Indonesia has experienced many kinds of disaster; they are floods, droughts, fires, typhoons, landslides, floods and landslides, tidal waves, transport accidents, earthquakes, forest and land fires, conflicts/social unrests, volcanic eruptions, terrorism/sabotage, industrial accidents, and earthquakes and tsunamis. According to Data on Disasters in Indonesia 2009 published by National DMA, disasters in Indonesia escalate by the year. In 2007, 888 disasters occurred, while in 2008 the figure reached 1.306 (46,66% increase), and in 2009 the number increased by 50% or total of 1.958 disasters. The detailed description of the statistics is shown in the following graphics:

Graph 1: The Statistics of Increasing Number of Disasters



The graphics above show the disasters occurrence in Indonesia in 2002 – 2009. The increase in number can be the results of many reasons. It may be caused by environmental degradation caused by natural disasters or human. The disaster occurrence averages in Indonesia for 2002 – 2009 is as follows:

Table 1: Disaster Occurrence Averages in Indonesia

No	Disasters	Averages per year
1.	Floods	297
2.	Droughts	156
3.	Fires	147
4.	Typhoons	110
5.	Landslides	92
6.	Floods and landslides	27
7.	Tidal waves	17
8.	Transport accidents	14
9.	Earthquakes	11
10.	Forest and land fires	10
11.	Conflicts/social unrests	6
12.	Volcanic eruptions	4
13.	Terrorism/sabotage	4
14.	Industrial accidents	2
15.	Earthquakes and tsunamis	0,25

Indonesia's National DMA published the disaster risk index (http://bnpb.go.id/pubs/index/12).

It is a disaster risk assessment that classifies disaster risk level of each district in Indonesia. Factors taken into account are natural and human hazards, geographic locations, population, number of victims and damaged buildings or infrastructures from previous events. The disaster risk index is a useful tool in analyzing disaster management capacities, funding, planning, statistics, and operations.

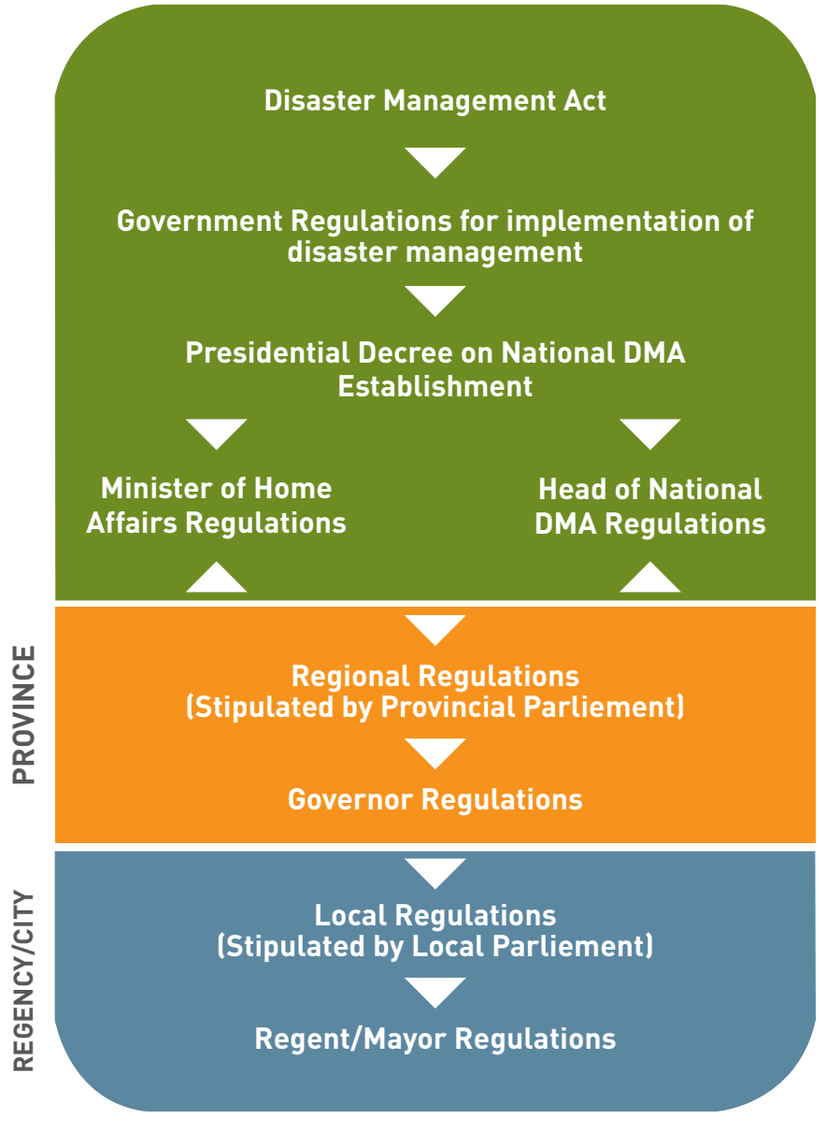
Legal Arrangement

Indonesia established a Disaster Management Act in 2007. It changed **the disaster management paradigm from responsive** (which is focused on disaster response and recovery) **to preventive** (disaster risk reduction and preparedness). Through preparedness efforts one expects disaster risk can be reduced. This can be realized through development programs bearing the perspective of disaster risk reduction as well as spatial management which is based on mapping and analysis of potential disasters.

The Act governs the establishment, responsibilities and duties of National and Regional DMAs. The Act also requires Government and Local Governments to prepare a National Disaster Management Plan coordinated by National DMA. National Disaster Management Plan was established in 2009. It is a cross-sectoral government plan that is effective for five years and renewed every five year. The programs in the document are integrated into National Development Plan that contains government development policies and programs, as well as Government Work Plan. The disaster management planning and activities become key priorities in national development plan.

For implementing purposes, National DMA then specified the Act in some regulations as a basis to execute the Act. We find the preparedness legal framework adequate. The legal framework is shown as follows:

Figure 1: Legal Framework of Disaster Preparedness in Indonesia



However, there are few weaknesses or lack in standard operational procedures in executing the preparedness activities. For example, National and Regional DMAs do not have a standard operational procedure regarding the management of early warning systems as well as a lack of MoU with relevant institutions. The Government, especially DMA, needs to make some improvements in implementing phase of disaster preparedness activity.

Indonesian Disaster Management Act defines preparedness as a series of activities conducted to anticipate the effects of disaster and the disaster itself through organization and effective and efficient steps. Preparedness is the implementation of disaster management in situations where potential disasters may happen.

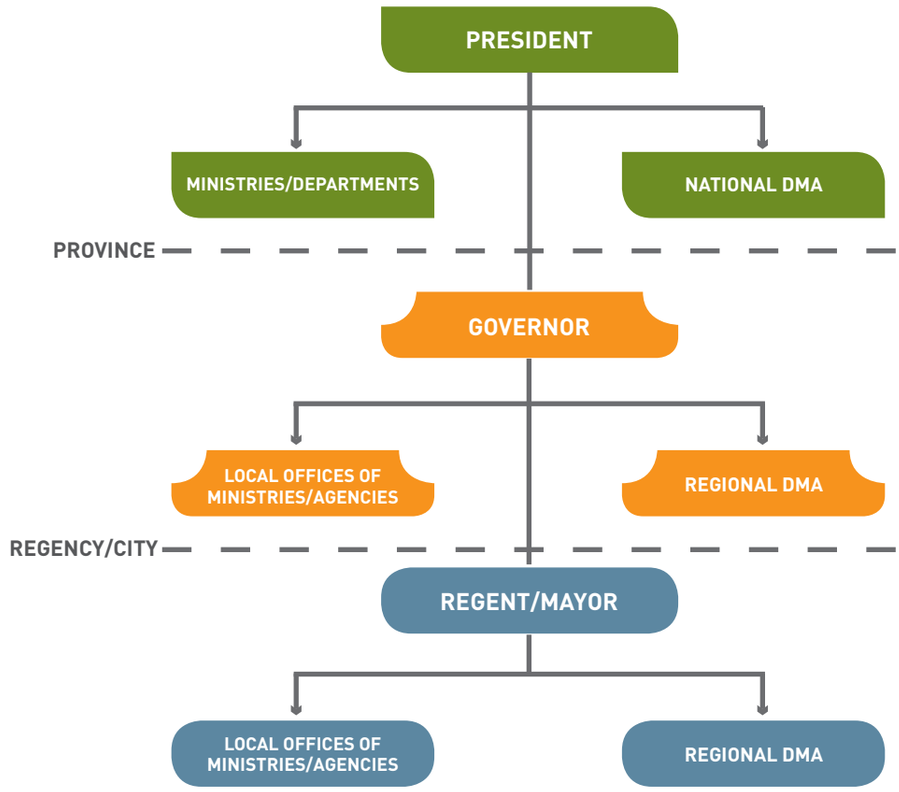
As stated in Government Regulation on The Implementation of Disaster Management, The Central and Regional Governments conduct disaster management planning.

One of the disaster management planning activities is establishing contingency plan which is a plan devised under uncertainty circumstances that contain approved scenarios and goals, predetermined managerial and technical actions, and agreed systems that enable to give better response to such circumstances in order to prevent or deal with the emergency situations.

Contingency plan is formulated by all parties as an effort to increase preparedness in disaster management. This is a joint affair among the government, businesses, and community where the government is the party in charge. Each side can actively participate in accordance to their capabilities, competences, and authorities as well as contributing/using any resources available within their authority/ scope of power. Parties that are involved in establishing contingency plan are comprised of governmental institutions, national armed forces/police department, businesses/private sectors, non government organizations, MCGA, Indonesian Red Cross, National Search and Rescue Agency, volunteers, and other parties who may be relevant to certain types of disaster threats.

Furthermore, the Government Regulation requires that, in order to carry out the disaster risk reduction efforts, an action plan shall be formulated in a forum that involving elements of the government, non- governmental organizations, society, and business entities which is coordinated by National DMA in the national scale or Regional DMA in the regional scale. The governance structure for Disaster Preparedness in Indonesia can be seen the following figure.

Figure 2: Governance Framework in Indonesia



Indonesian government has been honoured with **"Global Champion for Disaster Risk Reduction"** award by the United Nations as their appreciation of Indonesian government's efforts in the disaster risk reduction matter. This award illustrates the value of Indonesian government take places in the disaster preparedness issues.

However there are still some issues related to governance structure of Disaster Preparedness in Indonesia. The issue that needs to be dealt with is the dominant role of the government and other external parties. The role of local disaster preparedness teams has not been significant yet.

A local government and community that are resilient and prepared to face disaster may be reached through regular disaster training and simulations at the grassroots level. Another concern is that disaster management in Indonesia has yet to become comprehensive. It is yet to be made clearer who will be doing what in time of disaster. Many parties want to help but do not know what to do. In several instances, several government agencies perform similar tasks, and thus making it overlapping and redundant and making the local governments confused. There is a need to formulate standard operating procedures. (National Disaster Management Plan, 2010-2014).

Findings/Conclusions; (Legal Arrangement)

- *The lack of established/official standard operational procedures in some activities. Those activities apparently are performed based on the routines and experience from previous catasthropic events, without standardized procedures.*

Recommendations;

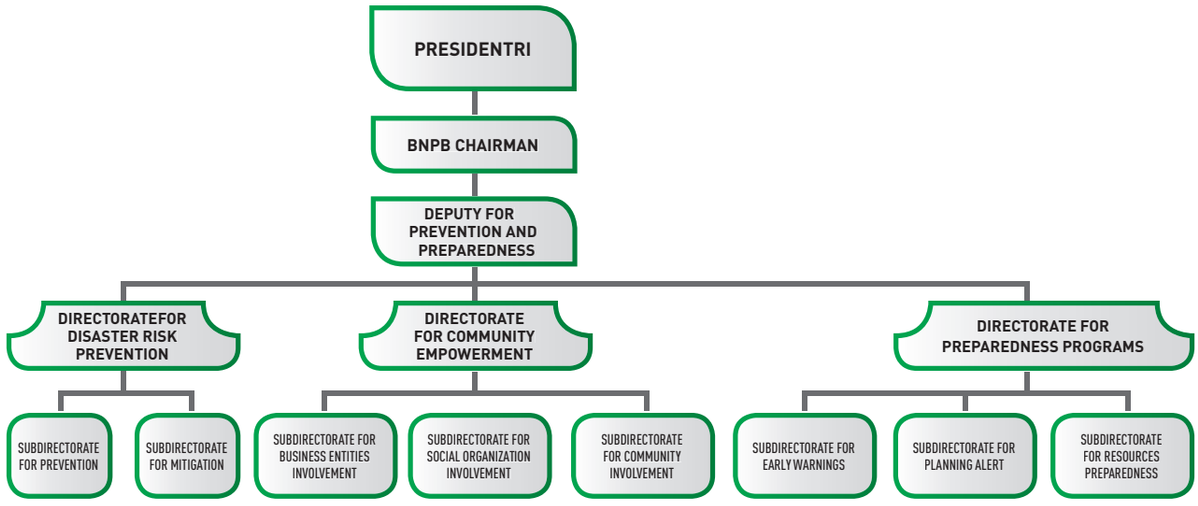
- *National and Regional DMAs emphasize in establishing the standard operational procedures as official basis in performing activities.*

Organisation and Coordination Structure

According to Presidential Decree Number 8 of year 2008 on National Agency for Disaster Management, National DMA is a Government Authority lead by a Chairman who is directly responsible to the President of Indonesia.

Concerning to the disaster preparedness area, National DMA has a unit named Deputy for Disaster Prevention and Preparedness that is responsible for coordinating and conducting general policies in the field of disaster management in the pre-disaster phase. They are also responsible for community empowerment.

Figure 3: Organizational Structure of Pre Disaster Management



The tasks of Deputy for Disaster Prevention and Preparedness are coordinating and conducting general policies in the field of disaster management in the pre-disaster phase as well as community empowerment. This Deputy consists of (1) Directorate for Disaster Risk Prevention; (2) Directorate for Community Empowerment; and (3) Directorate for Preparedness Programs.

In fulfilling their responsibilities, Deputy for Disaster Prevention and Preparedness is conducting several functions which are:

- Preparing general policies in the sector of disaster management for pre-disaster phase as well as community empowerment;
- Coordinating and conducting general policies of disaster management for pre-disaster phase and executing community empowerment programs;
- Maintaining working relations in disaster management sector for pre-disaster phase and community empowerment sector.
- Monitoring, evaluating, and analyzing reports of general policies implementation in disaster management for pre-disaster phase and the community empowerment.

The Directorate for Preparedness Programs carries out the responsibilities of conducting coordination in establishing general policies, labour relations, planning and execution as well as monitoring, evaluation, and analysis in the field of disaster preparedness.

In doing such tasks, the Directorate for Preparedness Programs has certain functions as follows:

- As the coordinator of planning and conducting general policies and labour relations of preparedness area;
- Preparing materials for planning and early warnings programs implementation;

- Preparing materials for planning as well as the implementation planning alert programs;
- Preparing materials for planning and resources preparedness programs implementation;
- Preparing materials for monitoring, evaluation, and report analyses of preparedness area.

Directorate for Preparedness Activities consists of (1) Sub directorate for Early Warnings; (2) Sub directorate for Planning Alert; and (3) Sub directorate for Resources Preparedness. Each sub directorate has responsibilities for preparing materials for coordination purpose in establishing general policies and labour relations as well as planning, monitoring, evaluating, and analyzing reports of each area.

Deputy for Prevention and Preparedness has a vision "Reduce Risk and Make Preparedness our Culture". Mission is to;

- Improve national and regional ability and capacity in reducing disaster risks.
- Building a culture that is both conscious and concerned towards disaster.
- Improve preparedness of governmental officials, private sector, and the community in order to achieve resilience in facing disasters.

DMA has not coordinated appropriately with other institutions. There is no MoU, nor other documented agreements among them to specify their responsibilities or parts in disaster preparedness activities. The mission is elaborated in Strategic Planning of National DMA 2010-2014, which is "increasing efforts for prevention, mitigation, and preparedness in reducing disaster risks and climate change adaptation".

Findings/Conclusions; (Organisation and Coordination Structure)

➢ *DMA has not coordinated appropriately with other institutions. There is no MoU, nor other documented agreements among them to specify their responsibilities or parts in disaster preparedness activities.*

Recommendations;

♦ *National DMA immediately takes initiatives to prepare MoUs regarding preparedness activities to be agreed upon with other relevant instituions.*

National Strategies and Action Plans

Preparedness program needs to be integrated into development plans at the central and local levels, into the National Development Plan, Annual Development Plan, Strategic Plans and Work Plans of Ministries/Agencies, Local Development Plan, Local Annual Development Plan and Work Plan of Local Government Units. In this way, risk reduction programs and activities will not stand by themselves but will be mainstreamed into regular development programs. It is expected that this strategy will help realize risk sensitive development and resilient community.

National Action Plan for Disaster Risk Reduction 2010-2012 Priorities (NAP DRR 2010-2012):

- Disaster Risk Reduction as national and regional priorities as well as institutional capacity building;
- Use of knowledge, innovation, and education to build safety culture and resilience;
- Reduction of disaster risk causing factors;
- Identification, assessment, and monitoring of disaster risks as well as the application of early warning system;
- Preparedness strengthening of disaster response at all levels of community

Findings/Conclusions; (National Strategy)

➢ *National and Regional DMAs of West Sumatra and Yogyakarta Province have not established contingency plans. There is no contingency plans in nationwide, nor regional/local wide*

Recommendations;

♦ *National and regional DMAs, as well as Regional Governments start preparing disaster management plans and prioritizing preparedness activities. For the areas that experienced disaster hazards, a contingency plan needs to be prepared and established immediately. In addition, established contingency plans need to be updated and adjusted to the current updates periodically.*

Management Tools Such as GIS, GPRS, GPS, Early Warning Systems

As Indonesia's National Agency for Disaster Management (National DMA) understands that geospatial technology can address various stages of disaster management, including planning and mitigation and preparedness. National DMA has established Geospatial, a Web-based spatial information system that provides spatial information such as administrative boundaries at provincial and national levels and topographical maps at 1:250,000 scale in PDF format that can be downloaded for free. This can be beneficial for preliminary description of an area that can be used in emergency response. The website also features Disaster Watch which provides information related to a disaster when it strikes, in real time. The agency is also developing a mechanism to estimate the impact of a disaster, which was recently put to use in the case of an earthquake off Bali. This was created within an hour of the earthquake and available from National DMA's website.

Recently, National DMA has used optical remote sensor technology called LIDAR on examining the peak of Merapi. LIDAR is finding application in areas like flood readiness through creation of flood risk maps. This technology is needed to create a highly accurate GIS-based topographic layer for automated hydrological

systems analysis and flood plan delineation for flood readiness. With the application of the technology, the government had been able to map areas prone to lahar floods. The results of the mapping have been given to the local administration to be used to inform policy that would anticipate the threat of the floods that are formed by intense rainfall during or after an eruption.

The general problem in the usage of technology tools in disaster management is that data is available, but centralized repositories recording datasets are often not in place. The other issues is technical expertise; lack of awareness of GIS and its benefits as it is seen only as a tool for producing maps; and bureaucracy to make provision to obtain the required data.

Findings/Conclusions; (Management Tools)

- *National and Regional DMAs of West Sumatra and Yogyakarta Province have not established adequate early warning systems.*

Recommendations;

- *National and Regional DMAs along with Regional Governments start to prioritize preparedness activities by providing appropriate facilities and infrastructure for early warning systems.*

Training Activities and Public Awareness

After the devastating tsunami event of December 2004, Canadian Red Cross (CRC) has been supporting Indonesian Red Cross Society (PMI) to install and strengthen its early warning system in all branches in Aceh Province and Nias Island. In order to make tsunami-affected people resilient to future disasters and create risk culture at the local level, CRC and PMI are implementing an Integrated Community Based Risk Reduction Program (ICBRR) program in 43 villages of Aceh Besar, Aceh Jaya and Nias.

Another ICBRR program funded by the International Federation Red Cross (IFRC) and Cooperation with Danish Red Cross (DRC) and PMI is also being conducted in 11 branches in Central java and Yogyakarta. The program started by making a program document and MoU between IFRC, DRC and PMI.

The ICBRR program was aimed at increasing community resilience through enhancing disaster preparedness and response capacities of PMI. A close link between community based action teams (CBATs), local government and PMI Branch is necessary for sustaining the outcomes of the program.

Moreover, National DMA is also conducting National Disaster Preparedness Rehearsal which is an annual program that is held in different province.

Findings/Conclusions; (Training Activities & Public Awareness)

➢ *Rehearsal and Simulation Implementation for Tsunami Hazard in West Sumatera Province is Unsatisfactory.*

Recommendations;

♦ *National and Regional DMAs start to perform rehearsal or simulation activities periodically and in an integrated manner, especially for regions with high risk of disaster. Also, central and regional governments start to prioritize and allocate budget for disaster mitigation simulation or rehearsal activities that directly involve the general public.*

Financial Structure

Funding Arrangement for Disaster Preparedness in Indonesia includes:

- National budget

As the coordinator of the disaster management area, National DMA receives the national budget allocation for disaster preparedness programs.

This budget is allocated in the Budget Section of National DMA (Budget Section 103).

Budgeting and actual realization of National DMA's Deputy for Prevention and Preparedness Year 2009, 2010, and semester 1 of 2011 are as follows:

Table 2: Financial Structure of Pre Disaster Management

No.	Year/Entity	Budget (USD)	Actual (USD)	Percentage (%)
A.	2009	16.360.625	11.429.839	69,86
	Deputy for Prevention and Preparedness	2.353.899	1.183.270	50,27
a.	Disaster Risk Reduction	921.868	806.246	87,46
b.	Preparedness	1.077.004	229.372	20,43
c.	Disaster Mitigation	355.027	156.978	44,22
B.	2010	22.339.069	13.807.751	61,81
	Deputy for Prevention and Preparedness	2.728.242	1.793.486	65,74
a.	Disaster Risk Reduction	42.150	35.187	83,48
b.	Preparedness	2.299.614	1.458.603	63,43
b.	Disaster Mitigation	386.477	299.636	77,53
C.	2011 (up to semester I)	20.012.622	542.197	2,70
	Deputy for Prevention and Preparedness	18.765.107	1.383.002	7,37
a.	Disaster Risk Reduction	842.403	127.187	1,10
b.	Preparedness	6.314.664	1.155.087	18,29
c.	Disaster Mitigation	6.105.155	379.395	6,21

***1 USD=Rp 9.650,00**

Throughout the period of 2009 until the first term of 2011, NATIONAL DMA has conducted several disaster preparedness programs. In 2009, there were 3 programs which were disaster preparedness rehearsal, socialization programs of disaster management, and mitigation with a budget allocation of $3.060.894 and a realization of $2.826.160 (92,33% of the budget). In 2010, National DMA has also conducted those 3 (three) programs with a budget allocation of $2.353.899 and a realization of $1.183.270 (50,27% of the budget).

The main problem which related to the financial structure of Disaster Preparedness is the minimum budget allocation to the sector which causes the lack of the ability to create an official and satisfactory contingency plan, an adequate early warning system tools, and adequate evacuation facilities and infrastructure management activities as the priority in preparedness for disaster mitigation activities.

- Local budget
- Private sectors and/or community
- Donors and NGOs

Findings/Conclusions; (Financial structure)

➢ *DMA manages its financial resources effectively, but still there are some shortcomings for some activities. It's because of the lack of regional government's concern to support with appropriate budget.*

Recommendations;

♦ *Regional Governments, along with Regional DMAs, start to prioritize the preparedness activities in their budget allocation.*

Abbreviations

CBAT's: Community Based Action Teams

CRC: Canadian Red Cross

DRC: Danish Red Cross

ICBRR: Integrated Community Based Risk Reduction Program

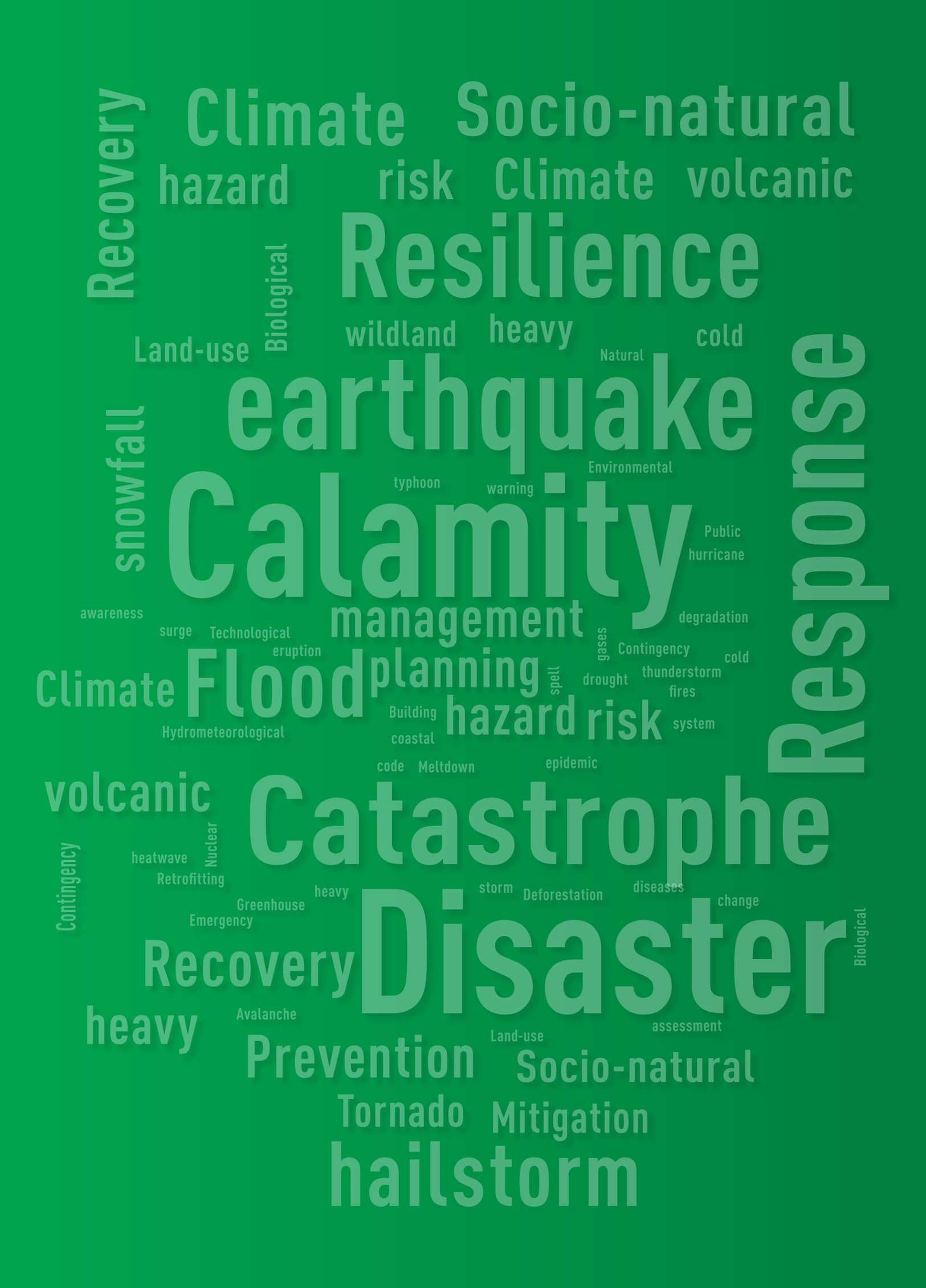
LIDAR: Optical Remote Sensor Technology

MCGA: Geophysical Agency of Indonesia

MoU: Memorandum of Understanding

NAPDRR: National Action Plan for Disaster Risk Reduction

PMI: Indonesian Red Cross


Recovery
Climate
Socio-natural
hazard
risk
Climate
volcanic
Resilience
Biological
wildland
heavy
cold
Land-use
Natural
earthquake
snowfall
Environmental
typhoon
warning
Calamity
Response
Public
hurricane
awareness
management
degradation
surge
Technological
eruption
gases
Contingency
cold
Climate
Flood
planning
spell
drought
thunderstorm
fires
Building
hazard
risk
system
Hydrometeorological
coastal
code
Meltdown
epidemic
volcanic
Catastrophe
Contingency
Nuclear
heatwave
Retrofitting
heavy
storm
Deforestation
diseases
change
Greenhouse
Emergency
Disaster
Biological
Recovery
heavy
Avalanche
assessment
Land-use
Prevention
Socio-natural
Tornado
Mitigation
hailstorm

PAKISTAN

Auditor Generel of Pakistan

Audit Objective

The overall objective of the audit was to ascertain the effectiveness of disaster management structure related to the administration of disaster preparedness so as to deliver efficiently on the National Plan approved by the National Commission and to determine the adequacy of controls that ensure compliance with relevant governmental regulations.

The specific audit objectives were to determine whether:

- Structures were in place at national and district levels and there was adequate capacity to proactively respond to any disaster that may occur.
- Disaster management was integrated into Government planning process.
- Critical features of the National Plan for managing disaster are adequate and whether they were effective during the recent floods.
- Support systems critical to an effective emergency program were adequate
- NDMA's activities to enhance provincial government emergency management activities are effective
- Compliance with applicable laws and regulations were adhered to.
- Lessons learned from previous major natural disasters were implemented.

Audit Approach/Scope

Scope of Audit was based on the assumption that National Disaster Management Authority (NDMA) needs to learn from the recent floods to promptly improve the National Plan and to improve the performance and coordination of all agencies in the next catastrophic disaster. The extent to which the disaster preparedness operations of NDMA are in line with its articulated vision and strategic objectives.

Audit Methodology

- Review of damage assessment reports.
- Review of Management Information Systems (MIS) and related reports,
- Review of emergency response reports, correspondence, legislative and regularity proposals, approved budgets, and other documentary evidence relevant to the objective of our audit.
- Review of accounting records and supporting documents, procurement records and disaster staffing records.
- Interviews of NDMA personnel involved in the disaster response and recovery efforts to determine adequacy of emergency preparedness planning, training, funding and exercise.
- Questionnaires to general public who received relief aid to determine the overall adequacy of the Federal Relief efforts.
- Review of National Disaster Management Framework and analysis of national strategies and policies for disaster management.
- Review the adequacy of internal controls concerning receipts, expenditures, safeguarding of assets and utilization of resources for carrying out the disaster prevention and mitigation activities efficiently, effectively and economically by the NDMA.
- Review of Minutes of meeting of National Commission.
- Review of monitoring report issued by NDMA.

PAKISTAN

Audit Criteria

The common criteria specified in the international parallel/coordinated audit are used.

Identification of the Characteristics of the Disaster

Like other South Asian countries, Pakistan continues to suffer from a plethora of natural hazards that threaten to affect the lives and livelihood of its citizens - natural disasters include floods, earthquakes, landslides, cyclones, and drought. These hazards pose serious threat to the economic and social development of the country. The human impact of natural disasters in Pakistan can be judged by the fact that 6,037 people were killed and 8,989,631 affected in the period between 1993-2002 (World Disasters Report 2003, Geneva, International Federation of Red Cross and Red Crescent Societies), while more than 85,000 people were killed and more than four million people were affected due to the major earthquake that occurred on 08.10.2005 in the north of Pakistan.

Legal arrangement and Governance Structure

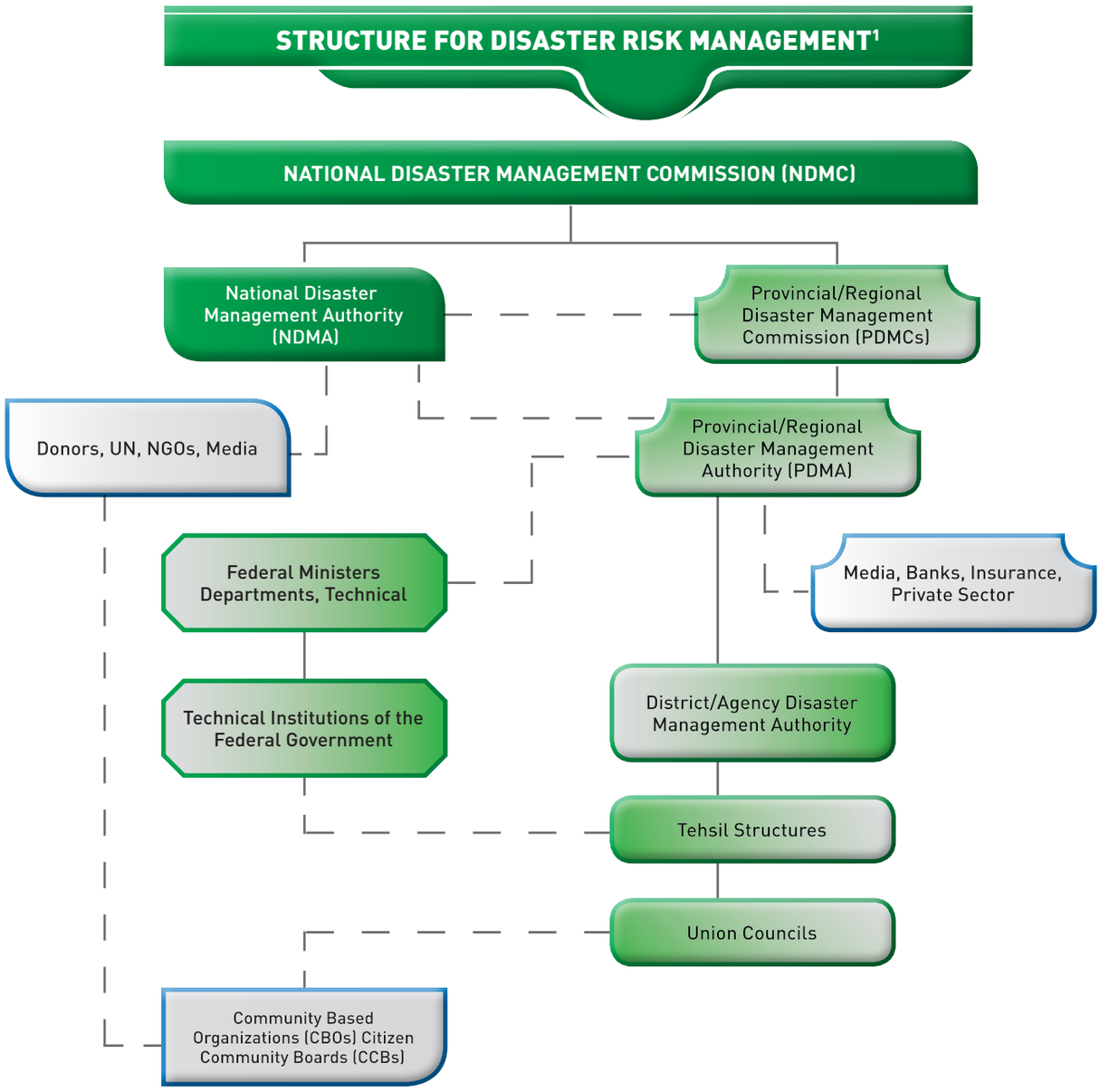
In 2007, the Government of Pakistan established a National Disaster Management Authority (NDMA) at the Federal level and Provincial/Regional Disaster Management Authorities (PDMAs) in four provinces, Azad Jammu & Kashmir and Gilgit-Baltistan under the NDMA Ordinance, 2007. Further, District Disaster Management Authorities (DDMA) were also established recognizing the fact that the impact of disaster is primarily borne at local level. To oversee the performance of NDMA and provide policy guidelines, a high powered National Disaster Management Commission (NDMC) under the Chairmanship of the Prime Minister was operative since 2007. Similar commissions have also been established in the Provinces which are chaired by the Chief Ministers.

In 2010, the National Disaster Management Ordinance, 2007 was converted in to National Disaster Management Act, 2010 after receiving the assent of the President of the Islamic Republic of Pakistan. The law enacted is comprehensive as it covers all disaster management spectrums including preparedness, response recovery and rehabilitation and reconstruction.

The National Disaster Management Commission (NDMC) will provide leadership in disaster risk management. It has identified following nine priority areas for capacity building to promote disaster risk management at national and sub-national level:

- Institutional and Legal Arrangements for disaster risk management
- Hazard and Vulnerability Assessment
- Training, Education and Awareness
- Disaster Risk Management Planning
- Community and Local Level Programming
- Multi-hazard Early Warning System
- Mainstreaming Disaster Risk Reduction into Development
- Emergency Response System
- Capacity Development for Post Disaster Recovery

The Provincial/Regional Disaster Management Commissions and Authorities will support government and non-government agencies down to the Union Council level in carrying out risk mitigation activities. The following diagram shows the structure of disaster management in Pakistan:



The functions and powers of the National Disaster Commission under the National Disaster Management Act, 2010 shall have the responsibility for laying down the policies, plans and guidelines for disaster management and without prejudice to generality of the provisions of the Act, the National Commission may:

- Lay down policies on disaster management
- Approve the National Plan
- Approve plans prepared by the Ministries or Divisions of the Federal Government in accordance with the National Plan
- Lay down guidelines to be followed by Federal Government and Provincial Authorities
- Arrange for, and oversee, the provision of funds for the purpose of mitigation measures, preparedness and response
- Provide such support to other countries affected by major disasters as Federal Government may determine

1 - Source: Annual Report, NDMA 2007-08

- Take such other measures for the prevention of disaster, or the mitigation, or for preparedness and capacity building for dealing with disaster situations, as it may consider necessary.

The Chairperson of the National Commission shall, in the case of emergency, have powers to exercise all or any of the powers of the National Commission but exercise of such powers shall be subject to ex-post facto ratification by the National Commission. In our opinion the governance structure in Pakistan is quite comprehensive.

Findings/Conclusions; (Legal Arrangement)

➢ *The National Disaster Management Act, 2010 promulgated does define the powers and functions of the National Commission, National Authority, Provincial Commission, Provincial Authority and District Authority. However, in the absence of an approved National Plan the duties and responsibilities of the Coordinators are yet to be defined by each forum to take charge of disaster management activities.*

Recommendations;

♦ *The legal framework needs to be amended so as to clearly establish the duties, competencies and responsibilities of the coordinators to take charge of disaster management activities in the country.*

Organisation and Coordination Structure

The Government of Pakistan has established National Disaster Management Authority (NDMA). Under Section 9 of the National Disaster Management Act, 2010 the NDMA has the following functions and powers:

- Act as the implementing, coordinating and monitoring body for disaster management
- Prepare the National Plan to be approved by the National Commission
- Implement coordinate and monitor the implementation of the National policy
- Lay down guidelines for preparing disaster management plans by different Ministries or Departments and the Provincial Authorities
- Provide necessary technical assistance to the Provincial Governments and the Provincial Authorities for preparing their disaster management plans in accordance with the guidelines laid down by the National Commission
- Coordinate response in the event of any threatening disaster situation or disaster
- Lay down guidelines for, or give directions to the concerned Ministries or Provincial Governments and the Provincial Authorities regarding measures to be taken by them in response to any threatening disaster situation or disaster

- For any specific purpose or for general assistance requisition the services of any person and such person shall be a co-opted member and exercise such power as conferred upon him by the Authority in writing
- Promote general education and awareness in relation to disaster management
- Perform such other functions as the National Commission may require it to perform.

Findings/Conclusions; (Organisation and Coordination Structure)

➢ *The National Authority responsible for planning, coordination and monitoring disaster preparedness in the country is not fully proactive in equipping itself with human, financial and other resources as it obtains Supplementary Grants from the government either in times of a disaster or just before an impending disaster situation, thereby limiting its disaster management activities.*

Recommendations;

♦ *National Disaster Management Authority should obtain timely government grants so as to be fully equipped with human, financial and other resources to enable it to undertake its disaster management activities without any limitation so as to be fully prepared before any disaster occurs.*

National Strategies and Action Plans

The Disaster Management Framework has identified the following nine priority areas for capacity building to promote disaster risk management at national and sub-national level:

- Institutional and Legal Arrangements for disaster risk management
- Hazard and Vulnerability Assessment
- Training, Education and Awareness
- Disaster Risk Management Planning
- Community and Local Level Programming
- Multi-hazard Early Warning System
- Mainstreaming Disaster Risk Reduction into Development
- Emergency Response System
- Capacity Development for Post Disaster Recovery.

Whereas under Section 10(3) of the National Disaster Management Act, 2010 the National Plan shall include:

- Measures to be taken for the prevention of disasters or the mitigation of their effects
- Measures to be taken for the integration of mitigation measures in the development plans
- Measures to be taken for preparedness and capacity building to effectively respond to any threatening disaster situations or disaster
- Roles and responsibilities of different Ministries or Divisions of the Federal Government in respect of measures specified in clauses (i), (ii) and (iii).

PAKISTAN

As indicated, since the National Plan is yet to be approved by the National Commission it is not possible at this stage to provide the main problems in the field of disaster planning as systematically designed test scenarios incorporating multiple disasters through field examination are yet to be implemented to determine if there is any corrective measure needed to modify the National Plan.

Findings/Conclusions; (National Strategy)

- *The National Plan is still in its draft stage and has not yet been finalized.*
- *In the absence of any National Plan, the duties and responsibilities of entities concerned have not been clearly defined.*
- *The Draft National Plan may not cater in all respects the strategies and activities oriented towards disaster risk reduction.*
- *Though the National Disaster Management Act, 2010 has been promulgated, however, no rules and regulations have been notified since the National Plan is in its draft stage and yet to be presented to the National Commission for approval.*
- *In the absence of any approved National Plan, the Provincial Authorities have yet to prepare the Provincial Plans in line with the National Plan for considering local disaster risks.*
- *Since the National Plan is yet to be approved and tested in the field, the disaster related activities are currently being implemented based on the experience gained/lessons learnt by the National and Provincial Authorities. Therefore, a systematically designed test scenario incorporating multiple disasters through field examination are yet to be implemented to determine if there is any corrective measure required to modify the National Plan to implement the Provincial Plans and also to further determine the level of participation of all relevant entities.*

Recommendations;

- *The National Plan should be prepared at its earliest in accordance with the NDMA Act, 2010 and presented to the National Commission for approval.*
- *The duties and responsibilities of entities concerned should be clearly defined in the National Plan.*
- *The strategies and activities of disaster management should focus towards disaster risk reduction to avoid or control the possible impact of the disaster.*
- *The Rules and Regulations, whenever notified should be prepared in line with the goals, objectives and strategies of the National Plan.*
- *The National Plan should be prepared at its earliest in accordance with the NDMA Act, 2010 and presented to the National Commission for approval.*

- *The duties and responsibilities of entities concerned should be clearly defined in the National Plan.*
- *The strategies and activities of disaster management should focus towards disaster risk reduction to avoid or control the possible impact of the disaster.*
- *The Rules and Regulations, whenever notified should be prepared in line with the goals, objectives and strategies of the National Plan.*

Management Tools Such as GIS, GPRS, GPS, Early Warning Systems

The National Authority has not developed any Disaster Management Information System (DMIS) for planning and directing disaster preparedness. Currently no tools such as GIS, GPRS and GPS are being used. In respect of Early Warnings Systems the NDMA has prepared National and Provincial Monsoon Contingency Plans and identified disaster prone settlement areas.

In developing countries like Pakistan, warning systems lack the basic capacities of equipment, skills, and resources. Among both developed and developing nations, the weakest element is the warning dissemination and preparedness to act.

Findings/Conclusions; (Management Tools)

- *The National Authority has not developed any Disaster Management Information System (DMIS) for planning and directing disaster preparedness.*
- *In the absence of any Disaster Management Information System (DMIS) at the national level, the integrated information systems both at national and regional level do not exist so as support decision making processes by the relevant entities.*

Recommendations;

- *The National Disaster Management Authority needs to develop a Disaster Management Information System (DMIS) for planning and directing disaster preparedness so that the National Authority is able to access valuable information for planning disaster preparedness activities.*
- *The Integrated Information Systems, both at national and regional level, should be implemented in line with the DMIS to support decision-making processes of relevant entities in times of a disaster for better coordination of disaster-related activities.*

PAKISTAN

Training Activities and Public Awareness

The Government has established the National Institute of Disaster Management (NIDM) under National Disaster Management Ordinance, 2009. NIDM was formally inaugurated on 15.02.2010. So far short courses have been disseminated on various aspects of disaster management for the government officials, private sector, media, NGOs and community organizations. However, trainings have not been organized within the framework of accredited training programs in the light of Section 26(3) of the National Disaster Management Act, 2010.

Section 10(3)(c) of the National Disaster Management Act, 2010 states that the National Plan shall include measures to be taken for preparedness and capacity building to effectively respond to any threatening disaster situation or disaster. However, limited trainings and awareness raising activities have neither been planned nor conducted as part of the overall strategy.

Since the National Plan has not been approved by the National Commission, the awareness campaign has been implemented in an ad-hoc basis to raise awareness amount the civil society.

Findings/Conclusions; (Training Activities & Public Awareness)

- *Limited trainings and awareness-raising activities have not been planned or conducted as part of the overall strategy.*
- *The National Institute of Disaster Management (NIDM) have disseminated short courses so far on various aspects of disaster management for the government officials, private sector, media, NGOs and community organizations. However, trainings have not been organized within the framework of accredited training programs in light of Section 26(3) of the NDMA Act, 2010.*
- *The awareness campaign has not been implemented on an ad-hoc basis to raise awareness among the civil society.*

Recommendations;

- *Trainings and awareness raising activities should be planned and conducted as part of the overall strategy in light of Section 10(3)(c) of the NDMA Act, 2010 so that disaster-response activities are undertaken with well-trained officials and well-informed public to avoid any apprehensions.*
- *Trainings need to be organized within the framework of accredited training programs as required under Section 26(3) of the NDMA Act, 2010 so that the training is imparted to officials with latest disaster-management techniques.*
- *The initiatives for raising awareness of the civil society need to be effectively managed and the participation of volunteers needs to be handled in accordance with the approved National Plan so that the message desired to be conveyed is effectively communicated to the civil society to ensure volunteer participation.*

Financial Structure

The Government of Pakistan provides budgetary grants to the National Disaster Management Authority in the budget passed by the Parliament. However, Supplementary Grants are obtained from the government either in time of a disaster or immediately before an impending disaster situation, thereby limiting its disaster management activities. The funds provided by the Federal Government to the NDMA shown table .

Table: NDMA Funds

(Rupees in million)	
Financial Years	**Amount**
2010-11	371.972
2011-12	2.093,854

Making Urban Area Resilient

Currently, no projects and programs are being executed for urban areas.

Findings/Conclusions; (Making Urban Area Resilient)

- *Section 10(3) of the NDMA Act, 2010 states that the National Plan shall include measures to be taken for the integration of mitigation measures in the development plans. However, since the National Plan is yet to be approved by the National Commission, therefore, currently due regard to disaster risks has not been taken into account while preparing construction plans.*
- *The NDMA has prepared National and Provincial Monsoon Contingency Plans and identified disaster prone settlement areas. However, there is no comprehensive plan in place to identify disaster prone settlement areas in line with micro zoning maps and local integrated disaster maps, and conservation plans have not been prepared for such areas.*
- *The Pakistan Building Code, No. 1986 was amended after the devastating earthquake of 08.10.2005 so that the safety for all communities was ensured. These were encapsulated in the "Seismic Provisions". These Seismic Provisions were founded on broad-based principles that would make use of new materials and new construction systems possible. However, currently no mechanism exists in place to ensure that the constructions of buildings are resilient to disasters.*
- *In the absence of the approved National Plan and any mechanism in place to ensure that the construction of buildings is resilient to disasters in line with the revised Pakistan Building Code, No. 1986 no regard to risk assessments have been made for retrofitting and demolition-construction works.*
- *Section 10(3) of the NDMA Act, 2010 states that the National Plan shall include measures to be taken for the integration of mitigation measures in the development plans. However, since the National Plan is yet to be approved by the National Commission, therefore, currently urban transformation projects have not been implemented in a manner that would contribute to disaster risk and hazard reduction.*

Recommendations;

- *Due regard to disaster risks should be taken into account while preparing construction plans and any adjustments to these plans should be made in the light of the approved National Plan so that the identified risk are addressed to avoid any post-disaster issues that may arise.*
- *To ensure that disaster management activities are directed to the right areas of the country the NDMA should develop a comprehensive plan for disaster prone settlement areas in line with micro-zoning maps and local integrated disaster maps and conservation plans.*
- *To avoid lateral damage to buildings the National Authority should develop a mechanism to ensure that the constructions of buildings constructed are resilient to disasters in line with the revised Pakistan Building Code, No. 1986.*
- *A risk assessments exercise should be carried out to ensure that the factors identified are addressed and that the retrofitting and demolition-construction works are undertaken in line with the revised Pakistan Building Code, No. 1986.*
- *NDMA should ensure that the urban transformation projects are implemented transparently and in a manner that would contribute to disaster-risk and hazard reduction in line with the National Plan.*

Abbreviations

CCB: Citizen Community Board

CBO: Community Based Organization

DDMA: District Disaster Management Authorities

DMIS: Disaster Management Information System

MIS: Management Information System

NDMA: National Disaster Management Authority

NDMC: National Disaster Management Commission

NIDM: National Institute of Disaster Management

PDMAs: Provincial/Regional Disaster Management Authorities

PHILIPPINES
Commission on Audit

Audit Approach/Scope

Commission on Audit (COA) has adopted the risk-based audit approach in both the financial and value for money audit.

Audit Methodology

- Interview with concerned officials and stakeholders etc,
- obtain and review the management policies, plans, orders, resolutions, guidelines and document showing the agency organizational structure; and besides measures which aim to reduce risks to hazards and manage the consequences of disasters etc,
- Verify whether;
  - ➢ the agency has linked with LGUs and other government agencies with regard to information on hazardous and critical areas and number of families,
  - ➢ the agency has a system of procedure to ensure that the activities of the LGUs are in accordance with the operating procedures of the national government;
  - ➢ the management procedure for assessing the learning's obtained from the training etc.
- Check whether the agency's facility is operating and staffed on a 24 hour basis during disaster.

Audit Criteria

The "Philippine Disaster Risk Reduction and Management Act of 2010" or R.A. No. 10121 and its IRR can be used as the criteria in the audit of Disaster Preparedness in the Philippines and other related laws, regulations and policies.

Identification of the Characteristics of the Disaster

The Philippines is considered one of the nations most "at risk" of being struck by disasters due to its geographic location (astride both the typhoon belt and the Ring of Fire), a high degree of ecological degradation and socio-economic vulnerability due to large number of people and economic assets exposed to multiple recurring hazards such as cyclones, floods, earthquakes and landslides). In the 2012 World Risk Report, the Philippines ranked third out of 173 countries in terms of disaster risk. While country-by-country rankings may create a false sense of precision and mask differences between different locations within countries, the Philippines high level of disaster risk is universally accepted.

The following are the types of hazards present in the country:

- Natural Hazards: Floods, Typhoons and Storm Surges, Earthquakes, Volcanic eruptions, Climate variabilities (La Niña/El Niño), Tsunami, Landslides (earthquakes/ rain induces) and Ground subsidence.
- Human Induced Hazards: Fire incidents, Sea accidents, Air accidents, Land accidents, Oil spill, Civil strife, Pollution, Industrial accidents, Terrorism and Red tide.
- Other Hazards: Bird flu and Climate change

To put the Philippines' disaster risk into context, there are approximately equal numbers of people exposed to tropical cyclones in Japan as in the Philippines. However, a cyclone of the same intensity would kill 17 times more people in the Philippines due to the greater level of vulnerability.

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Philippine buildings and roads are not built to the same standards or according to the same land use plans as in Japan, therefore the risk of damage to homes and infrastructure that could lead to displacement in the Philippines is also much greater than Japan. In 2011, for example, there were more than five times as many people displaced internally following disasters in the Philippines than in Japan despite the fact that Japan suffered one of its largest disasters in decade.

The higher risk of displacement in the Philippines (compared to Japan) means that when a disaster occur, a relatively larger portion of the population is likely be displaced, straining the ability of local communities (those not displaced) to absorb the shock. In the wake of tropical storm Sendong (internationally known as Washi), which struck Mindanao in December 2011, 54 per cent of the population of Cagayan de Oro and 34 per cent of the population of Iligan were displaced, overwhelming the response capacity of local and regional governments.

There are four key factors underlying disaster risk in the Philippines (and elsewhere): vulnerable livelihoods, poor urban governance and weak political accountability; ecosystem degradation and climate change.

Poor urban governance and lack of accountability increase the risk of displacement since they often result in ineffective and unenforced building codes and land use plans which further expose vulnerable settlements to floods, landslides and other hazards.

Other factors contributing to the Philippines high disaster risk include the scale of rapid and unplanned migration to already densely populated and low-lying urban areas, insufficient understanding of the impacts of climate change and other hazards and lack of effective early warning systems related to extreme weather events. The Philippines has been ranked the tenth-most-vulnerable country to climate change based on an analysis of more than 40 social, economic and environmental factors, and Manila is ranked by the Climate Change Vulnerability Index (CCV) as the most vulnerable of the world's 20 "high growth cities" to the effects of change.

The country is exposed both to climate-related disasters and sea level rise. Its population is vulnerable due to conflict, unregulated and precarious settlement patterns and a reliance on agriculture. In 2011, typhoon Sendong caused more than 1,500 deaths and 6,072 injuries, damaged 51,144 homes and displaced an estimated 430,900 people. In addition to damage to housing (estimated at USD 75.7 million), government statistics.

The ADB Country Partnership Strategy for the Philippines describes the country as one of the world's most hazard-prone countries. In the past 3 decades, it has encountered 268 recorded disasters and ranks 8th worldwide in terms of disaster incidence and human impact. Up to 60% of the total land area is exposed to multiple hazards, and 74% of the population is vulnerable to disasters. Recent experiences however showed how unprepared the country is as captured in the news during the onslaught of typhoon Ondoy and Pepeng.

Legal Arrangement and Governance Structure

Presidential Decree (P.D.) No. 1566 entitled "Strengthening the Philippine Disaster Control, Capability and Establishing the National Program on Community Disaster Preparedness, issued by President Ferdinand Marcos in 1978, was the "foundation for disaster management" in the Philippines.

In response to the high risk levels to disasters, the Philippine government has enacted two legislation relating to existing and projected climate change impacts: the Climate Change Act of 2009 and the Philippine National Disaster Risk Reduction and Management Act of 2010 (PDRRM-2010) (R.A. 10121).

The PDRRM-2010 seeks the reduction and better management of disaster risk. It is shaped by two key assumptions: (1) that disaster risk is something that is endemic rather than a concern only when a cyclone, flood, drought, or earthquake occurs; and (2) that it is within the power of the state to reduce disaster risk even though it is unable to prevent cyclones, earthquakes or other natural hazards.

The National Disaster Risk Reduction & Management Council (NDRRMC) or formerly called National Disaster Coordinating Council (NDCC) is an agency of the Philippine government under the Department of National Defence, responsible for ensuring the protection and welfare of the people during disasters or emergencies. It is composed of the following:

- *Chairperson - Secretary of Department of National Defence*
- *Vice Chairperson for Disaster Preparedness - Secretary of Interior and Local Government*
- *Vice Chairperson for Disaster Response - Secretary of Department of Social Welfare and Development*
- *Vice Chairperson for Disaster Prevention and Mitigation - Secretary of the Department of Science and Technology*
- *Vice Chairperson for Disaster Rehabilitation and Recovery - Director-General of the National Economic Development Authority*
- *39 Member Agencies.*

Findings/Conclusions; (Legal Arrangement)

➢ *Non-compliance with the full provisions of RA 10121, otherwise known as the "Philippine Disaster Risk Reduction and Management Act of 2010", non-implementation of City Ordinance No. 32, Series of 2011, and unavailability of a Disaster Risk Reduction and Management Plan, precluded the City to effectively manage their budgeted fund for Local Disaster Risk Reduction and Management.*

Recommendations;

♦ *We recommended that Management look into the immediate and full implementation of RA 10121 and City Ordinance No. 32, Series of 2011 in order that necessary plans for risk reduction and the proper utilization of the fund can be attained/achieved.*

Organisation and Coordination Structure

The Regional Disaster Risk Reduction and Management Council (RDRRMC) is tasked to coordinate, integrate, supervise and evaluate the activities of the Local Disaster Risk Reduction and Management Council (LDRRMC). It is responsible in ensuring disaster sensitive regional development plans and in case of emergencies shall convene the different regional line agencies and concerned institutions and authorities. It is composed of the following:

- *Chairman* - *RD, OCD*
- *VC for Disaster Preparedness* - *RD, DILG*
- *VC for Disaster Response* - *RD, DSWD*
- *VC for Disaster Prevention & Mitigation* - *RD, DOST*
- *VC for Disaster Rehabilitation & Recovery* - *RD, NEDA*
- *Members – Executives of regional offices and field stations at the regional level of government agencies*
- *Secretariat* - OCD Regional Office

The LDRRMC is chaired by the Local Chief Executive and has 18 member agencies. It is responsible in taking the lead in preparing for responding and recovering from the effect of any disaster based on the following criteria:

- *The Barangay Disaster Council (BDC), if a barangay is affected;*
- *The City/Municipal DRRMC if two or more barangays are affected;*
- *The Provincial DRRMC if two or more cities/municipalities are affected;*
- *The Regional DRRMC if two or more provinces are affected;*
- *National DRRMC if two or more regions are affected*

The NDRRMC and intermediary LDRRMCs shall always act as support to LGUs which have the primary responsibility as first disaster responders. Private sector and civil society groups shall work in accordance with the coordination mechanism and policies set by NDRRMC and concerned LDRRMCs.

In the case of typhoon Sendong, the pre-Sendong coordination around disaster prevention among the current structure was found to be lacking but coordination during the response was better due to national authorities' familiarity with the international humanitarian response system, a factor which initially facilitated the flow of relief to affected communities.

Coordination between local institutions and national and international actors was a challenge because LGUs were given the responsibility to lead but lacked the capacity and technical expertise to manage disaster risks. This major constraint had been identified even before PDRRM-2010 was enacted. The mismatch between institutional responsibilities and capacities, particularly at the local level, has been identified as a major impediment to effective implementation of disaster risk reduction and management facilities.

Allocation of responsibilities under PDRRM-2010 poses another challenge. The OCD has experience responding to disasters and it played a lead institutional role before PDRRM-2010 passed into law. Its traditional role, disaster response, means that it is not well equipped to mainstream and integrate DRR and DRRM into national, sectoral, regional and local development plans and policies, as required by the new law. Moreover, given the long-running conflict between the Philippine Armed Forces and the Moro Islamic Liberation Front (MILF) in Mindanao, including some areas affected by Sendong, the OCD was not regarded as neutral actor by some communities of Moro affected by the flooding.

Governance Failure in typhoon Sendong

In the case of typhoon Sendong, there are three explanatory factors why PDRRM 2010 has failed to engender a greater degree of accountability among those responsible:

- Extensive (and potentially wilful) lack of awareness of the law
- Unwarranted assumptions that communities necessarily have great powers of resilience and civil society volunteers will fill the breach
- The impact of the nation-wide system of patronage.

LGUs have repeatedly claimed they were unaware or improperly informed of the disaster risks facing their communities. When asked about the flood risk map of CDO, representatives from the Office of the LCE claimed that local officials lacked the expertise to interpret risk maps.

The governance failure observed in typhoon Sendong has a cost resulting in lack of responsiveness to the needs of the majority of the population. Despite enactment of PDRRM 2010, the patronage system forms the socio-cultural foundation of the current disaster management system in the Philippines, thus prohibiting a risk management ethos. As a result of patronage, decisions are based on electoral considerations rather than on evidence or technical assessments. This result in "underinvestment in vital national-level infrastructure projects and the concurrent resourcing.

Findings/Conclusions; (Organisation and Coordination Structure)

- ***Insufficient competent personnel resulting to the agency's failure to effectively carry out its functions and responsibilities;***
- ***Insufficient funds which prevented the agency from effectively carrying out its functions and responsibilities.***

National Strategies and Action Plans

National Disaster Risk Reduction and Management Plan (NDRRMP) 2011-2028

The NDRRMP is a road map on how DRRM shall contribute to sustainable development. It fulfils the requirement of RA No. 10121 of 2010, which defines national disaster risk reduction and management as the "systematic process of using administrative directives, organizations and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the impacts of hazards and the possibility of disaster.

The NDRRMP is scheduled to commence in 2011, immediately after its approval from the members of the National DRRM Council members. In general, the set of activities are divided into three timelines, with the first two having two (2) years interval while the last one with five (5) years, to wit: Short-term, 2011-2013; Medium term, 2014-2016; and Long-term, 2012-2028.

During the consultations, pilot projects and demonstration sites were identified. As priority or flagship projects which are doable, fundable, high impact, interconnected/interdependent, and sustainable, the purpose is to either replicate good DRRM practices or implement projects in areas which need them most. All priority projects are to be implemented within the immediate or short term period or between 2011 and 2013. The priority and/or flagship projects of the NDRRMP are:

- Development of the following plans:
  - Joint work plan for DRRM and CCA
  - Local DRRM plans
  - National Disaster Response Plan (to include a system for Search, Rescue and Retrieval SRR; scenario-based preparedness and response plans)
  - Risk financing
- Development of IEC and advocacy materials on RA 10121, DRRM and CCA
- Development of guidelines on
  - Communications and information protocol before, during and after disasters
  - Creation of DRRM teams
  - Criteria/standards for local flood early warning systems
  - Evacuation
  - Infrastructure redesign and/or modifications
  - Manual of operations of disaster operations centres
- Development of tools on
  - DRRM and CCA mainstreaming in the national and local-level planning
  - DANA and Post-DANA
  - Psychosocial concerns

- Establishment of DRRM Training Institutes
  - Local flood early warning systems (through integrated and sustainable management river basins and water sheds – like the Cagayan River Basin (CRB) in Region 2
  - End-to-End Early Warning Systems in Provinces of Bulacan, Leyte, Albay, Municipalities of Kitcharao and Santiago, Agusan del Norte and Butuan City
- Establishment of local DRRM Councils and Offices and their operations centres, as prescribed by RA 10121
- Conduct inventory of existing DRRM and CCA resources and services
- Development and implementation of DRRM and CCA activities using 5% of government agency's allocation from the annual national budget or General Appropriations Act (GAA);
- Hazard and risk mapping in the most high-risk areas in the country (e.g., community-based DRRM and CCA risk mapping in the municipalities of Kitcharao and Santiago in Agusan del Norte and Butuan City)
- Institutional capability program on DRRM and CCA for decision makers, public sector employees, and key stakeholders
- Mainstreaming DRRM and CCA (e.g., Esperenza Municipality in Agusan del Sur in CARAGA and in San Francisco Municipality in Camotes Island)
- PDNA capacity building for national government agencies, regional line agencies, and local offices.
- Review, amend and/or revise the following
  - Building Code and integrate DRRM and CCA
  - Executive Order No. 72 s. 1993, which provides for the preparation and implementation of the Comprehensive Land Use Plans (CLUPs) of local government units
  - Implementing Rules and Regulations of RA No. 10121
  - Various environmental policies (i.e., EO No. 26, etc.) to integrate DRRM and CCA.

Findings/Conclusions; (National Strategy)

- *Lack of plans embodying standard operating procedures on disaster management cast doubts on the management's ability to perform its mandate*
- *Failure of management to develop a standard operating procedure on disaster management may result to:*
  - *poor communication rendering difficult the performance of functions and mandate*
  - *uncoordinated activities preventing management in carrying out disaster activities*
  - *delayed information, lack of information affecting management decisions*
  - *poor assessment of damage, number of affected families incorrectly assessed affecting management decision*
  - *increased damages, increase in the number of families affected;*
- *Lack of plans resulting to disadvantageous contracts, procurement of insufficient number of goods, equipment for use in the management of the effects of disaster,*
- *The Local Disaster Risk Reduction Management Plan (LDRRMP) of the City Government specifying the proposed disaster risk reduction programs, projects and activities to be undertaken and their corresponding estimated costs was not developed yet, hence, the economy, efficiency and effectiveness of its accomplishments could not be evaluated. Further, the programs/projects/activities undertaken pertaining thereto, and the report on the utilization of the Local Disaster Risk Reduction Management Fund (LDRRMF) were not submitted, hence, the accuracy of the unexpended balance of the LDRRMF at the end of the year could not ascertained, contrary to Article 419 (d) of the Implementing Rules and Regulations of the Local Government Code of 1991, R.A. 7160 and Section 21 of R.A. 10121.*

Recommendations;

- *We recommended that Management look into the immediate and full implementation of RA 10121 and City Ordinance No. 32, Series of 2011 in order that necessary plans for risk reduction and the proper utilization of the fund can be attained/achieved.*
- *We recommended that the management direct the Local Disaster Risk Reduction and Management Council to submit the following:*
  - *Composition of the City Disaster Risk Reduction and Management Council;*
  - *City's The Local Disaster Risk Reduction Management Plan (LDRRMP);*
  - *Annual Work and Financial Plan;*
  - *Programs/Projects /Activities undertaken and status thereof; and*
  - *Report on the utilization of the LDRRMF and other dedicated disaster risk reduction and management resources.*

Management Tools Such as GIS, GPRS, GPS, Early Warning Systems

Findings/Conclusions; (Management Tools)

- *Inefficient communication and information sharing resulting to:*
  - *Incorrect information which might be used as basis for decisions;*
  - *Incorrect information resulting to damages*
- *Poor coordination activities resulting to:*
  - *management failure to reach the affected families on time;*
  - *increase damages to infrastructure and equipment;*
  - *error in the calculation of the kind of assistance to be provided*
  - *management failure to perform its mission and mandate.*

Training Activities and Public Awareness

In 2012, the Office of the Civil Defence conducted the following

- 7 trainings on related DRRM Software which includes training on REDAS, GIS and hazard mapping which was facilitated by the OCD regional offices in collaboration with PHILVOCS and benefitted the OCD staff and LGUs requesting for trainings;
- 167 consultations meeting with key stakeholders in identifying, assessing and prioritizing hazards, risks and vulnerabilities. The observance of the NDCM provided for an increased participation of the different stakeholders on the consultations meetings for the identification, assessment and prioritization of hazards, risks and vulnerabilities. These activities also include disaster response cluster meetings and facilitation of DRRM activities in the region;
- 296 trainings on national and regional disaster preparedness, simulation drills and exercise on DRRM. The OCDRCs are actively rolling out the Incident Command System (ICS) to the P/M/BDRRMCs. There is also an increased request from the LGUs, schools, and private and public offices for fire, earthquake and tsunami drills. There were also trainings conducted on communication protocol;
- 79 DRRM information and education campaign on the four primary hazards (tsunami, earthquake, typhoon, flood) produced and developed. The observance of NDCM intensified the OCD's information and education campaigns, which focused not only on the distribution of IEC materials but also on the conduct of orientations, seminars and for a on RA 10121, NDRRM Framework and Plan, and disaster preparedness measures; and
- It will also conduct four (4) trainings on risk analysis process which was scheduled on the 4th quarter of 2012.

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Findings/Conclusions; (Training Activities & Public Awareness)

- ***Inefficient Lack of trained personnel prevents management from effectively carry out its functions and responsibilities***

Financial Structure

The PDRRM of 2010 was supposed to mark a paradigm change toward the prevention and mitigation of disasters. Unfortunately, this new mindset has not resulted in new budgeting priorities. A NDRRM Fund, a Quick Response Fund and Calamity Fund for local governments were created and funds still flowed toward response rather than prevention. The Calamity Funds could have helped address many of the outstanding needs of people displaces by typhoons. Some have questions how funds have been used or delayed.

The present Local Calamity Fund shall henceforth be known as the Local Disaster Risk Reduction and Management Fund (LDRRMF). Not less than five percent (5%) of the estimated revenue from regular sources shall be set aside as the LDRRMF to support disaster risk management activities such as, but not limited to, pre-disaster preparedness programs including training, purchasing life-saving rescue equipment, supplies and medicines, for post-disaster activities, and for the payment of premiums on calamity insurance. It is expected that;

- The National Disaster Risk Reduction and Management Fund shall be used for disaster risk reduction or mitigation, prevention and preparedness activities such as but not limited to training of personnel, procurement of equipment, and capital expenditures.
- The specific amount of the NDRRM Fund and the appropriate recipient agencies and/or LGUs shall be determined upon approval of the President of the Philippines in accordance with the favourable recommendation of the NDRRMC.
- Of the amount appropriated for the NDRRM Fund, thirty percent (30%) shall be allocated as Quick Response Fund (QRF) or stand-by fund for relief and recovery programs in order that situation and living conditions of people in communities or areas stricken by disasters, calamities, epidemics, or complex emergencies, may be normalized as quickly as possible.
- All departments/agencies and LGUs that are allocated with DRRM fund shall submit to the NDRRMC their monthly statements on the utilization of DRRM funds and make an accounting thereof in accordance with existing accounting and auditing rules.
- All departments, bureaus, offices and agencies of the government are hereby authorized to use a portion of their appropriations to implement projects designed to address DRRM activities in accordance with the guidelines to be issued by the NDRRMC in coordination with the DBM.

Abbreviations

ADB: Country Partnership Strategy for the Philippines

BDC: Barangay Disaster Council

CCA: Climate Change Adaptation

CCV: Climate Change Vulnerability

CLUPs: Comprehensive Land Use Plans

COA: Commission on Audit

CRB: Cagayan River Basin

DRRM: Disaster Risk Reduction and Management

GAA: General Appropriations Act

ICS: Incident Command System

IRR: Implementing Rules and Regulations

LCE: Local Chief Executive

LDRRMC: Local Disaster Risk Reduction and Management Council

LGU: Local Government Unit

MILF: Moro Islamic Liberation Front

NDCC: National Disaster Coordinating Council

NDRRMC: National Disaster Risk Reduction & Management Council

NDRRMP: National Disaster Risk Reduction and Management Plan

OCD: Office of Civil Defense

P.D: Presidential Decree

PDNA: Capacity Building for National Government Agencies

PDRRM: Philippine National Disaster Risk Reduction and Management

PHILVOCS: Philippine Institute of Volcanology and Seismology

QRF: Quick Response Fund

RA 10121: Philippine Disaster Risk Reduction and Management Act of 2010

RDRRMC: Regional Disaster Risk Reduction and Management Council

REDAS: Rapid Earthquake Damage Assessment System

ROMANIA

Romanian Court of Accounts

Audit Objective

The main audit objective is the assessment of the efficiency and effectiveness of programmes and measures undertaken to prevent and to remove the effects of a major earthquake in Bucharest municipality. An analysis shall be made to ascertain whether the budget resources allotted for emergency situations management were used with the observance of the principles of economy, efficiency and effectiveness, as well as their impact on the minimisation of an earthquake effects.

The specific audit objectives, set based following a preliminary study, are:

- Analysis of the legislative framework and of the national programmes and strategies to minimise the effects of a potential earthquake, their harmonisation with European and international policies and standards;
- The efficiency, effectiveness and economy of local and governmental programmes unfold to diminish the effects of a seism in Bucharest;
- Reporting the impact of programmes unfold by analysing the degree to which the set objectives were fulfilled;
- The organisation, endowment and financing of the structures, institutions and economic entities involved in the activity to prevent and fight seism effects and whether they reflect the objectives and are able to fulfil the pertaining strategic objectives;
- The organisation, mobilisation and action of the entities involved after seism emergence. Plans, programmes, strategies grounding authorities' actions, the auditing of the expenses generated by these actions and of the internal and international aid received for victims of disasters and to remove the seism effects.

Audit Approach/Scope

The competences of the Court of Accounts in the field of performance audit are provided under art. 21 paragraph 2 and art. 28 of Law no. 94/1992 on the organisation and operation, re-issued. In keeping with these provisions, the Court of Accounts conducts the audit of the consolidated general budget management, as well as of any public funds and conducts an independent assessment of the efficiency, effectiveness and economy of the use, by a public entity, a program, a project, a process or an activity of the public resources allotted for the implementation of the set objectives.

The findings and recommendations issued are meant to diminish costs, enhance efficiency in the use of resources and fulfilment of objectives set at the level of the audited programme /project/ process/ activity or entity.

The performance audit mission unfolds in the period 05.06.2012 - 27.07.2012, and the audited period is 01.01.2007 – 31.12.2011; it is governed by the following legal framework:

- Law no. 94/1992 on the organisation of the Romanian Court of Accounts, re-issued;
- The regulation on the organisation and unfold of the Romanian Court of Accounts' specific activities, as well as the follow up of the documents resulting from these activities;

- "The performance audit guidelines " drafted by the Romanian Court of Accounts, which ensures compatibility with the accepted international audit standards (INTOSAI);
- The Guidelines "audit of disaster risk reduction" drafted by the INTOSAI Working Group on Accountability for and Audit of Disaster-related Aid (AADA).

Several actors are involved in the management of disaster preparedness activities, such as national and local governments, the international community, the private sector, the civil society etc. In Romania, the mandate of the Court of Accounts does not cover all activities and organisations involved in disaster preparedness.

The organisation and operation law does not provide a mandate for the Romanian Court of Accounts to audit non profit organisations and associations through which a part of the internal and external aid received on disaster emergence are unfold (some 10,000 such non profit organisations are recorded with tax bodies at the level of Bucharest municipality).

The main actions to prevent earthquake, respectively the Programme on the consolidation of seismic risk prone buildings, geospatial IT systems establishment, implementation and use, as well as the organisation, financing and endowment of the activities to prevent and manage emergency situations were audited at the level of the Territorial Administrative Unit of Bucharest Municipality (UATMB).

Audit Methodology

Under the light of the guidance of the international documents such as "the performance audit guidelines" drafted by the Romanian Court of Accounts, which ensures compatibility with the accepted international audit standards (INTOSAI) and "ISSAI 5510: Audit of risk reduction" prepared by the Turkish Court of Accounts within the INTOSAI Working Group on Accountability for and Audit of Disaster-related Aid (AADA);

- Examination of;
  - All legal and administrative arrangements, particularly laws;
  - Development Plans, Medium-Term Programs, Annual Programs, Government Programs;
  - Meeting minutes and decisions of the boards specified in the law of coordinator entity;
  - Entities' budgets, documentation related to financial resources;
  - Strategic plans, accountability reports and audit reports of entities "National Strategy for Disaster Management" and "the Plan for Analysis and Coverage of Risks of Bucharest Municipality";
  - Disaster and emergency plans, civil defence plans of town;
  - Internal and external correspondences;
  - Publications and documents of associations, professional organizations and academics.
- Interviews with the officials of entities as well as with key individuals directly involved in the emergency situation activity and meetings with the personnel of entities.
- Using Questionnaire on the assessment of the IT system.
- Drafting and using the verification lists for the assessment of GIS risks and controls;

Audit Criteria

Specified the specific criteria such as the following;

- Goals, objectives and strategies established at national level should be reinforced with a sound financial and legal framework.
- As regards the legal framework and the observance of specific legislation;
  - Common and specific legislation in force, regulating the activity of the audited entity;
  - Internal norms issued when enforcing the legislation in force;
  - Contractual requirements.
- A national disaster strategy and action plan, encompassing all types of possible disasters, should be prepared and periodically updated;
  - duties, responsibilities and those entities concerned should be clearly defined;
  - duties should be prioritized and scheduled.
- As regards the level of the performance of the programs unfolded in order to reduce seismic risks:
  - Standards in this field and performance indicators;
  - Applying the principle of the good practice in the field;
  - Regulations issued by Bucharest Municipality and internal regulations
  - The law of public acquisitions, cost standards, etc.
  - Safety standards and relevant indicators in constructions and urbanism.
  - Performance objectives and tasks presented in the strategies and programs unfolded in the field of preventing and managing the effects of disasters.
- Performance objectives and tasks presented in the strategies and programs unfolded in the field of preventing and managing the effects of disasters.
- There needs to be a legal framework that clearly establishes the duties, competences and responsibilities of the coordinator entity.
- The entity responsible for the coordination should be equipped with human, financial and other resources necessary to plan, coordinate and monitor disaster preparedness with an integrated approach.
- Local implementation plans should;
  - be prepared by considering local disaster risks.
  - comply with high level plans.
  - be realistic and feasible and tested to be feasible through field examinations.
  - be responsive to alternative scenarios and multiple disasters.
  - be prepared through high-level participation of all relevant entities.
  - analysed and enforced by all the entities involved.
  - be up-dated periodically.
- Plans should include an infrastructure operating with alternative systems, which would enable effective communication among relevant entities and inform the public on regular basis during the disaster.

- A local disaster strategy and action plan, encompassing all types of possible disasters, should be prepared and periodically updated:
  - duties, responsibilities and those entities concerned should be clearly defined;
  - duties should be prioritized and scheduled.
- There should be a mechanism that ensures construction of buildings resilient to disasters.
- Retrofitting and demolition-construction works should be conducted according to short and long-term plans and within the scope of priorities established based on risk assessments. Plans, targets and budget should be correlated.
- The urban transformation projects should be implemented transparently and in a manner to contribute to disaster risk and hazard reduction.

The general conclusion of the audit is that the Programme to consolidate buildings, as a main preventive actions, meant to minimise the effects of an earthquake in Bucharest, has not been approached as a priority which would save lives and assets in the instance of a major earthquake, on the one hand because of the specific legislation which is not clear, easy to enforce and which underwent numerous modifications and on the other, because of the failure to attain the indicators set at the level of the UATMB.

Legal Arrangement and Governance Structure

Through the Programme to consolidate multi-floor buildings, the Government undertook to provide for the safety of old, privately owned buildings, allotting funds from the state budget for the buildings under the 1st rank seismic risk, representing a public hazard.

As provided under art. 1 of O.G. no. 20/1994, re-issued: "the minimisation of building seismic risk is a complex action, of national interest, within the context to mitigate the effects of a potential earthquake related disaster and includes measures to consolidate existing buildings lacking sufficient protection against seismic actions, which are degraded or damaged by seism".

Funds were accessed within the Annual Programme for the design and execution of consolidation works involving multi-floor buildings, under the 1st rank seismic risk according to technical appraisal report and which are a public hazard ("Red Dot Buildings"), at the level of Bucharest Municipality, to mitigate the effects of a potential earthquake generated disaster. The Program unfolds based on the provisions of the OG no. 20/1994, re-issued on measures to diminish existing buildings seismic risk.

The successive modifications and abrogation of the legal framework regulating minimisation of existing buildings risks were not adequately coordinated/correlated and only generated effects as of 2001, though they are national interest actions.

The following were found concerning the analysis of the legislative framework and of the national programmes and strategies to prevent and minimise the effects of an earthquake and their harmonisation with European and international policies and standards:

Findings/Conclusions; (Legal Arrangement)

- *Inefficient lack of trained personnel prevents management from effectively carry out its functions and responsibilities.*
- *The legal framework includes norms lacking clear deadlines and which are not correlated. Only the norms issued after 2001 contain applicable provisions so that the Programme could be launched (the Methodological norms issued between 1994 and 1999 were repelled without generating effects);*
- *Neither were these legal provisions correlated in the instance of the legal regimen of the necessity dwelling places, since this Programme unfolds, at the level of Bucharest municipality, since 2000 and these dwelling places were regulated only in 2002 by the OUG no. 51/2002 on measures to support and speed actions to diminish the seismic risk involved by multi-floor buildings, under 1st rank seismic risk and which represent a public hazard;*
- *The buildings consolidation Programme is not consistent (structured according to floors and short – medium – long term implementation deadline);*
- *The norms do not provide for the measures, steps and actions to take in case owners refuse consolidation works which results in the blocking or indefinite postponement of the Program completion;*
- *The MDRT in the capacity as a Programme initiator and the UATMB, an entity involved in the process did not have a proactive role, since they did not notify all the inconsistencies and irregular situations and they should have drafted proposals to de-block the Programme;*
- *The main issues which were not regulated following modification in 2011 of the OG no. 20/1994, re-issued, are on the one hand the absence of a standard guiding cost of consolidation works so the final design and execution cost is no more contested by owners, and on the other the failure to establish a clear formula to calculate the amounts to be reimbursed by owners (a clear definition of the surface involved, respectively joint quotas of the common property to be calculated in keeping with the cadastral documentation and not the useful surface mentioned in the ownership deed);*
- *The modifications to the OG no. 20/1994, re-issued do not provide for the modality to recover the consolidation expenses of a state owned dwelling place which was sold subsequent to the final acceptance of the consolidation works;*
- *Though the consolidation programme is considered a priority for Romania, significant in the saving of lives and assets, with an emergency character, in practice the implementation is slow – some 1.4 buildings a year;*
- *The UATMB never implemented the provisions of art. 24 of OG no. 24/1994, re-issued, they did not draft any minute taking down the refusal by owners to take measures to make the building safe.*

Recommendations; (Legal Arrangement)

- *We recommended that Management look into the immediate and full implementation*
- *Conduct of a formal analysis, at the UATMB management, relating to the issues found by the Court of Accounts to establish the causes which generated deficiencies, perturbing factors, the way the management and executive structures participated in ensuring the observance of the regulations in force and to attain targets;*
- *Considering the very high risks in case of earthquake and the urgency of preventive measures, it is necessary to adopt medium and long term measures to set strict deadlines and budget rules and analyse the possibility to allot a share of the GDP or of local budgets.*
- *Establishing a detailed and complete framework with proposals to enhance, modify and complete the legal regulations in force, the presentation of the MDRT for adoption or the regulation, according to case, at the applicable competence level, relating to the following issues:*
  - *Given the emergency and national priority character, ordering legal measures to allow for the operation of law (instances of refusal of access in the apartment or to participate within the consolidation Programme).Since the aim of the consolidation programme is to limit human andmaterial loss, to de-block the programme, the possibility to unfold the consolidation programme free of charge, similarly to the blocks thermalrehabilitation, at thedecision-making level (Government, Parliament, local authorities). Besides the economic motivation, the consolidation programme mainly aims at the minimisation of human victims number in case of earthquake, while the funds involved are smaller than the ones used in the thermalrehabilitation programme. Furthermore, in the unfold of the consolidation Programme up to know, there results that many persons are exempt, being under therevenues ceiling set by law;*
  - *The general framework to set guiding standard cost for the consolidation works so that the final amount for design and execution may not be contested by owners;*
  - *Setting a clear calculation formula relating to reimbursements by owners (clear definition of the surface involved, respectively the joint quota of the common property which are calculated in keeping with cadastral documents and not the useful surface mentioned in the property deed);*
  - *The modification of OG no. 20/1994, re-issued, by providing for the modality to recover consolidation expenses relating to a state owned building which was sold subsequent to the final consolidation works acceptance;*
  - *Analysis of the possibility that the owners representative be a party in the design, execution contract, so as to directly inform the other owners on the content of all documents concluded relating to consolidation works;*

- *Urgently planning of the necessity dwelling places meant for the consolidation programme by adding access platforms for persons with disabilities, connection to utilities and other facilities (TV cable, internet, lift etc.);*
- *Provision of firm deadlines and of sanctions to diminish the execution delays and to keep prices under control;*
- *Enhance transparency based on the analysis of the possibilities to involve owners association in the contracting and unfolding of consolidation works;*
- *Provision of firm deadlines for acceptance and handing over of documents as well as sanctions and deadlines to remedy possible inadequate works.*

Organisation and Coordination Structure

The organisation, mobilisation and action of the entities involved after seism emergence. Plans, programmes, strategies grounding authorities' actions, the auditing of the expenses generated by these actions and of the internal and international aid received for disaster victims and to remove seism effects.

Findings/Conclusions; (Organisation and Coordination Structure)

- *At the level of all the UAT of Bucharest Municipality sectors a significant involvement in the emergency situations activities is noted, special attention being given to these activities;*
- *Though the CMSU should integrate all the entities with competences in emergency situations in Bucharest Municipality , this project is not known at the level of sector local Committees and at the level of certain entitiessubordinated or partners of the CGMB;*
- *All entities considered the collaboration with the ISUMB as being very good;*
- *The appreciations relating to plans, strategies etc. are generic, no UAT indicated which emergency plans – earthquake – are currently valid at the level of each sector and no preventive actions and population education in case of earthquake were specified;*
- *Though the management of the mayoralty considered the necessity to have a volunteers team at the level of BucharestMunicipality and a feasibility studywas commissioned in this respect, by the date of this audit no project implementation measures were taken;*
- *There are no internal procedures at the level of the UATMB to manage internal and international aids received forthe victims of a disaster or removal of the seism outcomes.*

Recommendations;

- *Considering that population is not aware of the possible impact of a disaster (major earthquake), it is necessary to increase the public awareness so as to diminish disasters negative effects. In this respect, all authorised institutions, the private sector and the NGOs need to coordinate and cooperate. Guidelines should be drafted on disasters, offering information and advice on the actions to be taken before, during and after disasters occurrence. A campaign should be launched to make population aware through programmes in which the civil society is involved as well.*
- *A higher involvement of the non-governmental sector is necessary in the development in schools (especially in the training and education units included in the rehabilitation programme with the World Bank) of programmes for emergency situations in order to establish, develop and spread educational materials to inform and make the public aware.*
- *Within the Management Centre, in the establishment of disaster preparation training plans, the issues of who and what shall do, where and when and how shall be clearly defined in accordance with the adequate staff training.*
- *The establishment of the municipal buildings record book, which shall include (besides technical and administrative data) for each individual building, an earthquake risk analysis at the same time with the land surveys and establishing the buildings reactions in the instance of a possible major earthquake.*
- *Introducing an internal procedure to manage donations which shall grant that the resources received reach the intended beneficiaries and subsequently make an analysis of the impact on the population and on the affected buildings as well as establishing the documents and recording and follow up of the amounts or assets offered, also indicating the persons in charge and provision of these obligations in the job description.*

Making Urban Area Resilient

❖ *The efficiency, effectiveness and economy of local and governmental programmes unfold to diminish the effects of a seism in Bucharest:*

In keeping with the data on the institution website, in Bucharest Municipality there are 741 buildings expert-apprised in keeping with the new norms in the field, at the end of 2011 they were assessed as follows: 112 buildings fall in the 1st rank seismic risk involving public danger and 260 buildings falling in the 1st rank seismic risk.

According to the data provided by the UATMB, in Bucharest Municipality 25 buildings were consolidated, of which 10 with own resources (by the owners) and 15 based on the consolidation programme financed from the state budget and from the local one.

Mention shall be made that 7 buildings were completed in the period 2003 – 2007, and the remaining 8 the works were completed in the period 2007 – 2011, currently there are 4 buildings in the consolidation process.

The analysis of the data on the built surface indicator shows that in almost all instances the increase of the value of the works performed were beyond 40%, which is accounted for by the pact that the technical projects and the charge books were not well grounded. This also generated the increase in the value of the indicator behind the calculation of the amounts to be reimbursed by each apartment owner.

The amount collected is relatively small in relation to the volume of the payments made by the UATMB for the design activity and for the consolidation of these buildings, but this is accounted for by the fact that over 50% of the persons owing reimbursements to the budget are exempted, since their income is below the monthly average salary at the national economy level.

In keeping with the Plan for sustainable development of Bucharest Municipality 2009 – 2012, under the chapter "Investment and rehabilitation of dwelling places infrastructure", the priorities of UATMB are the following:

"The Mayoralty of Bucharest Municipality intends, for the period 2009 – 2012:

- to make an expert appraisal of 10 – 15 buildings a year;
- to draft and contract 10 consolidation technical projects a year;
- to contract the execution of 10 buildings consolidation works a year;
- to complete de consolidations of the 112 buildings falling under the 1st rank seismic risk, with a height of over ground floor + 4 floors, built before 1940."

These indicators were not totally attained, technical expert appraisals were made and technical projects were drafted but relating to the consolidation works the ceiling of 10 buildings a year was not attained. The main reasons for the failure to attain the last indicator are the refusal of owners to cooperate, the applicable legislation which does not cover the settlement of the multiple conflict situations emerging during the consolidation process, as well as the fact that the municipality did not sanction – in keeping with the legal provisions – the owners who did not allow access of construction companies to perform consolidation works.

Findings/Conclusions; (Making Urban Area Resilient)

- ***The buildings consolidation is a very slow process – as of Programme launching in Bucharest Municipality and until the 31.12.2011, only 14% of the 112 buildings under the 1st rank seismic risk – a public hazard, according to the technical appraisal were completed. This way the Programme shall be implemented in about 100 years' time.***
- ***We consider that the consolidation programme was not efficient in Bucharest Municipality since the amounts allotted from the state budget were not integrally used, on a yearly basis only some 30% of the transfer's value was used.***
- ***UATMB did not enforce the provisions of art. 24 of OG no. 24/1994, re-issued – no minute was drafted ascertaining the refusal of owners to take steps to ensure the building safety.***

Recommendations;

- ♦ *Establishing medium and long term programmes for the buildings consolidation which would also include performance indicators;*
- ♦ *Establishing, approving and implementing internal procedures with precise deadlines and responsibilities and implementation modalities, which would rule out vulnerabilities, malfunctions and deficiencies and ensure;*
  - *the consistent observance and enforcement of the legal regulations in force;*
  - *increase the use of the funds allotted from the state budget through the MDRT;*
  - *drafting and approving significant performance criteria and periodical assessment of activity performance in keeping with the former;*
  - *Assignment by the General Mayor, through internal procedures, of the specialised staff with competence in finding and drafting of minutes taking down owners' refusal to ensure the building security;*
  - *In case courts issue Presidential ordinances, to allow building companies access in the apartments of owners refusing it, the UATMB shall enforce these ordinances through law enforcers and recover the expenses involved from the owners.*
- ♦ *Performance of an analysis, considering that 50% of the persons owing reimbursements to the budget are exempt, so as to identify alternative financing (UE funds, public – private partnership etc.), which would ensure consolidation of 1st rank seismic risk buildings which do not answer the technical criteria provided in the ordinance, so as include them in the programme, respectively those with a smaller height, occupied by persons with a very low income, but who are under the obligation to consolidate the buildings.*

❖ *In point of reporting the impact of programmes unfold by analysing the degree to which the set objectives were fulfilled: (Public awareness)*

Findings/Conclusions; ((Financial Structure/(Training Activities & Public Awareness)

- ➢ *The programme allows for the reimbursement of the financing in equal instalments over a 25-year period, the consolidation works unfold over a very long period of time, the monthly instalments to reimburse are hard to bear and the economic operators which conducted the works did not insure a good organisation of the site activity.*
- ➢ *Though information campaigns were conducted they did not attain their target – the audit team noticed that a large share of the population is not aware of the danger involved by not taking the measures to diminish seismic risk of existing constructions.*
- ➢ *Owners are generally contented with the consolidation works.*

- *Dwellers are generally not satisfied with the finishing works. Mention shall be made that this was not the target of the consolidation programme, the funds allotted could be used inside apartments only to correct damages made during the consolidationworks.*
- *The amount of the consolidation works was modified in all instances; it reached over 40% as compared to the initial value, which is unsatisfactory.*
- *Owners considered that the consolidation works duration was too long.*

Recommendations;

- *The Management look into the immediate and full implementation*
- *Establishing actions coordinated by the UATMB to educate, inform and make aware the population of the dangers they face if they do not take steps to diminish the existing buildings seismic risk;*
- *More attention paid to the selection of tender participants for the award of consolidation works contract relating to the professional qualification of the employees who execute the works*
- *A better grounding of the Project and of the indicators in the charge books which would insure the maintenance of the initial contract value and limit addenda;*
- *A clear provision in the legislation of the calculationmodality of the joint quotas, which would consider the overall property surface (useful surface + surface of annexes, loggias, balconies, garages).*

❖ *The organisation, endowment and financing of the structures, institutions and economic entities involved in the activity to prevent and fight seism effects and whether they reflect the objectives and are able to fulfil the pertaining strategic objectives:*

Management Tools Such as Geospatial IT Systems (G.I.S)

The UATMB coordinates the establishment of a consistent IT strategy at the level of Bucharest Municipality local public administration, follows up its implementation in keeping with the CGMB Decision no. 169/2005 on the approval of the IT Strategy for Bucharest Municipality local public administration.

To implement the IT Strategy through the specialised directorate, the Directorate for IT systems of the Operations General Direction establishes and implements the annual IT plan of the Bucharest Municipality local public administration.

The IT projects are currently in various stages (drafting, feasibility studies establishment, and procurement procedures organisation, implementation, completed) and are unfold based on the UATMB local budget, as well as on the external grants obtained from USTDA American governmental agency.

ROMANIA

The geospatial IT systems (GIS), the Urban Data Bank (BDU-M2N), the Annual Coordination Programme (E-PCA) and the Interactive Map for the general public (HIP) are part of the integrated IT System implemented within the UATMB.

The GIS IT system is implemented on a platform providing users with a set of software instruments for the collection, storage, sorting, transforming and displaying spatial data (GIS) from the real world in a format corresponding to the current work requirements within the UATMB.

Findings/Conclusions; (Management Tools)

- *The Bucharest Municipality local public administration IT Strategy was not developed and implemented in keeping with the set stages and periods – the deadlines initially approved by the CGMB were exceeded, the main shortcoming being the under financing.*
- *The entity management supported the initial implementation stage (strategy and budget allotment) which furthered the development of the GIS application, but currently there are delays relating the implementation and full use of the application at the level of all UATMB directorates;*
- *The GIS application, a component part of the SII, developed at the level of the UATMB is well structured, and the quality of the information contained could ensure - in case the system operates - reports, statistics, maps generation in a 100% percent, as required by management to develop action strategies for the prevention and intervention during and after disaster emergence;*
- *The following were achieved through the use of the GIS application: the response delay is reduced, information is updated and shared among the various directorates of the UATMB; they are mentioned in unitary system of the graphic, alpha numerical data and scanned ones, the concomitant and simultaneous use of this databy all users which rules out the time and effort to look through archives and performance audit documents preservation;*
- *As of the date of this audit, the GIS application does not contain all the information on existing town planning and technical networks, which are not traced on the application map, not all the postal numbers are recprded, especially in the newly built areas; the data basis containing the information to be provided by the other institutions (sector mayoralties, tax administrations, charges and taxes directorates, utilities providers etc.) is not updated;*
- *The internal users (UATMB employees) considerthat the GIS application improves the activity mainly due to the fact that it provides updated information, shared among various UATMB directorates. The main shortcoming is the failure to feed data into this data basis (currently some 40% of the information is loaded);*
- *External users show that the current use of the GIS application may be improved by involving all utilitiesproviders in the data centralisation process on the utilities networks in the UATMB GIS and the updating of the postal numbers by the PMB;*

- ***Though the IT Strategy on Bucharest Municipalitylocal public administration aims at establishing a communication between the Integrated IT system of BucharestMunicipality local public administration (GIS included) and the existing IT system at the level of the central public administration, self-managed companies in Bucharest, where a data and information transfer is necessary, the GIS application is not known and used by most sector UAT and some of the public services under the CGMB.***
- ***Given the failure to load the data bases with all the information required for the optimal operation of the GIS application, it is not possible to analyse and assess risks in case of disasters (major earthquakes in Bucharest municipality),the known dangers and potential disaster sources are not highlighted on maps to allow for decision making and drafting better plans. This issue is important to insure efficiency and effectiveness.***

❖ *The organisation, endowment and financing of the activities to manage emergency situations at the level of the UATMB: (Financial Structure)*

The Direction for Defence, Civil Protection within the UATMB ensures the management of the civil protection measures and the management of the emergency situations on the territory of the capital, both during peace and upon mobilisation in time of war.

From the analysis of the data reported through the execution accounts concluded at the end of the budget exercise in the period 2007 – 2011, there results that the amounts allotted for the Directorate for Defence, Civil Protections are insignificant; it results that for the UATMB the allotment of budget credits for emergency situations is not a priority, the average amount of payments made is only 0.08% of the total at the level of the municipality.

In the period 2007 – 2011, UATMB, through the Directorate for Defence, Civil Protection, acquired and transferred for use to the ISUMB assets amounting to 7,793,032 lei, of which 7,547,165 lei fixed assets and 245,867 lei stocks (as of 31.12.2011).

Given the absence of the necessary funds for the adequate endowment of the ISUMB, alternative solutions were sought at the level of the UATMB; the agreed solution was access of UE funds through the Regio Programme/3rd Priority Axis/the 3.3 Major intervention domain – "Enhancement of the endowment of operational bases for emergency situations intervention with equipment".

Findings/Conclusions; (Financial Structure)

- *The UATMB was involved and played an active part in the organisation, endowment and financing of the emergency situations related activities in the sense that alternative situations were sought to finance the material basis for interventions in case of disasters;*
- *The financing of the material basis required by the ISUMB to unfold the current activity is atypical, in the sense that the state budget is releaved of the material and capital expenses in the detriment of local budgets. The issue here is the legislation which does not impose a quota of the GDP or of the local/municipal budgets to be allotted exclusively for emergency situations;*
- *Considering that ISUMB is not under the CGMB, it may notestablish a medium and long term strategy for local public funds requirements to make expenses that would ensure a material bases for the adequate operation of the ISUMB in case of disaster.*

Recommendations; (Financial Structure)

- *The risks associated to critical infrastructures need to be adequately identified and managed. To consolidate critical infrastructures by minimising risks affecting the, the cooperation between the UATMB, UAT sector 1 – 6 and especially with the management of the regies and companies which administer critical structures and the managers of local interest private companies are key factors.*
- *Using the GIS technology in the assessment of natural hazards, to identify areas more prone to dangerous natural phenomena. This in combination with the information on natural resources, population and infrastructure make possible to assess the natural hazard risk and to identify critical elements in high risk areas. This information may be further used to establish less vulnerable development activities and/or strategies to mitigate vulnerability at acceptable levels.*
- *To efficiently approach GIS we recommend a permanent UATMB management involvement and the establishment of an internal working group, which would create a general strategy on technical details (setting important technical stages, the relation between them etc.), financial aspects, the general works chart, objective setting, loading data bases and mediatisation of the former and others.*
- *Furthermore, we consider important to design a geospatial information inter-institutional exchange mechanism. The Mayoralty should provide for data collection at regular intervals, in keeping with agreed rules, of the individual data set from each participating institutions, which they would subsequently assemble in a common data packages to be distributed to all partners.*
- *Subsequent to validation of the data in the GIS, we recommend establishing maps of area hazards and their use in the disaster prevention activities (major earthquake).*

Audit Objective

The main objective of the audit is to evaluate the efficiency and efficacy of the programmes and measures taken both to prevent and remove the flood effects on the Romanian territory where there is the risk of floods. The audit will focus on whether budgetary resources allotted for the management of emergency situations have observed the principles of economical spending, efficiency and efficacy of use, as well as their impact on the reduction of the effects for floods.

The specific objectives are:

- The review of the legislative framework and of the national programs and strategies on the line of preventing and limiting the effects of an earthquake/ floods, their alignment to European and international standards;
- The model for the organization, endowment and financing of the structures, institutions and companies involved in the activity of preventing and fighting against the effects of earthquakes/floods, whether they comply with contemplated purposes, and whether they are able to meet strategy objectives in the field;
- The efficiency, efficacy and economical character of the local and governmental programs unfolded in order to reduce the effects of a seism in Bucharest and the effects of the floods in Romania;
- Reporting on the impact of the unfolded programs by analyzing the extent to which the proposed objectives have been attained;
- The manner of the entities involved after the occurrence of the earthquake of organizing, mobilizing and acting. Plans, programs, strategies regarding the actions of the authorities, the manner of auditing the expenses generated by these actions and the domestic and international aid received for disaster victims or the removal of the effects of the seism/floods.

Audit Methodology

Under the light of the guidance of the international documents such as "the performance audit guidelines" drafted by the Romanian Court of Accounts, which ensures compatibility with the accepted international audit standards (INTOSAI) and "ISSAI 5510: Audit of risk reduction" prepared by the Turkish Court of Accounts within the INTOSAI Working Group on Accountability for and Audit of Disaster-related Aid (AADA);

➢ Examination of;

- All legal and administrative arrangements, particularly laws on transformation of disaster risk areas, and related by-laws;
- Development Plans, Medium-Term Programs, Annual Programs, Government Programs;
- Meeting minutes and decisions of the boards specified in the law of coordinator entity;
- Entities' budgets, documentation related to financial resources and documents pertaining to resources allotted to disaster training;
- "National Strategy for Disaster Management" and "the Plan for Analysis and Coverage of Risks", accountability reports and audit reports of entities
- Disaster and emergency plans, civil defence plans of provinces/towns;

- Plans, training and other materials of coordinator entity, Ministry of Education;
- Internal and external correspondences;
- Reports and other documents produced by correspondences of coordinator entity and relevant NGOs;
- Publications and documents of associations, professional organizations and academics.
- The information systems of coordinator entity, the Ministry concerning environment and urban development and the local information systems, hazard maps and contingency plans;

➢ Observations on the site as to the consistency of plans with actual situation; Physical structure and technical infrastructure through observation

Audit Criteria

The common criteria specified in the international parallel/coordinated audit are used. Additionally, the specific criteria are specified.

➢ As regards the legal framework and the observance of specific legislation,

- Common and specific legislation in force, regulating the activity of the audited entity;
- Internal norms issued when enforcing the legislation in force;
- Contractual requirements;

➢ As regards the level of the performance of the programs unfolded in order to reduce floods risks:

- Standards in this field and performance indicators;
- Applying the principle of the good practice in the field;
- Regulations issued by IGSU, MMP and internal regulations;
- The law of public acquisitions, cost standards, etc.
- Safety standards and relevant indicators in constructions and urbanism;
- Performance objectives and tasks presented in the strategies and programs unfolded in the field of preventing and managing the effects of disasters.

The establishment of these audit criteria has been done with a view to minimizing the subjective assessment of the issues that make the object of the audit. By relating to the selected criteria, the audit contemplates to analyze:

- The degree of cooperation between institutions, the identification and removal of double responsibilities
- The degree of achieving the indicators set for each program;
- The availability of the services and the response time in emergency situations;
- The degree of accessing local and EU funds;
- The way IGSU, through policies/ procedures/strategies, acts in emergency situations generated by floods, in the field of prevention as well as in the field of intervention once produced the disaster ;
- The way the National Administration "Romanian Waters" acts according to its responsibilities established by the law in preventing the floods;
- The manner of accessing international aids.

Identification of the Characteristics of the Disaster

According to the studies on the global incidence of such a risk, of all types of natural disasters, floods were proven to have the highest incidence in the period from 2000 through 2009. According to the data provided by the Insurance Supervisory Commission, Romania's flooding risk is 0.40%, the highest in Europe and four times the risk in Italy, Belgium or Great Britain. In the period 2005 – 2012, our country was affected by 4 major floods. One of them caused significant damages occurred in 2008.

In July – August 2008, the Romanian territory was affected by floods caused by massive rains and powerful winds. In the counties of Bacau, Botosani, Iasi, Maramures, Neamt and Suceava, 309 cities and villages were affected. As a consequence of these phenomena, there were registered 28.000 evicted persons, 3.000 temporary isolated and 7 deceased. Out of 8.700 destroyed households, a number of 1.100 could not be rebuilt, being affected 1.600 km of roads.

The flood registered in June-July 2010 has a severe impact on lives, health and material goods of the population through duration, strength and the effects. 481 cities and villages plus other 92 (where agricultural fields were affected) from 37counties were affected. Raise of the risk factor for the population imposed the eviction of approximately 20.000 persons in cities and villages from 20 counties and declaration of the alert colour of 37 cities and villages the Iasi, Ialomita, Suceava and Tulcea counties. Statistics of the events showed that 3.000 persons were temporarily isolated, 30.000 households were affected, 23 persons died.

The causes of floods on the Romanian territory are:

- Hydrographic basin on the Romanian territory is large, the Danube one providing a supplementary risk;
- Pollution generated by human activities, which led to substantial climate changes, the greenhouse effect and global warning;
- Severe mitigation of the forests as consequence of irrational cutting;
- Setting of the cities and villages and of social and economic objectives in the flood areas;
- Inefficient works against floods.

The floods occurred in the last 5 - 10 years and the consequences thereof have led to a new approach, given the increasing social responsibility, namely the flood risk management approach, according to which the awareness and involvement of the human communities have an essential role in avoiding the loss of human lives and reducing damages.

Unfortunately, the almost annual frequency of the floods on the Romanian territory showed that the areas directly affected mainly face with:

- A long time needed to resume the operation of vital systems (electricity water);
- Large number of people in distress;
- Food, potable water and proper equipment needed;
- Support to families of the dead, as well as to families of people with disability.

Given the aforesaid, we believe the selection of the theme regarding the programmes and measures to prevent and remove the consequences of the floods on the Romanian territory is relevant and of concern for the relevant authorities as well as for the public.

Legal Arrangement and Governance Structure

The legal framework regulating the floods on the Romanian territory relies on the following normative documents:

- Water Law No. 107/1996, as further amended and extended;
- OMAI (Order of the Ministry of Internal Affairs) No. 638/2005 and OMMGA (Order of the Ministry of the Environment and Water Management) No. 420/2005 approving the Rules on the management of emergencies caused by floods, hazardous weather, accidents during hydro-technical constructions and accidental polluting;
- OMAI No. 1474/2006 approving the Rules on planning, organising, preparing and carrying out the emergency prevention activities;
- Government Decision No. 846/2010 approving the medium and long term national flood risk management strategy;
- Mutual Order No. 1240/1178/2005 of the Ministry of the Environment and Water Management and the Ministry of Internal Affairs regarding the approval of the Prefect's Handbook on management of flood emergency situations and the Mayor's Handbook on management of flood emergency situations;
- Government Decision No. 1268/2004 regarding the General Plan of preventive measures to avoid and reduce the consequences of the floods;
- Government Decision No. 447/2003 approving the methodological norms on the preparation and contents of the landslide and flood natural risk maps;
- Law No. 575/2001 approving the national land planning – natural risk areas;
- OMAI No. 736/2005 regarding the establishment of the permanent guarding service in all city/town/village halls in the areas exposed to the imminent risk of emergency situations;
- Mutual Order No. 823/1427/2006 of MMGA and MAI approving the weather and hydrological cautions and warnings encoding procedures;
- OMMDR No. 976/2008 on approving the Methodology to determine which torrential drainage basins contains human establishments exposed to the risk of fast breakthroughs;
- Law No. 260/2008 on mandatory home insurance against earthquake, landslide and floods;
- Government Decision No. 547/2005 approving the national civil protection strategy;
- Government Decision No. 762/2008 approving the national emergency prevention strategy.

Some similarities were found between the existing normative acts referring to the fact that the organisation and operation of some of the components of the National Emergency Management System are established under norms issued before the legal establishment thereof. Thus, although the emergency services were established in 2002 – with the enforcement deadline of the Government Ordinance No. 88/2001 regarding the establishment, organisation and operation of public community emergency management services, The General Inspectorate for Emergency and subordinated territorial units were not established and

operated as united fire and civil protection units structured until the end of 2004.

Pursuant to the Government Decision No. 1489/2004 on the organisation and operation of the National Commission for Emergency situations, the information and decision flow of the National System for Emergency situations Management is presented in the following chart:

Information and Decision Flow (In the National Emergency Management System)

Prime Minister	Relevant international authorities
Minister of Administration and Internal Affairs	General Inspectorate for Emergency Situations
National Committee for Emergency Situations	National Operational Centre
Ministries or heads of the central public administration authorities	Operative centres Emergency Call Centre 112
Ministerial committees for emergency situations	
Prefect of the Bucharest	Bucharest Inspectorate for Emergency Situations
Bucharest Committee for Emergency Situations	Operational Centre
County Prefect	County Inspectorates for Emergency Situations
County Committee for Emergency Situations	Operational Centre
Mayor	Operative Centre
Local Committee for Emergency Situations	
Emergency Cell	

The analysis of the legal framework that regulates the emergency situations caused by floods showed that the related legislation is not simple, the normative acts in force does not cover all aspects generated by such emergency situations (recovery, rehabilitation, reconstruction activities), and the competent individuals believe that complicated, not correlated, inefficiently structured legal framework leading to bureaucracy can only create confusion.

Findings/Conclusions; (Legal Arrangement)

- *The legal framework regulating emergency situations is very branchy (there is one or more regulations for each component, part of the National System for Emergency Situations Management), not correlated and engenders bureaucracy.*
- *The uncorrelated and ineffectively structured legal frame, regulating the emergency situations generated by floods is not facile and easy; and besides induces bureaucracy and creates confusion.*
- *The legislation in force does not cover the management of the activities involving rehabilitation, reconstruction and subsequent risk mitigation.*

- *Strictly relating to the IGSU, there is no an unitary regulatory framework: this entity conducts its activity based on two organic laws, respectively the Law on civil protection and the Law on fire fighting and protection.*
- *The great number of normative documents regulating the field of flood prevention and relief existing at the level of the Ministry of the Environment and Forests reveals the existence of a complex legal frame, and the permanent necessity for legislation modification/adaptation demarches, generated both by the necessity of perfecting the existing legal frame, and by the transposition within the Romanian legislation of the various European standards.*

Recommendations;

- *Establishment of a consistent regulatory framework on emergency situations at national level and concerning the IGSU – the drafting and adoption of a law regulating its whole activity.*
- *The establishment of an authority with competences in the management of rehabilitation, reconstruction and subsequent mitigation of risks.*

Organisation and Coordination Structure

The prevention of emergency situations is part of the national security system and represents an integrated set of specific activities of technical and operational nature, planned and carried out in order to eliminate/ reduce disaster risks.

According to Annex No. 3 to the Decision No. 2288/2004 on approving the allocation of the main support positions covered by the ministries, the other central bodies and non-governmental organisations acting to prevent and manage emergency situations, the duty to manage the hazardous meteorological phenomena risk lies with the Ministry of Environment and Water Management, and the duty to provide support during the floods lies with the Ministry of Administration and Internal Affairs.

As regards the responsibilities of the Ministry of Environment and Forests concerning flood preparedness are the following:

- To have the local, county and basin flood defence plans approved by the Ministerial committees of the Ministry of Environment and Forests;
- The warning and alert plans prepared by the dam holders must be endorsed by the Water Directorates and County Inspectorates for Emergency and approved by the Ministerial committees;
- To prepare the national strategy for defence against floods, hazardous meteorological phenomena, accidents during the hydro-technical constructions and accidental polluting;
- Makes proposals every year as regards the insurance by state budget of the financial means needed to cover the expenses for the setup and renewal of the material and defence means stocks needed for flood management as well as to execute the new flood defence works or to rehabilitate works affected by disaster;
- Coordinates and supervises the execution of the hydro-technical works for defence based on a uniform view;

- Coordinates on a national level the flood defence activity, follows-up on the hydrological and meteorological information and forecasts sent to stakeholders;
- Initiates the preparation of or amendments to the normative acts in the flood defence field.

In terms of how such duties are fulfilled, the audit team retained that a number of inspections are conducted throughout the year, which help the Ministerial committee for emergency to monitor the information and decision flow to warn the population, the collaboration among all structures involved in the flood management, the extent to which the works holders and those in charge of flood management are aware of the flood risk management procedures.

They also organise flood drills within the drainage basins area, which are intended to optimise the response and the collaboration between all the structures involved on county level in the flood management. Following such inspections, the weaknesses are detected and measures are taken, the implementation of which is followed up until the next inspection.

The Ministry of the Environment and Forests fulfils its attributions established by law in the field of the emergency situations generated by floods, by means of the verifications performed by mixed commissions or by commissions belonging exclusively to MMP. All the prevention activities are monitored, and the defective aspects are recorded in protocols, by which measures have been instructed and implementation deadlines established.

Findings/Conclusions; (Organisation and Coordination Structure)

- *The mobilization and the actions of the authorities involved during and post- the occurrence of floods; the efficiency of the operative coordination and mobilization measures during the occurrence of floods, as well as the assessment of the evaluation method for the damages caused by floods; the evaluation of the relief measures concerning the effects of floods*
- *In the field of the emergency situations management there is no structure that integrates the activity of all the state institutions and ensures the uniform coordination and management of the interventions during emergency situations, until the normality is restored.*
- *Maintaining the operation of obsolete machinery results in significant human efforts and additional materials consumption, because of the insufficiency of funds for purchasing the necessary spare parts;*
- *The defective endowment with intervention means, IT and communication facilities and protective equipment, existing within the units of the IGSU structure, as a consequence of the deficient State budget financing, leads to perpetuating the use of technical equipment and materials with an outdated lifespan and affects the efficiency andeffectiveness of the intervention actions, also generating a longer response time, as well as an additional consumption of material and human resources.*
- *Some of the measures were not implemented within the established deadlines, the motivation invoked by the representatives of the audited entities referring to the insufficiency of the financial resources.*

National Strategies and Action Plans

The medium and long term national flood risk management strategy approved by the Government Decision No. 846/2010 resulted from Romania's obligation as member state of the European Union to implement the Directive 2007/60/EC of the European Parliament and of the Council on the assessment and management of flood risks.

The objectives of the strategy are economic, social and environment-related.

The *economic objectives* envisage the protection of the economic infrastructure against floods and the guarantee to make use of the economic opportunities of future generations.

The *social objectives* focus on the protection of the population and human communities against floods by ensuring a reasonable level of protection against breakthrough risks.

The *environmental objectives* are intended to maintain the balance between the economic and social development and the environmental conservation/restoration.

Shortly, the general objectives of the Medium and Long Term National Flood Risk Management Strategy are the following:

- to increase the quality of life by reducing the damages caused by floods;
- to make proper use of the resources to execute, maintain and operate the infrastructures and measures to reduce the flood risk;
- to maintain the proper economic activities in the areas exposed to flood risks;
- to reduce the impact of the flood by cutting down the number of casualties among the population and animals exposed to the flood risk;
- efficient control of the land use by placing an interdiction to erect new buildings and carry out activities in areas frequently exposed to flood risks;
- to improve the collective response to flood emergency and strengthening the capacity to adapt and recover from the event as soon as possible;
- to create a legislative framework to stimulate the participation of the private sector in the flood risk management, including professional groups and the population (getting information through the flood insurance system or other economic facilities identified).

Further plans (flood defence plan, warning-alert plan, the plan on ensuring the material means for flood defence) have been discussed. IGSU defines the "General concept of planning, preparing, organising and carrying out the emergency response actions", according to which the flood prevention and management measures are implemented based on the Analysis and Hedge Plans, Cooperation Plans and Flood Defence Plans prepared for each county/Bucharest. Based on the actual conditions on the Romanian territory, the probability of floods has been analysed, looking at how the normal way of life in the communities can be affected, and 12 hypotheses are identified depending on the drainage basins on the Romanian territory. At the same time, several scenarios were created, which depend on the extent and gravity of events.

Findings/Conclusions; (National Strategy)

- *During 2009 – 2011, IGSU failed to complete the elaboration and to submit for adoption to the Government the project of the National Plan for the provision of the human, material and financial resources for emergency situations management, thus failing to ensure the implementation of the normative background in force regulating the field of the emergency situations (OUG no. 21/2004, Law no. 481/2004, etc.).*
- *The plans drafted at local level are approved and assimilated by the IGSU territorial structures, without ensuring, in all cases, their updating.*
- *The warning and alarm plans are not drafted / updated in every case at local/county level.*
- *The implementation of the Medium and Long Term National Flood Risk Management Strategy and of the Action Plan approved by HG no. 846/2010, comprising the activities scheduled to be performed during 2010-2035, is permanently monitored by the Authority for Floods and Water Management within the Ministry of the Environment and Forests, no delays being determined by the present timeand the approved implementation planning being complied with.*

Recommendations;

- *Permanent updating of these plans in relation to the new identified risks.*

Management Tools Such as GIS, GPRS, GPS, Early Warning Systems

The IGSU has not implemented the GIS application. GPS subsystems are used efficiently on ambulances, and TETRA terminal equipment is used 30% of the total requirements.

The Ministry of the Environment and Forests uses GIS. In terms of meteorological and hydrological equipment, the Ministry of the Environment and Forests operates SIMIN and DESWAT. Also, the flood defence plans contain inundable stripes, placed on the watercourses based on the maximum levels recorded on GIS.

In 2004 the Loan Agreement no. 4736 RO between the Government of Romania and the BIRD was signed, one of its objectives being the establishment of the IT System for the Management of Emergency Situations, the initial completion deadline of which was June 2009.

Findings/Conclusions; (Management Tools)

- *Though a legal framework to implement the integrated IT system was provided as early as 2004, it was not completed even to date, so that the IGSU did not have and does not have an instrument to operatively insure complete, correlated and real time information required to prepare and unfold intervention actions to prevent and remove floods effects.*
- *The data recorded in the final damages evaluation reports elaborated by the different components of the National Emergency Situations Management System are not correlated; consequently, the other institutions within the national system do not use the same data as those officially presented by MAI-DGRIP.*
- *At a national level, there is no unitary approach of the data use and reporting system regarding the (physical and material) damages caused by floods, in order to determine the actual and exact dimension of the damages caused by this type of natural hazard and to instruct de necessary and appropriate measures in order to eliminate the negative effects of floods.*

Recommendations;

- *Provision of the measures required to respect the integrated IT system implementation deadlines and setting into function according to the project terms.*
- *Creating an unique database containing all the relevant data regarding the damages caused by floods, as well as appointing a structure in charge of managing the national database, in order to ensure the existence and use of the same data by all the entities within the National Emergency Situations Management System.*

Training Activities and Public Awareness

IGSU carries out public information and awareness campaigns as follows:

For the Firemen Day and the Civil Protection Day, respectively, in 2009 and 2010, the following brochures have been printed: „Supravietuitorii la incendiu, la inundatii, la cutremur", "Stii ce ai de făcut?", "Protejează-ti locuinta!", as well as calendars: "Ce-ar fi dacă? Cum să ne descurcăm si să fim buni cetăteni în situatii de urgentă?", each in 500 copies that were sent to the county emergency inspectorates in order to be disseminated in schools / to the public.

In the period December 2008 – December 2011, a preventive campaign was carried out in the General Inspectorate for Emergency Situations titled "O casă sigură – o viață în plus" (A Safe House – A Life Saved), which was organised on three projects, the last of whom is called„Mod de comportare în caz de inundații" (Conduct in case of flood).

According to the "O casă sigură – o viată în plus" preventive campaign report, (annex no.) carried out in IGSU, focussed on the 3 major national risks (fire, earthquake and flood), 23,644 informative and education activities were carried out; 2,250,000 people, of which 1,261,000 children attended such activities. The average number of events/county is 563 and the average number of participants was 53,848/ county.

Following the "Mod de comportare în caz de inundatii" campaign, the expectations of IGSU were the following:

- The local communities, especially those located in areas exposed to flood risk should become aware of the risks they are exposed to, know the ways to reduce or eradicate the effects thereof;
- The citizens should know the meteorological and hydrological codes;
- The citizens should the proper conduct to employ both during and after the flood.

Findings/Conclusions; (Training Activities & Public Awareness)

➢ *The reviews of the documents concerning the preparation/ prevention campaigns performed by territorial structures of IGSU, on flood risk, revealed that the calendar of the campaign do not include a stage of evaluations of degree of achievement of established objectives.*

Recommendations;

♦ *The calendar of the campaign will include a final stage regarding the degree of achievement of established objectives comparing with the results of events (generated by emergency situations).*

Financial Structure

The Ministry of the Environment and Forest, the "Romanian Waters" National Administration, respectively, entities in charge of safe maintenance of the hydro-technical constructions, which is a main duty as to flood preparedness/prevention on the Romanian territory, spent the following amounts by funding sources in 2009-2011:

"Romanian Waters" National Administration (Thousand Lei)

Pos.	Funding source	Year 2011	Year 2010	Year 2009
1.	State budget	161,910	179,587	198,177
2.	Self-funded	87,514	16,406	19,992
3.	Repayable grant	450391	438,304	439,392
4.	Environmental fund	399,753	251,668	-
5.	EU Solidarity Fund	20,858	-	-
6.	SOP Environment (EU)	120,636	7,455	-
7.	TOTAL	1,241,062	894,420	657,561

Ministry of the Environment and Forests (Thousand Lei)

Pos.	Funding source	Year 2011	Year 2010	Year 2009
1.	State budget	615,634	634,910	475,290
3.	Repayable grant	520,468	510,576	426,920
6.	External non-repayable grant, Sectoral Operational Programme "Environment" (EU) + PHARE	110,067	7,455	-
7.	TOTAL	1,246,169	1,152,941	902,210

Findings/Conclusions; (Financial Structure)

- ***Although the global amount of the investments included in the annual planning of the Ministry of the Environment and Forests have increased from one year to another, during 2009 - 2011, the amounts corresponding to the investments financed from the state budget and from external refundable funds are extremely high, compared to the amounts corresponding to the investments financed from external non-refundable funds.***

Recommendations;

- ***Increasing efforts (Ministry of the Environment and Forests) on the part of the audited entities in order to:***
  - *Attract external non-repayable funds to finance the investments, which are insignificant as compared to the repayable and budget funds;*
  - *Review / use of the investment prioritisation criteria to lead to the efficient, cost-saving and effective use of the funds regardless of the funding source, ant at the same time reducing the number of the investments not completed.*

Making Urban Area Resilient

The main preventive activities included in the flood management, according to the Government Decision no. 1854/2005 are, inter alia, meant to reduce the damages caused by floods by: *"avoiding to erect houses and social, cultural and/or establishments in the potentially inundable areas and including such data in the city planning documents referring to the outcomes of previous floods; tailoring the future developments to the flood risks; promoting proper practices on using the lands and arable land and forest lands; identifying the details, the geographic boundaries of the areas naturally exposed to flood risks on the administrative-territorial unit, registering such areas in the general city planning and including specific measures on flood risk prevention and mitigation, constructions and land use in the city planning rules."*

The responsibilities regarding the city planning plans and programmes and having the inundable areas included in such plans pertain to the administrative-territorial units that prepare the same and supervise the city development based thereon.

The inundable areas are also included in the Flood defence plans, prepared for each commune, city/town, county, drainage basin and approved by the ministerial committees of the Ministry of the Environment and Forests.

Findings/Conclusions; (Making Urban Area Resilient)

- *Though there is a legal framework regulating the location of economic and social objectives on rivers' major beds, the intervention reports for the years 2005, 2008 and 2010 drafted at the level of the IGSU show that still exist building and construction in floodable areas.*

Recommendations;

- *The entities competent in the supervision of legal provisions observance in water management shall be requested to verify all constructions located in floodable areas regarding the existence of all legal advices and authorizations.*
- *Instruction of measures by the management of IGSU, in order to ensure the fulfillment of the legal obligation of coordinating the annual planning of the necessary resources for the management of the emergency situations at national level, either by the annual elaboration of the draft plan for the provision of the human, material and financial resources for such situations and its submission for adoption to the Government, or by the substantiation and promotion of a legislative modification resulting in ensuring the necessary resources for the prevention and management of the emergency situations at national level.*

Abbreviations

BDU: Urban Data Bank

DESWAT: Hydrological Forecast System Demonstrated and Ready for Operation

E-PCA: Annual Coordination Programme

GDP: Gross Domestic Product

HIP: Interactive Map for the General Public

IGSU: Romanian General Inspectorate for Emergency Situations

IT: Information Technology

MDRT: Ministry of Regional Development and Public Administration of Romania

OMAI: Order of the Ministry of Internal Affairs

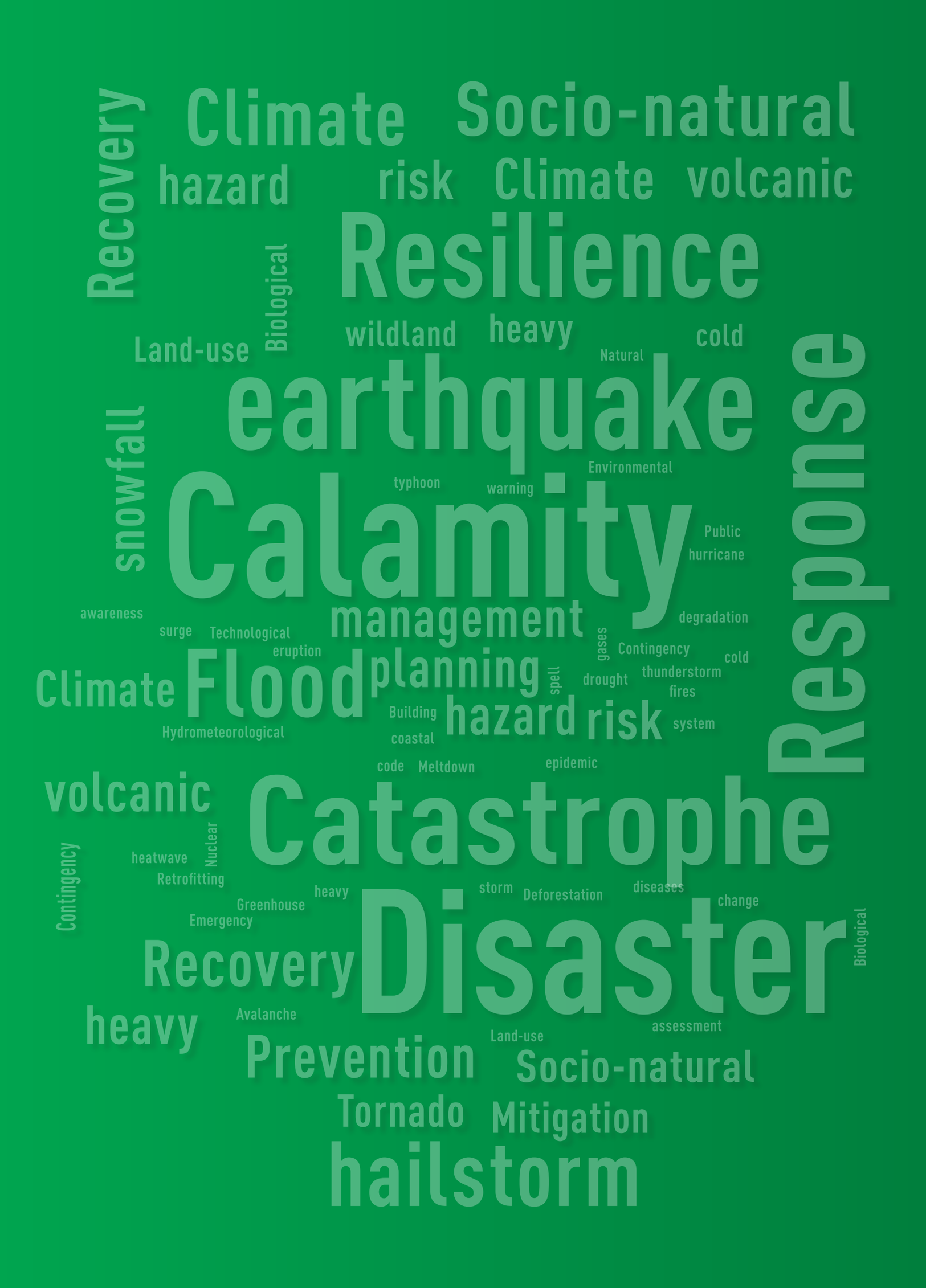
OMMGA: Order of the Ministry of the Environment and Water Management,

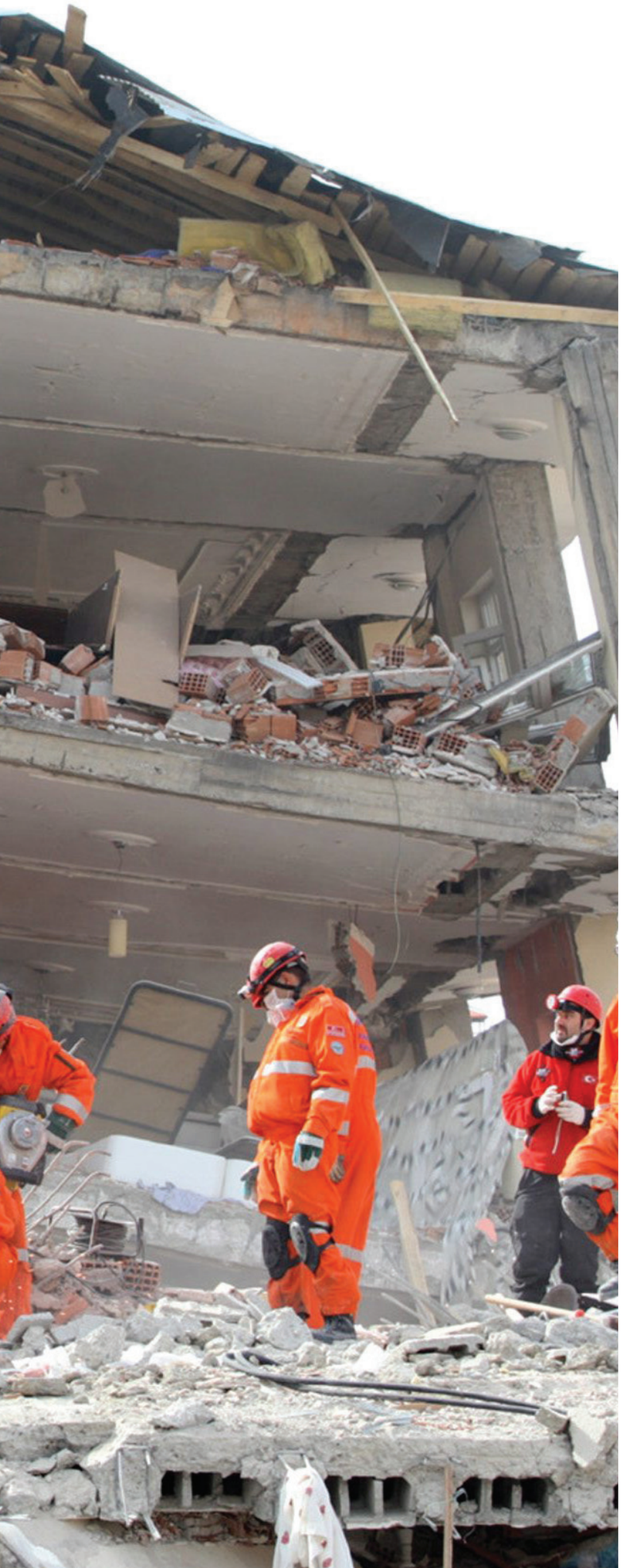
SIIE: Integrated System for Emergency Information

SIMIN: National Integrated Meteorological System

UATMB: Territorial Administrative Unit of Bucharest Municipality

USTDA: The U.S. Trade and Development Agency


Recovery
Climate
Socio-natural
hazard
risk
Climate
volcanic
Resilience
Biological
wildland
heavy
cold
Land-use
Natural
earthquake
snowfall
Environmental
typhoon
warning
Calamity
Response
Public
hurricane
awareness
management
degradation
surge
Technological
eruption
gases
Contingency
cold
Climate
Flood
planning
spell
drought
thunderstorm
fires
Building
hazard
risk
system
Hydrometeorological
coastal
code
Meltdown
epidemic
volcanic
Catastrophe
Contingency
Nuclear
heatwave
Retrofitting
heavy
storm
Deforestation
diseases
change
Greenhouse
Emergency
Disaster
Biological
Recovery
heavy
Avalanche
assessment
Land-use
Prevention
Socio-natural
Tornado
Mitigation
hailstorm



TURKEY

Turkish Court of Accounts

Disaster Risk Reduction Activities

Audit Objective

The main objective of this study is to contribute to the improvement of the activities concerning disaster risk reduction. In this framework, it is expected that this audit study will add value to the following areas;

- Policy-making for the development of strategies, plans and activities that will prevent natural events from turning into disasters;
- Effective planning of disaster risk reduction;
- Clearly defined authorities and functions of relevant entities, preferably in the legislation;
- Greater coordination among entities involved in disaster risk reduction;
- Installation of information systems like early-warning, GIS, etc. in a manner to form a sound ground for disaster preparedness;
- Planned, effective and efficient awareness raising and training activities,
- Allocation of funds according to planning priorities and consequently, the economic and effective use of public funds;
- Development of a land-use plan and its implementation with due care to disaster risks;
- Ensuring that the Law on the Transformation of Disaster-prone Areas is used as an instrument that serves to the purpose of disaster risk reduction.

Audit Approach/Scope

In this audit study, we adopted the "top-down approach" which can be accepted a classical approach for performance audit. In this framework, we searched for what the principal government/parliamentary policies and the aims and objectives of public entities are. Certain matters such as urban transformation required adoption of an audit approach grounded on the needs and expectations of citizens, which we call as "bottom-up perspective" in performance audit. For that reason, we tried to adopt both bottom-up and top-down perspectives in our audit study. Moving from these, we designed the audit matrix including main questions, sub-questions, criteria, and methodology.

In Turkey, different types of disasters are experienced and there are a number of entities responsible in this area. In this audit study, we tried to audit the activities fulfilled between 2009-2012 in a manner to cover all institutions, primarily the Prime Ministry General Directorate of Emergency Management of Turkey (AFAD) and the Ministry of Environment and Urban Development that are involved in the activities concerning disaster risk reduction. Since there are disaster risk reduction activities only for earthquake and flood, we gave more emphasis on these disaster types in our audit study.

In the examination, the following main questions were used as a frame:

- Are the organizational structure and strategies for disaster preparedness adequate?
- Are the preparatory works for emergency response adequate?
- What is the extent to which residential areas are prepared to disasters?

TURKEY

Audit Methodology

Examination of documents and files: Documents, files and projects of the period between 2001 and 2012 were examined at institutions and organizations within the scope of coordination, particularly in the Prime Ministry General Directorate of Emergency Management of Turkey (AFAD) and the Ministry of Environment and Urban Development. In AFAD, the monitoring and evaluation works related to disaster risk reduction during 2002-2011 were examined. We evaluated whether the relationship between the entities under coordination and the coordinating entity was sound for the proper conduct of activities for disaster risk and damage reduction.

Additionally, the connection between the plans and the budget were assessed along with the expenditure documents related to retrofitting and construction works and other documents.

Literature review: The publications and documents of associations, national and international professional organizations and academicians were reviewed.

Interview: Face to face interviews were made with the officials of the entities, academicians and NGOs. Interviews were conducted particularly in the Prime Ministry General Directorate of Emergency Management of Turkey, the Ministry of Environment and Urban Development, Directorates of Emergency Management, municipalities and other entities concerned.

Focus group meetings: The meetings were held with the personnel of AFAD, the Undersecretariat of Treasury, State Planning Agency, universities and relevant NGOs and so.

On-site visit & Observation: The activities of the municipalities and the provincial disaster and emergency directorates were audited at several provinces including Istanbul, İzmir, Edirne and Van. The retrofitting and construction works through sampling were examined in Istanbul.

Checking and testing the information systems: Examination on the information systems of AFAD, the Ministry of Environment and Urban Development, municipalities and other entities concerned; and besides comparing and testing data.

Analysis: The ongoing and finalized urban transformation projects were analysed through observation, interviews and document examination.

Before and after analysis: On 23 October 2011, a violent earthquake occurred in Van, Turkey and caused devastating damage due to the building stock of the region and led to the loss of many lives. After the disaster, the disaster region was visited to make on–site observations and assessments as to the consistency of plans such as disaster and emergency plans and civil defence plans of provinces/towns with actual situation.

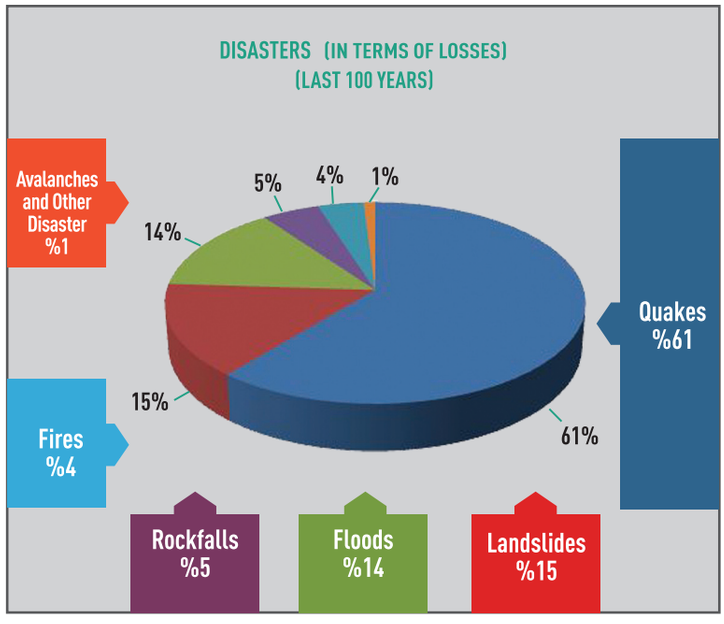
Audit Criteria

The common criteria specified in the international parallel/coordinated audit are used.

Identification of the Characteristics of the Disaster

Due to its geological, geomorphologic and climatic structure, Turkey is a country at very high risk of natural disasters, which result in loss of life and property, injury as well as social and economic damages. Earthquakes have the highest risk of damage, since nearly 66 % of all lands in Turkey are located on the first and second degree earthquake zones. In addition to earthquakes, however, avalanches, fire and floods caused by excessive precipitation in recent years are significant disasters resulting in loss of life and property. Due to such reasons as over-exploitation of nature, unplanned urbanization, illegal housing, insufficient education, natural events like floods, landslides, erosion, rock fall and avalanches and particularly, earthquakes are turning into disasters in Turkey.

According to data obtained from the UN prevention web, since the beginning of the 20th century, approximately 87.000 people have lost their lives and nearly 300.000 people have been injured because of disasters. The total number of the houses damaged by the natural disasters is nearly 700.000. As seen in the following figure, 61 % of the damages caused by disasters in the last 100 years are associated with earthquakes. In terms of the number of human losses and affected people, earthquake ranks first. Out of the disasters which occurred in Turkey, the Erzincan earthquake of 1939 and the Marmara Earthquake taking place on 17 August 1999 were the most devastating ones.



The Marmara Earthquake on 17 August 1999 has great importance in the case history of Turkey. This earthquake caused huge loss of life and large scale devastation; and besides, it affected the social and economic life not only of the disaster region and but also of the whole country. In addition to this, after the earthquake, the scientists stated that Istanbul would face a serious earthquake hazard in the near future and the probability of an earthquake occurring in the next 30 years was estimated to be 65 %. Istanbul has always been the heart of economic and social life of Turkey. For that reason, the Marmara Earthquake in 1999 was a turning point in Turkey's disaster management and coordination.

TURKEY

Before the Marmara Earthquake of 1999, the disaster policies of Turkey had focused on post-disaster relief and reconstruction activities. The Marmara Earthquake was a painful reminder of the necessity to review the state of disaster management in Turkey. After this earthquake, understanding related to disaster management has radically changed in Turkey. In parallel to the development in the international disaster policy, specifying new policies and strategies which concentrate on disaster risk reduction has gained importance. The floods in Istanbul in 2009 and in Rize in 2010 and the earthquakes in Van and Simav in 2011 have brought forward the importance of disaster risk reduction in our country.

Legal Arrangement

As one of the most devastating disasters experienced by our country, the 1999 Earthquakes taking place in the Marmara region forced the State to reconsider its disaster policies. Thereafter, deficiencies in relevant legislations were eradicated as well as relevant entities were restructured. To fill the gaps in coordination, General Directorate of Emergency Management of Turkey was established in 2000, the building inspection system was fully changed, and insurance coverage was made mandatory.

In line with the development in the international policy under the leadership of UNISDR and taking the changes in the world into consideration, Turkey started to work on developing a system in which the national level would be responsible for coordination and the local level would be strengthened. As a result of these works, the Law no. 5902, a framework law, related to disaster management which includes issues concerning disaster risk reduction entered into force in 2009.

The Law no. 5902 was adopted in 2009 to eliminate the problem of coordination between agencies involved in the disaster management system and ensure the coordination through a single entity. In 2011 and 2012, on the other hand, legal arrangements were made to grant certain authorities to the Ministry of Environment and Urban Development. As a result, a structure appropriate for effective, continued and coordinated conduct of activities has not been established in the past 13 years since the earthquake in 1999.

Findings/Conclusions; (Legal Arrangement)

- *The legal infrastructure established in the aftermath of the earthquake in 1999 has been subject to frequent changes, which have disrupted the formulation of disaster strategies, permanent institutional structuring as well as distribution of duties and responsibilities.*
- *Existing legal framework is inadequate in terms of directing and coordinating disaster risk reduction.*
- *Although AFAD is designated as the coordinator, the Ministry of Environment and Urban Development has also been assigned duties related to the coordination of certain disaster risk reduction activities, which leads to overlapping and conflicting duties and responsibilities.*

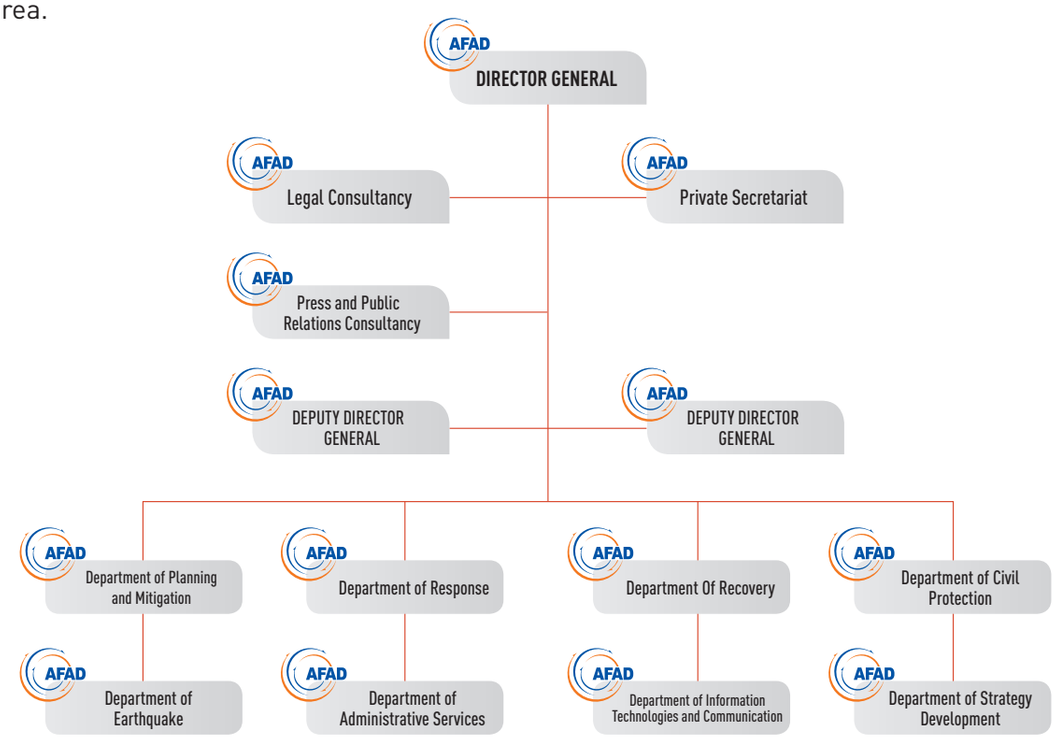
Recommendations; (Legal Arrangement)

- *There needs to be a legal framework that clearly establishes the duties, competences and responsibilities of the coordinator entity.*
- *The legal framework that ensures effective conduct of disaster preparedness and damage reduction works should be developed. The duties of all related entities such as the Ministry of Environment and Urban Development, AFAD and its provincial directorates, municipalities, etc within the scope of disaster preparedness should be clearly and precisely defined.*

Organisation and Coordination Structure

After the Marmara earthquake, the disaster management were restructured. The General Directorate of Emergency Management of Turkey was established in 2000. In disaster management, the three main organizations, namely the General Directorate of Emergency Management of Turkey, General Directorate of Disaster Affairs and General Directorate of Civil Defence, were specified as responsible entities. However, the way the three main organizations working in disaster management were organized under three different ministries resulted in the continuation of the problems in this area.

In 2009, General Directorate of Disaster Affairs, General Directorate of Civil Defence and General Directorate of Emergency Management which were directly associated with the disaster issues were merged and their authorities and responsibilities were delegated to the "Prime Ministry Disaster and Emergency Management Presidency (AFAD)". As shown in following organisational chart, AFAD was reorganised in a manner to ensure that its mandate covers the disaster risk reduction issues.



TURKEY

According to the Law no.5902 adopted in 2009, AFAD is the primary entity responsible for:

- Taking necessary precautions for effective provision of services related to disaster and emergency as well as civil defence;
- Ensuring coordination among institutions and organizations that perform pre-disaster preparedness and harm reduction, response to disaster and post-disaster recovery activities;
- Establishing and implementing disaster policies.

Besides, within the scope of disaster management restructuring, Disaster and Emergency Supreme Board, Disaster and Emergency Coordination Board and Earthquake Advisory Board were established for the purposes of ensuring coordination and policy development.

With respect to pre-disaster activities, both the municipalities and the provincial administrations have crucial functions such as drawing disaster and emergency plans, organizing teams and supplying equipment, evacuating and demolishing buildings that pose risk of disaster or threats to security of life and property. Given the fact that the devastating effects of disasters, particularly of earthquakes, are reduced insofar as the earthquake resistance of structures is increased; proper functioning is of great significance as this would highly contribute to risk reduction. Furthermore, branch offices of AFAD are within the organizational structure of special provincial administrations. The entities in charge of disaster-related activities and subject to coordination in such circumstances are listed below in respect to disaster types:

- Earthquake: Ministry of Environment and Urbanization, Undersecretariat of Treasury, DASK, municipalities, special provincial administrations, universities, non-governmental organizations.
- Flood: Ministry of Forestry and Water Affairs, General Directorate of State Hydraulic Works, General Directorate of Turkish State Meteorological Service, municipalities, special provincial administrations, universities, non-governmental organizations.
- Landslide: Ministry of Forestry and Water Affairs, special provincial administrations, universities, non-governmental organizations.
- Forest Fire: Ministry of Forestry and Water Affairs, special provincial administrations, universities, non-governmental organizations.
- Other: Ministry of Transport, Maritime Affairs and Communications, Petroleum Pipeline Corporation, Turkish Petroleum Corporation, Turkish Atomic Energy Authority, municipalities, special provincial administrations, universities, non-governmental organizations.

Apart from those listed above, Ministry of National Education, Ministry of National Defence, Ministry of Finance, Ministry of Health and Turkish Red Crescent have certain functions in connection with their areas of expertise. These entities are engaged in disaster risk reduction and planning works that form the basis for disaster risk reduction within their respective spheres of duty.

During the last 12 years, lastly in 2009, the legal and institutional structure has been changed twice. It is not possible to say that institutional restructuring activities solved the organizational problems of the past which were highlighted in the performance audit reports published by the TCA in 2002: "How well is Istanbul getting prepared for the earthquake?" In fact, in the new structuring, the provincial organizations are charged with disaster risk assessment and production of provincial disaster maps and AFAD with drawing overall country disaster plans. At provinces, provincial disaster and emergency directorates which function under the governor and are affiliated to special provincial administrations are established. Under these circumstances, the provincial organizations which assess risks and accordingly take action and AFAD have separate institutional structures. This leads to problems in the service planning and delivery due to the weak bond among AFAD, the high coordination units and implementation directorates of disaster and emergency in the provinces.

One of the main aims of the Law no. 5902 was to ensure the coordination through a single entity. In 2011 and 2012, some important authorities concerning disaster risk reduction were transferred to the Ministry of Environment and Urban Development. Only two years after the adoption of the Law no.5902, the authorities concerning planning and coordination of disaster risk reduction were delegated to different bodies once again. In addition to this, since the Law no.5902 entered into force in 2009, the entity responsible for the coordination has not been equipped with the necessary human, financial and other resources to plan, coordinate and monitor disaster risk reduction with an integrated approach and in an environment ensuring participation from multi-stakeholders.

Findings/Conclusions; (Organisation and Coordination Structure)

- *An institutional structure appropriate for effective, continued and coordinated conduct of activities has not entirely been established. Firstly, a tripartite structure was established. Later, three entities were merged to establish a single entity. Two years later, legal arrangements were made to grant certain authorities concerning making cities resilient to another entity. Throughout this process, the database and knowledge related to disaster was substantially lost.*
- *The mismatch between institutional responsibilities and capacities, particularly at the local level, has been identified as a major impediment to effective implementation of disaster risk reduction and management facilities. Escalation procedures between local, regional and national level are unclear or are not properly followed.*
- *There is no institutional connection between AFAD and provincial directorates of AFAD. Therefore, there are problems in information exchange between the central and local units. The organizational structure at the local level is not qualified enough (in terms of physical, human and financial capabilities) to plan and perform the activities based on risk assessment, as required by law, which is highly criticized.*

- *There is not an optimum level of coordination, cooperation and information exchange among national disaster management authority, municipalities, and provincial units of the Ministries.*
- *Budgets of the provincial directorates of AFAD are not prepared based on needs and resources, rather determined by taking a certain percentage (at least 1%) of budgets of special provincial administrations, without considering the level of risks*
- *Disaster Management Authority has not coordinated appropriately with other institutions.*
- *Since 1999, it has even not been possible to establish the institutional and legal framework that ensures effective coordination and monitoring of disaster preparedness activities. The existing institutional structuring is giving more stress on post disaster activities and so on.*

Recommendations;(Organisation and Coordination Structure)

- *The duties of all related entities such as the Ministry of Environment and Urban Development, AFAD and its provincial directorates, municipalities, etc within the scope of disaster preparedness should be clearly and precisely defined.*
- *The unit responsible for coordination should be established in a manner to enable it to perform a proper and country-wide planning and monitoring.*
- *In allocating financial and human resources, disaster risks of regions should be taken into consideration.*
- *A mechanism appropriate for tracing the resources allocated to disaster preparedness should be established (accounting, board, etc).*

National Strategies and Action Plans

After the 1999 Marmara earthquake, significant steps have been taken to establish disaster policies in Turkey. A special commission consisting of experts was formed during the preparation of the 8th Five-year Development Plan (2000-2005) to deal with matters related to natural disasters. The recommendations of the commission related to disaster prevention and damage mitigation were mostly reflected in the plan. In the 9th Development Plan (2007-2013), it is stated in relation to the disaster management that the duties and authorities of public institutions and organizations are not clear, necessary measures should be taken and settlements at high risk of disaster should be given priority in the transformation plans.

Policies set forth in the 9th Development Plan are widely included in the government programs.

The medium-term programs for periods of 2006-2008, 2007-2009 and 2008-2010 include, in brief, the following matters:

- Need for an integrated system of disaster management covering pre-, syn- and post-disaster periods;
- Development of standards on disaster safety in urban planning and building construction,
- Ensuring control over planning and housing process.

In the medium-term plans for periods of 2010-2012 and 2011-2013, prioritized activities within the disaster management are development of a national disaster management strategy and action plan, prioritization of risky areas based on disaster risk scale, finalization of risk reduction works, and improvement of disaster insurance system. Unlike other programs, in medium-term program for 2012-2014, it is expressed that comprehensive framework legislation will be drafted in the area of urban transformation for risk reduction; activities will be organized to raise awareness among public; programs will be developed for settlements and public buildings in need of reinforcement and restoration.

2008-2012 annual programs stress for the first time the need to identify and define different disaster risks for the production of integrated disaster risk maps and envisage that disaster maps and risk are to be given priority. Moreover, the plans also provide for a thorough review of disaster legislation, completion of national disaster management strategy and action plan, installation of the management information system, stocktaking for purpose of reinforcing public buildings. As of the end of 2012, there is a draft National Disaster Management Strategy Paper and Action Plan developed by AFAD. This draft sets the strategic goals aimed at disaster risk reduction, increased institutional capacity and social awareness.

As explained above, new disaster policies giving priority to DRR were reflected in the high -level national strategic documents such as development plans, medium-term and annual programs. Although the specification of National Disaster Management Strategy and preparation of Action Plan started after the enactment of disaster management law in 2009, the draft National Disaster Management Strategy Paper and Action Plan have not been finalised yet as of the end of 2012. In spite of this, it was determined that emergency/response plans were drafted or prepared at different levels, mostly regional and local, without integrating them into the national strategy. In fact, as it is well-known, national disaster strategy and action plans are one of the most important tools in leading and evaluating the activities related to DRR as a whole.

Findings/Conclusions; (National Strategy)

- *In the aftermath of the Marmara and Duzce earthquakes in 1999, the policies oriented towards disaster risk and damage reduction were brought to the agenda of the country and included in the high-level policy papers such as development plans and medium-term plans. However, to materialize such policies, an integrated disaster strategy and action plan encompassing all disaster types cannot be put into practice.*
- *Recently, there has been an increase in the initiatives and efforts towards establishing a national strategy. In this context, strategy papers such as the draft National Disaster Management Strategy, the National Earthquake Strategy and Action Plan effective since January 2012 and Integrated Urban Development Strategy and Action Plan (KENTGES- 2010) were drawn up. However, each strategy document was prepared in an isolated manner and thus, is not coherent with other strategies and action plans. Therefore, disaster planning seems to be entirely disorganized.*

- *Actions defined in the strategy papers that should be long-term and high-level documents are not addressed in a manner that enables them to be implemented with an integrated approach. For instance, the National Disaster Management Strategy is still in the draft form, whereas the National Earthquake Strategy and Action Plan, which is typically expected to be its subdocument, has been effective since January 2012.*
- *Despite the fact that the responsible entities as well as the timetable is in place, the strategy papers and action plans are not revised and up-dated even when the related action is excluded from the responsibility area of the relevant entity with the legal arrangements made after the effective date of these papers. For instance, the duties and authorities of the Ministry of Environment and Urban Development as defined in the Integrated Urban Development Strategy and Action Plan (KENTGES–2010) and those established after its restructuring between 2011 and 2012 are contradictory. Moreover, the actions stipulated in the action plans are not prioritized in a realistic and feasible manner. All these imply that there is no practicable, reliable and sound planning achieved in the disaster management.*
- *The activities related to disaster are being carried out in an unplanned manner due to several factors like changes in the institutional infrastructure in the area of disaster management, no profound disasters experienced after 1999 until Van earthquake in 2011, etc. During this period, activities were oriented towards disaster damage reduction and rehabilitation.*
- *The initiatives taken towards disaster risk reduction are limited with local activities such as pre and syn-disaster planning and ground studies performed at certain places in disaster prone areas, particularly in Istanbul.*
- *Disaster risks and hazards reduction activities have been performed unplanned and at local level since Marmara and Duzce Earthquakes in 1999. These activities are undertaken without prioritization and planning and mostly when an external financing is obtained. Furthermore, amounts spent on disaster preparedness are not precisely known; plans, activities and budgets are not interrelated. This is also valid for the recent strategy papers. The resources as well as the source of these are not set in the action plans prepared within the framework of strategy papers.*

Recommendations; (National Strategy)

- *The major problem related to disasters as a phenomenon is the traditional perception that acknowledges disasters as inevitable events and fate. In breaking this perception dominating all segments of the society, ensuring that the society as a whole is focused on the disaster risk reduction and creating a social awareness; not solely the relevant and responsible entities but also the parliament, the government, all entities whether public or private and even the citizens should assume significant tasks.*
- *The viewpoint that aims at reducing the risks of natural events as well as human and technology-induced incidences turning into disasters has contributed considerably in the achievement of significant progress in this respect in certain countries. In this sense, it is important that policies that yield long-term solutions and remove the concept of "disaster" from the country's agenda*

should be given weight and such policies should be owned by the public in general. Through this perspective, the national strategies should be drawn up with a participatory approach and in a consistent manner, based on risk assessments that consider all disaster types, including those stemming from cross border issues.

- *Actions within the scope of national strategies should be prioritized according to necessities and scheduled in a clear and realistic manner. The duties and responsibilities of all parties concerned should be defined clearly and the milestones should be monitored.*
- *Disaster risk reduction should be long-term and performed in a planned manner. Since it does not seem possible that such activities would accomplish result in the short-term, this requires high-level political ownership.*
- *An integrated disaster management focused on reducing disaster risks and hazards should be materialized in a short time in ordernot to face with loss of lives and higher economic losses after disasters.*
- *Realization of aims and objectives at national level is based on well-defined strategies, performance of activities in coordination, a proper legal infrastructure and adequate financing. Therefore, it should be ensured that the strategic objectives are achieved through correlating plans, activities and budget and establishing the legal framework that ensures effective disaster management and coordination.*

Findings/Conclusions; (Local Plans)

- *In the current disaster management, apart from the central setup, provincial-level of planning is also envisaged. Nevertheless, these plans were made without considering factors like the likelihood of the responsible personnel to become victims of disaster and the possible impact area, etc. In fact, it has been observed in many disasters that the large-scale disasters do not only affect a particular province, but the region as a whole, and the persons in charge become victims of disasters.*
- *The fact that the national disaster strategy and action plans are not prepared and put into implementation as of the end of 2012 has negatively affected the local level planning. Provincial Directorates of AFAD is preparing civil defence and emergency relief plans.*
- *These plans are still prepared in accordance with the laws and arrangements that have been in effect since 1950s, although there have been profound changes made so far in the institutional structuring. Neither the functionality of these plans, which are prepared on paper only to satisfy the statutory duty, is evaluated, nor have they been tested since 2009. Moreover, the control made by AFAD on the plans is an evaluation limited with the form, which is based on the provisions of the relevant by-law.*
- *Since AFAD has not specified the principles for the Provincial Emergency Aid Plans prepared by its provincial directorates, each province make planning within the limits of its possibilities. At provinces like Istanbul, Izmir etc where disaster risk is high and which have relatively more human and financial resources, provincial emergency plans were prepared with the support of universities. Besides,*

relevant entities such as municipalities, State Water Works, etc., include certain activities related to disasters in their institutional plans, independent of each other and AFAD.

- *The scope of the most comprehensive provincial emergency plan prepared by Provincial Directorate of AFAD in Istanbul is limited with emergency planning.*
- *AFAD has neither determined the principles for planning, nor has it established a control or monitoring mechanism to check whether the provincial disaster plans are drawn up and if so, to measure their feasibility, functionality and effectiveness.*
- *The provincial emergency plans indicate that these plans were prepared without taking into account all the possible disaster types and risks assessments, and mostly prepared for the earthquake threat. It is considered that apart from their focus on emergencies, there are also deficiencies in the plans in terms of syn- and post-disaster response:*
    - *Plans regarding assembly/temporary sheltering areas are not more than planning of tent areas and the number of tents. Assembly/temporary shelters designated within the plans can sometimes be inconsistent with urban development plans and actual situation and most of the time, become unrealistic.*
    - *Plans are not drawn up in a manner to be responsive to alternative scenarios that take into account multiple disasters (triggering one another), possibility of disasters affecting multiple provinces, possible disaster season/day/hour variances, which constitutes a crucial problem in terms of functionality.*
    - *Field exercises are highly significant in that the feasibility of plans are tested and improved by way of field exercises; they need to be comprehensive and responsive to alternative scenarios. Nevertheless, such exercises are not performed at an optimum level and effectively and in general, are in the form of desk-based activities.*
    - *The extent to which plans are realistic and feasible is also affected by the fact that plans are not updated properly and regularly.*
- *Even the most comprehensive provincial emergency plan outlines the necessary services, entities to deliver such services and job descriptions as well as the names of the responsible personnel; however, the fact that the persons assigned roles and responsibilities might become victims of disaster is not taken into account.*
- *AFAD has designated the provinces that each province will support in case of a disaster. However, this effort did not go beyond identification; so far, no arrangement has been made on how provinces will support each other and works like field exercises, training, etc have not been conducted in provinces to be aided.*
- *How persons and organizations mobilized from outside the disaster region for aid are engaged in the disaster response, and how their vital needs like sheltering are to be covered and the method to be employed in the distribution of aid received are not set forth as required, which would add fuel to the chaotic atmosphere.*

- *Stakeholders like NGOs, private sector and volunteers are not actively engaged in the preparation of plans. Post-disaster roles and functions of these are not satisfactorily defined, either. Only certain provincial plans define the roles of the privatized entities, which are providers of infrastructure services like communication, natural gas, electricity, etc. There is no monitoring as to whether these entities have planned how and the extent to which they will ensure business continuity in case of disaster.*
- *AFAD has not established the criteria regarding the accreditation of NGOs. Lack of an accreditation system is not only hampering the engagement of NGOs but also posing risks. It has also brought about many issues like the reliability, competency of those NGOs that want to get involved in the process. The earthquake in Van set a very good example of how such issues can come up.*
- *Plans generally do not include arrangements related to special groups like the disabled, the old, children, etc.*
- *In most of the provincial emergency plans, the communication is planned to be sustained through existing communication channels like television, radio, mobile phones during disaster. There are no alternative communications channels designated to maintain communication among the relevant persons/entities, to inform and guide citizens, where disasters occurs late at night when these channels are less used, or existing means of communication fail to operate and/or fall short during the disaster.*

Recommendations; (Local Plans)

- *The extent to which the local and subscale plans are prepared by which entities should be established through considering the alternative scenarios on the impact area of disasters.*
- *The principles and procedures governing the preparation of local plans should be defined by AFAD immediately in a manner that such principles and procedures as well as their scope are coherent with policies and strategies related to disaster management. There should be a control mechanism in place, in order to ensure the consistency of the plans with such principles and procedures, national strategies and action plans and to oversee their functionality.*
- *Subscale plans should be drawn up;*
  - *Based on disaster risk assessments;*
  - *In a manner to cover alternative scenarios and multiple disasters (triggering one another);*
  - *With the active participation of all relevant and responsible persons and entities, including NGOs, universities, private sector;*
  - *In a manner to cover reinforcement of settlement areas against disasters.*
- *The feasibility and up-to-dateness of emergency plans should be secured through conducting drills at regular intervals.*
- *Evacuation line, assembly areas and temporary shelter areas necessary during and after the disaster as well as facilities to be used in cases of emergency should be determined; it should be ensured that these are in consistent with urban development plans and practices, and actual situation.*

- ***The feasibility and up-to-dateness of emergency plans should be secured through conducting drills at regular intervals.***
- ***At regions with high disaster risk, an obligation to prepare business continuity plan should be introduced in order to ensure continuity of public services and private sector operations.***
- ***In the subscale implementation plans, the duties and competences of all the relevant and responsible entities and organizations should be clearly defined.***
- ***Private sector, NGOs with proper accreditation and volunteers should be included in the implementation plans in line with their competencies.***
- ***All disaster plans should be drawn up in consideration of special groups like the disabled, elderly people, children and women, etc.***
- ***In the local and subscale emergency response plans;***
  - *Communication channels through which those assigned roles and responsibilities will communicate as well as alternative communication channels need to be established.*
  - *During a disaster, with the aim of preventing information pollution and providing the communication in a fast and effective manner, who will be authorized to inform the citizens as well as the communication channels thereof should be determined and citizens should be informed beforehand about how this system will operate.*

Management Tools Such as GIS, GPRS, GPS, Early Warning Systems

One of the most important tools used by the management in the planning and coordination of disaster risk reduction is information systems. Proper planning of functions in this specific area, their integration into the functioning of multiple entities, the development and implementation of projects for investment and service purposes and monitoring their results will only be possible with building a sound information system. In the 2000s, several steps have been taken in Turkey to install such information systems and strategies as;

- Disaster Information System of Turkey (TABİS),
- National Disaster Archive system of Turkey (TUAA),
- Earthquake Monitoring systems and Strong Ground Motions Observation Network of Turkey,
- Geographical Information System (CBS) and
- Integrated Urban Development Strategy (KENTGES) and Action Plan (2010 – 2023).

In AFAD, detection of disaster-prone areas and production of disaster maps integrating all threats likely to affect settlement areas are the main elements underlying disaster damage mitigation and planning. Apart from Earthquake Map (1996), flood map (2008), snow slide, landslide and rock fall maps, which are out-dated; maps specific to other disaster types are not available.

National Disaster Management Information System is a crucial tool for planning and managing DRR's activities. After several years of conceptualization, National Disaster Management Information System of AFAD has still been at the planning stage. Since the early 2000s, there has been an ongoing effort in Turkey towards establishing a Disaster Information System. In this context, there are progressing initiatives for the establishment of National Disaster Archive of Turkey as well as Disaster Information System (ABIS)-2005 and Disaster Management Information System (AYBIS)-2008 by AFAD.

The National Disaster Archive of Turkey, which encompasses past disaster data, is not advanced and up-to-date enough to be used in disaster preparedness. The ABIS and AYBIS projects, which were planned to be finalized in 2012, were merged and transformed into AYDES (Disaster Management and Decision Support System) Phase 1 Project in 2012 when it was understood that they would not yield the expected benefit.

In other respects, there have been some efforts to benefit from Geo-science technologies, to collect data and to establish a data repository for developing GIS in Turkey. Several entities like municipalities, special provincial administrations, and provincial directorates of DMA have their own information systems. Some of them have been relatively well-functioning on an individual basis. However, the fact that they are incoordinately developed by different stakeholders obviously leads to duplication. The integration and sharing of information systems among entities are very limited. Early Warnings Systems have also been set up in some disaster-prone provinces like early warning system of Istanbul Gas Distribution Company and flood early warning system of Edirne State Water Works.

Findings/Conclusions; (Management Tools)

- *As of the end of 2012, an active and effective information system used in disaster risk reduction has not yet been established in Turkey. The recent legal amendments authorize AFAD and the Ministry of Environment and Urban Development in this area. These two entities are functioning individually.*
- *Within the Ministry, the work on the establishment of a National GIS is at the phase of feasibility study. The other projects of the Ministry, TUCBS (National Geographic Information System of Turkey) and TRKBİSS (Standard Setting for Urban Information System of Turkey) have not been finalized. Therefore, there is not satisfactory progress achieved in recording the spatial data produced through geographic studies into a geographic information system and in the data analysis and thus, in the preparation of hazard maps and contingency plans based on these maps.*
- *Although AFAD and the Ministry have overlapping and/or associated duties in the utilization of spatial data in disaster hazard reduction, there is no effective and required level of task sharing and cooperation among them.*
- *As for the projects carried out by AFAD aiming at using spatial data in DRR, the progress achieved is not at an optimum level due to such reasons as insufficient human resources and changes in the institutional structuring, although fund is annually allocated from its budget for this purpose.*

- *An integrated disaster information system is not in place and available to all the relevant entities, which is leading to repeating works and waste of resources. For instance, since AFAD does not have an up-to-date and accessible national disaster archive that includes appropriate information, Istanbul Metropolitan Municipality is working on its own disaster archive. Entities establish systems according to their own needs and do not/cannot make these available to other entities. Besides, entities do not share the data and maps they produced for their own systems with other entities (including AFAD) which are in need of such information in fulfilling their legal mandates, and charge a fee for their use. These factors limit data sharing and result in repeated investments made by entities to produce same/similar information, leading to waste of resources.*
- *Lately, albeit positive steps taken, due to lack of standardization in the components of information system infrastructure both at national and local level (like data type, subject cataloguing, data sharing, source coding, software), there is no coherence, which brings about limitations onintegration of data produced nation-wide andin efficient use of resources. Although there are ongoing efforts in the Ministry to sign a protocol with relevant entities so as to overcome the issue of data sharing, there has been no significant progress.*
- *The establishment and use of Geo-science techonologies has not been taken as part of overall strategies so far. Studies on GIS were first launched in 2000s and a great number of entities and local administrations have so far established stand-alone geographic information systems. Due to such reasons as the lack of standards and principles in this specific field and of necessary financial resources, many systems and software cannot be used and ultimately become obsolete.*
- *Except certain local practices, either the contemporary hazard reduction tools, early warning systems are not fully established in Turkey, or cannot be used effectively due to various reasons (like insufficiency of human resources.)*

Recommendations; (Management Tools)

- *With respect to the information systems to be used in the planning and steering of disaster risk reduction;*
  - *System architecture;*
  - *Financing, technical, etc requirements;*
  - *The principles, policies and standards related to elements such as content, format, software codes, etc.*

  In addition, other matters should be immediately determined.
- *As in the case of many other areas in Turkey, in the area of disaster management, the investments in information technologies takes place in long terms. In most cases, when the installation of the system is completed, the technological lifecycle of the system also ends or the system becomes obsolete. ABİS and AYBİS projects are a very good example of this. Given the fact that Information Technologies and systems have a lifecycle of 2.3 years, it is of vital importance that such projects be planned well and implemented within a short period in order*

to obtain the expected benefit. In this context, systems like TABİS, İSTABİS, RABİS, HAZTURK, etc that have been worked on for a very long time and cannot bring the expected benefit should be reconsidered.

- *One of the crucial aspects of proper DRR is definitely the establishment of an integrated information system that will support the decision-making process and its being available to the use of all relevant entities. In this respect, the entity in charge of coordination should coordinate the establishment of an integrated information system at national and local level including also the data production and sharing. Measures should be taken in order to prevent the waste resulting from multiple entity establishing information systems having similar function and different technical features. Besides, the platform that is to ensure exchange of data and geographic maps among entities should be defined, and it should be ensured that the entities, which deliver public services, benefit freely from such platform.*

Training and Public Awareness Activities

There are some efforts to spread the new conception concerning DRR to the education system and to raise public awareness about emergency preparedness and response, principally earthquake in Turkey. Awareness-raising activities and exercises are carried out in an unplanned and uncoordinated manner. Such trainings, which target the society as a whole but are limited in number, are not planned and handled by a single authority. Informative documents and books published on the websites of AFAD and Ministry of Interior and "School-Based Disaster Education Project" carried out by the Ministry of National Education and financed by Japanese International Development Agency (JICA) are rare examples of the activities performed by public entities in this area.

The most important studies are conducted within the scope of ISMEB which is another externally funded project. Some of the activities realised within the context of this project are as follows:

- face-to-face trainings, mostly implemented at the school.
- web-based trainings in which such documents as "first 72 hours" were prepared and published.
- Exhibitions displaying disaster photos for raising public awareness.

Although several institutions have engaged in awareness raising activities, they have been able to access only to a small part of the society from 1999 earthquake until today. Training activities are predominantly carried out by nongovernmental organizations. Therefore, sound data related to funds used for training purposes is not available.

Training programmes of AFAD mostly focus on spreading the precautions related to civil defence and emergency situations. There is not a database where information regarding the qualifications and duties of the trainees is kept. For example, there are no records about which schools performed education programme on life-safety in schools. Since a sound system is not established to monitor and evaluate the activities related to training and public awareness, training activities are poorly coordinated and the possibility of duplication in these subjects is particularly high. Trainings are

not based on training materials and accredited programs of a certain training strategy. There are few training events (practical-theoretical) and these are not monitored and adjusted according to the necessities.

Other training events like the course on "Earthquake Hazard Analysis in Engineering" certified by professional chambers serve only to individual knowledge and skill development.

Findings/Conclusions; (Training Activities & Public Awareness)

- *AFAD which has the primary responsibility for both vocational and awareness raising trainings, is not conducting these activities in a planned manner. Only vocational training activities are being organized within the scope of routine programs that were specified by the General Directorate of Civil Defence before establishment of AFAD.*
- *Within the framework of awareness raising activities, AFAD considers informative documents sufficient, which are mostly published on its website. The existence of electronic documents can be regarded as a positive situation, whereas it should be noted that a great part of the society has difficulty in accessing these documents.*
- *Since AFAD have not performed its role in this area in a successful manner, activities towards awareness raising are carried out individually by several institutions and organizations and mostly within the scope of the programs developed on their own initiative. Such a disorganized approach may reduce the quality and reliability of trainings. On the other hand, development of stand-alone training programs for the same purpose is to create at least an issue of efficiency.*
- *There is no work done to determine the scope, quality and level of training and thus, same trainings with similar content are being organized routinely. Apart from this, training events are organized without standards and accredited training documents.*
- *Besides, the success-level and retainment of the training events, the extent to which the information acquired is disseminated by participants in their own institutions and their level of internalizing the training are not measured and assessed; nor does the central authority require feedback regarding trainings.*
- *The fact that the accreditation criteria of NGOs have not yet been established by AFAD has brought about further uncertainties for the NGOs, which will work in coordination in training activities.*

Recommendations; (Training Activities & Public Awareness)

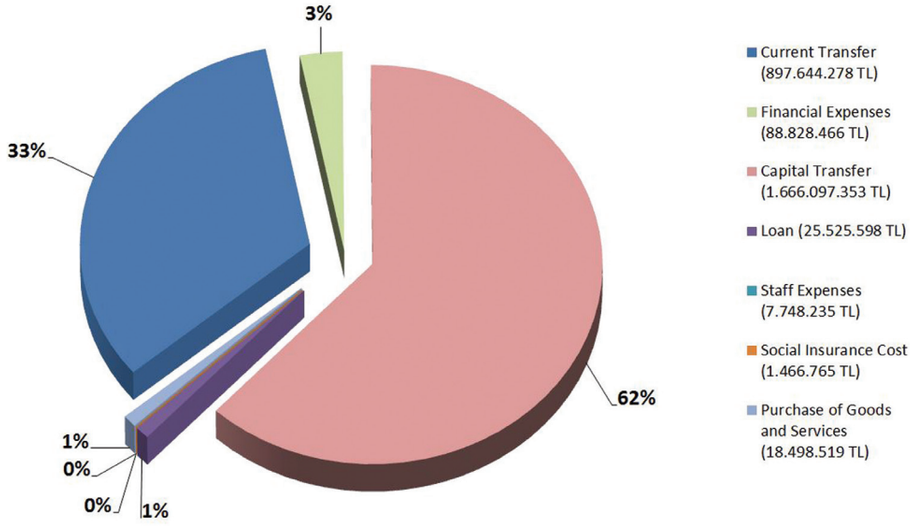
- *Public awareness creation and training activities should be a part of strategic national efforts; it is rather the result of single projects.*
- *Vocational training and training activities for awareness raising should be organized under the coordinatorship of AFAD and with active participation of relevant entities such as universities, NGOs, private sector, etc. within the scope of plans, which are to be prepared according to a specific strategy, and should be organized within the framework of accredited training programs and materials.*
- *Within the scope of public awareness raising, volunteerism should be encouraged and the written and visual media should be used effectively in this area.*

Financial Structure

Resources allocated for this specific area are predominantly regarded as a contingency reserve to be used in times of disasters rather than a fund to be used for the implementation of an integrated plan for DRR. Like the installation of an early warning system, there are some individual initiatives mostly funded by grants and loans of such organizations as World Bank. As shown in the Figure 1 (Page 25), a wide range of entities including non-governmental organizations provide and utilize these resources. For that reason, it is extremely difficult to detect the resources used in such activities which are not planned and coordinated and a number of institutions and organizations share roles and responsibilities in.

Within the scope of the parallel/coordinated audit, we examined only the financial structure, budget and budget realisation of AFAD for the year 2011 as well as some projects/ programme expenditures as example. In 2011, the total expenditure of AFAD was 2.705.809.212 TRY (as of the end of 2011, 1 USD = 1.90 TRY, approximately 1.424.110.111 USD).

Graph1: Realisation of AFAD's Budget in 2011



Source: 2011 Annual report of AFAD

TURKEY

As seen in Graph 1, the biggest part of (62 %) of the total amount was the capital transfer allocated for building permanent residences for disaster victims in the past disasters such as the Simav earthquake while only 4.5 % of the capital transfer was used for pre-disaster activities. On the other hand, 4.8 billion TRY were spent for disaster response and rehabilitation works in the aftermath of the Van earthquake. This experience shows once again that the costs that must be born after disasters are much higher than the costs incurred due to DRR activities.

Besides, specific projects including Istanbul Seismic Risk Mitigation and Emergency Preparedness (ISMEP) have been implemented in order to make Istanbul prepared for a probable earthquake. For the funding of the ISMEP activities, some loan agreements were signed with such international organisations as:

- International Bank for Reconstruction and Development (WB) in 2005 -€310 Million- and in2011- €109.800,
- European Investment Bank in 2008 - €300 Million,
- Council of Europe Development Bank in 2010 - €250 Million,
- Islamic Development Bank in 2012 with an amount of € 243 million.

Findings/Conclusions; (Financial Structure)

- *Disaster risks reduction activities have been performed unplanned and at local level since Marmara and Duzce Earthquakes in 1999. These activities are undertaken without prioritization and planning and mostly when an external financing is obtained. Furthermore, amounts spent on DRR are not precisely known; plans, activities and budgets are not interrelated.*
- *Provincial Directorates of AFAD do not have adequate financial resources to fulfil their responsibilities related to disaster management. Still, budgets of the provincial directorates of AFAD are not prepared based on needs and resources, rather determined by taking a certain percentage (at least 1%) of budgets of special provincial administrations, without considering the level of risks involved. Budgets of provinces with higher disaster risk and those with lower are not allocated based on their needs, which creates disequilibrium.*

Recommendations; (Financial Structure)

- *Taking into account, with lesser expenditure, it is possible to avoid bearing higher costs; the loss of lives can be decreased, the DRR activities should be given priority within the budget.*
- *Realization of aims and objectives at national level is based on well-defined strategies and adequate financing. Therefore, it should be ensured that the strategic objectives are achieved through correlating plans, activities and budget and establishing the legal framework that ensures effective disaster management and coordination.*
- *In order to prevent unnecessary investment in this field and to use the resources more efficiently, a mechanism should be established to monitor the physical and financial realization of the action, projects and investment.*
- *The institution which is responsible for coordination, should establish a system that ensures the monitoring of the activities on the basis of time/cost/stakeholders/relevant activities.*

Making Urban Area Resilient

Unplanned urbanization in Turkey has persisted for many years due to economic, social and political reasons in the fast-growing cities (e.g. Population of Istanbul, which was one million in 1945, has reached up to 15 million) and the urban development plans were drawn up at a later time when the towns had already expanded. 14 construction amnesties granted and the disposal of 2/B lands (treasury lands, which were formerly classified as forestlands) introduced with three separate Forestry Laws, in a sense, have encouraged unplanned settlement. The unplanned and disorganized structuring has ruled out the opportunity to use hazard reduction tools and thus, an urban structuring taking disaster risks into account could not be achieved.

Municipalities and the Ministry of Environment and Urban Development have the authority to draw up urban development plans as per the Law No.3194 on Construction and the Decree Law No.644, respectively. Furthermore, according to the provisions of certain special laws, a great number of entities are authorized with planning. Granting authority to multiple entities on the same Environmental Plan hampers the development of an integrated plan and curtails the disaster awareness. Different entities prepare and approve different types and scales of plans with different approaches, norms and methods, which in turn hinders a unified approach in the planning. This also rules out the principle of "hierarchical association", which forms the basis of planning.

Since the 1999 Marmara earthquake, Turkey has focused on the potential earthquake in Istanbul. In order to make Istanbul prepared for a probable earthquake, Istanbul Seismic Risk Mitigation and Emergency Preparedness (ISMEP) expected to be completed in 2018 was started in 2006 with a budget amounting to € 1 billion 213 million. One of the most important components of this project is to make Istanbul resilient against the potential earthquake. This project is an important step for making Istanbul prepared against the potential earthquake. In this framework:

- feasibility studies were made about such public buildings of first priority as schools and hospitals against seismic risks,
- assessment reports were prepared on the retrofitting or reconstruction works of these buildings,
- an inventory of cultural heritage buildings was taken and risk assessment was made in relation to them,
- retrofitting project designs were prepared,
- seismic risk assessments were made for the selected cultural heritage buildings,
- supportive measures were taken for effective building code enforcement.

Additionally, the demolition of unstable buildings and construction of new settlements were brought to agenda after the 2011 Van earthquake. However, the plan with respect to "demolition of unstable buildings and construction of new settlements by TOKI" would not constitute an initial step towards a sound transformation without relying on the strategies underlying these activities such as micro-zoning studies, solutions to legal issues, revision of development plans, planning of financial, technical and manpower resources.

TURKEY

As it is well-known, the most crucial step to be taken towards the detection of settlement areas vulnerable to disasters is the preparation of integrated disaster hazard maps and contingency plans based on hazard maps. In KENTGES, it is planned to complete these maps by 2023. However, since there are no criteria established by AFAD with respect to the preparation of "integrated disaster hazard maps", provincial directorates of AFAD have not drawn up these maps yet. Furthermore, these directorates do not have sufficient human resources as well as the capacity to fulfil these tasks. There are also problems in the exchange of some information that will be taken as basis in the preparation of the maps.

The Law No.4708 on the Building Control which has been in force since 2001 was piloted for ten years in 19 provinces and started to be implemented countrywide in January 2011. Nevertheless, as it stands now, the building control system does not provide assurance for all structures. Public buildings, all buildings in the villages, those under net 500 square meters in the settlement areas where the population is less than 5000 people and all buildings constructed by the Housing Development Administration (TOKİ) are left outside the system. Given the fact that the existing building stock is mostly composed of unlicensed buildings, it is evident that the number of buildings that the system secures has a very small share in the total number of buildings.

Besides, the core aspect of the building control system is that a contract is signed between the building control firms and the owners of the building. However, in most of the cases, since the owners do not have the necessary information and do not pay due consideration to the issue of building control, in general, the addressee of the building control firms is the contractors, in other words, building control firms are put in a position to control contractors whom they charge for the service. Given the fierce competition in the sector, it is clear that this will lead to certain problems (i.e. pricing under rate, improper controls, etc). Professional competences of the architects/engineers working for building control firms are also a subject of discussion. In particular, the technical staff that does not have the necessary professional experience works in such firms with the signing authority.

Construction workmanship is also crucial in the disaster resilience of buildings. However, with a few exceptions, there are no elaborate programs for the training of construction workers. An arrangement related to the issuing of a "Certificate of Construction Mastership" was planned to be put into implementation on 01.01.2012. In practice, however, a certificate to be issued by the contractor is required and it does not necessarily have to be received after a certain "training program". This requirement has been delayed and is planned to be enforced by the end of 2017. There are not any other similar arrangements with respect to master builders, apprentices, unskilled workers, etc.

The Ministry of Environment and Urban Development cannot oversee the operations of the building control firms in an effective manner. Due to the existing workload and insufficiency of human resources, control of the Ministry on the firms is limited with office controls whereas controls in the construction sites are not regular. The Ministry is also taking significant steps towards leveraging the quality of construction materials in accordance with

the EU norms. However, appropriate use of such materials in buildings is as important as the production of these materials according to the relevant standards. In this regard, the control of the Ministry is not effective in terms of quality and deterrence.

A significant part of our building stock is at risk given the fact that the buildings constructed before the enactment of the legislation including up-to-date information in relation to disaster risk (By-law on Earthquake of 2007) as well as those falling under the category of illegal housing are predicted to have reached up to 50 % in big cities. Yet, in Turkey, a building stock inventory based on disaster risk assessments has not been developed yet. These factors also impede the conduct of retrofitting and demolition-reconstruction works within a sound strategy and planning.

There are certain risks as regards to the achievement of the objectives set for urban transformation projects launched to reduce disaster risks. Certainly, eradicating such major risks is highly important for the success of the projects. Major risks are summarized as follows:

- This immense and countrywide transformation project aiming at disaster risk reduction does not have a comprehensive strategy.
- The areas to be transformed are not prioritized and determined as part of a strategy aiming at disaster preparedness of the city as a whole.
- The concepts of "risky area" and "risky building" are not clearly and precisely defined.
- The ground study reports, hazard and contingency plans of many provinces have not been drawn up yet.
- There is no information regarding the current building stock of Turkey while it is not known how the current building stock will give reaction to different disaster scenarios.
- There is no correlation established among costs, needs and resources.

Given the fact that making cities resilient to disasters as a whole is a long-term initiative, it becomes more evident that this process should be managed transparently and openly and gained public support.

Findings/Conclusions; (Making Urban Area Resilient)

- *There is not an effective mechanism in place, which correlates urban development plans with disaster risks and ensures that urban development plans as well as changes therein are made based on disaster risks. Different entities prepare and approve plans in different types and of scales with different approaches, norms and methods, which hinders a unified approach in the planning.*
- *There is conflict of duties among entities both in the preparation of micro zoning, integrated disaster hazard maps and contingency plans, in establishing rules and principles and the management of the process.*
- *So far, disaster hazard maps and contingency plans based on hazard maps have not been drawn up so far because there are no criteria established by AFAD related to the preparation of "integrated disaster hazard maps".*
- *There is no step taken towards the preparation of contingency plans as the integrated disaster hazard maps are not in place. Announcement of disaster-prone areas, which may be considered within this scope, is the only initiative taken so far.*
- *The existing building stock is mostly composed of unlicensed buildings. Besides, the system secures has a very small share in the total number of buildings.*
- *Since 2001,the effective building control system has not established and run. There are still many problemmes concerningcontrol firms,technical staff,construction workmanship, beingoverseen the operations of the building control firms andthe quality of construction materials by the ministry.*
- *A building stock inventory based on disaster risk assessments has not yet been developed.*
- *In public sector, apart from ISMEP and several individual efforts at some provinces, there are no reinforcement and/or reconstruction activities. Besides, ensuring resilience of education, sport and health facilities owned by private sector is left to their own decisions. The public authority does not make any investigation thereof.*
- *Illegal buildings, which constitute a great part of the current building stock, are not granted license with the justification that they are not in compliance with the legislation related to construction. Thus, such buildings are reinforced without receiving engineering services and obtaining assurance through building control.*
- *Reinforcement of disaster-prone towns was put in the country's agenda in 2012. A crucial step was taken towards disaster risk reduction with the Law No.6306 and dated 16 May 2012 on "the Transformation of Disaster-prone Areas". However, launching a project without a defined strategy related to making cities resilient to disasters as a whole and without adequate preparation, might not only bring about many problems leading to irrevocable consequences, but also result in losing the public support, which is of vital importance in such projects.*

Recommendations; (Making Urban Area Resilient)

- *Micro zoning, integrated disaster hazard maps and contingency plans which are important tools in creating disaster resilient cities, should be:*
  - *laid down in the relevant legislation.*
  - *addressed with an integrated approach.*
  - *implemented immediately.*
  - *Measures should be taken to ensure that these maps and plans are reflected on the urban development plans.*
- *For effective functioning of the building control system:*
  - *The scope of the system should be revised in a manner to provide assurance regarding the resilience of buildings.*
  - *It should be ensured that the relation among building control firms, contractors and employers do not affect the quality of the control.*
  - *Actions should be taken to ensure effective oversight by the Ministry of Environment and Urban Development over the operations of building control firms.*
- *Resilience of buildings to natural events should not be left to the initiative of individuals. It should be kept in mind that the processes related to both publicly and privately owned buildings are under the sovereignty and control and thus, the guarantee of the State.*
- *The strategies aimed at ensuring resilience of all buildings should be supported by sound and long-term financing sources, taking into account of the costs borne by the state after disasters and particularly, possible loss of lives.*
- *Particularly in disaster-prone cities, current building stock as a whole (both licensed-unlicensed and public or private) should be determined and risky buildings should be detected through detailed risk analysis and either reinforced or demolished/ reconstruction based on the cost-benefit analysis.*
- *The scientific criteria based on which the decision as to the reinforcement or demolition and reconstruction is taken should be precisely established in cooperation with the experts in the field, professional chambers, universities and in the light of the international standards and practices.*
- *In order to ensure the soundness and consistency of such criteria with the actual practices; a sufficient number of technical personnel having the necessary qualifications should be assigned to decide on the reinforcement or demolition of such buildings and should be trained on the criteria to be applied in taking such decisions as well as their application.*
- *Making cities resilient to disasters should be addressed within the scope of a long-lasting integrated strategy and action plans, which define the future character of the city.*

- *Beginning from the settlement areas with the highest disaster risk, as part of a long-term strategy, ground studies of cities should be conducted; contingency plans should be prepared and reflected upon the urban development plans.*
- *Areas to be transformed should be prioritized starting from the most risky areas.*
- *Urban development plans should be made public and the restructuring of cities should be made transparent.*
- *Resources should be correlated with activities in the projects. Besides, alternative financing models that will ensure sustainability should be developed.*
- *Regeneration, improvement and transformation efforts should be:*
  - *Sustainable;*
  - *Supported with social transformation projects;*
  - *Performed within the principles of transparency and participation and based on in-situ transformation approach;*
  - *Moreover, the possible added value should be reflected on the public in general.*

Abbreviations

ABIS: Disaster Information System

AFAD: Prime Ministry General Directorate of Emergency Management of Turkey

ABIS: Disaster Information System

AYBIS: Disaster Management Information System

AYDES: Disaster Management and Decision Support System

CBS: Geographical Information System

ISMEP: Istanbul Seismic Risk Mitigation and Emergency Preparedness

JICA: Japanese International Development Agency

KENTGES: Integrated Urban Development Strategy

TABİS: Disaster Information System of Turkey

TCA: Turkish Court of Accounts

TRKBİSS: Standard Setting for Urban Information System of Turkey

TUAA: National Disaster Archive system of Turkey

TUCBS: National Geographic Information System of Turkey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Accounting Chamber of Ukraine

Audit Objective

The Audit Objectives are to determine the actual status of the use of budget funds allocated to disasters and emergencies in terms of legality, efficiency and effectiveness, operational efficiency assessment of the state system of prevention and response to emergencies of technological and natural origins, assessment of the internal control of the audit objects in this field, as well as the implementation of the recommendations of the Accounting Chamber of the previous inspection.

Audit Approach/Scope

The audit study is covered the period of 2009-2011 and conducted in the following institutions;

- Ministry of Emergencies of Ukraine and its main branches in Kyiv and Kharkov region;
- Electrical Communication and Automation Centre of Ministry of Emergencies of Ukraine;
- State Inspection of Technological Safety of Ukraine and its main branches in Lviv and Kharkiv regions;
- State Service of Mining Supervision and Industrial Safety of Ukraine and its territorial branches in Lviv and Kharkiv regions;
- State Enterprise "Agency of Information, International Cooperation and Development" Agency Chernobyl inter in form;
- Ukrainian Scientific Research Institute of Civil Protection.

Audit Methodology

The methodology was based on;

- INTOSAI and National auditing standards;
- The Guidelines "audit of disaster risk reduction" drafted by the INTOSAI Working Group on Accountability for and Audit of Disaster-related Aid (AADA);
- Business risks are related to realization of administrative reform in Ukraine and changes of legal demesne of objects of audit were taken into consideration during conducting of audit.

Audit Criteria

Criteria used during audits;

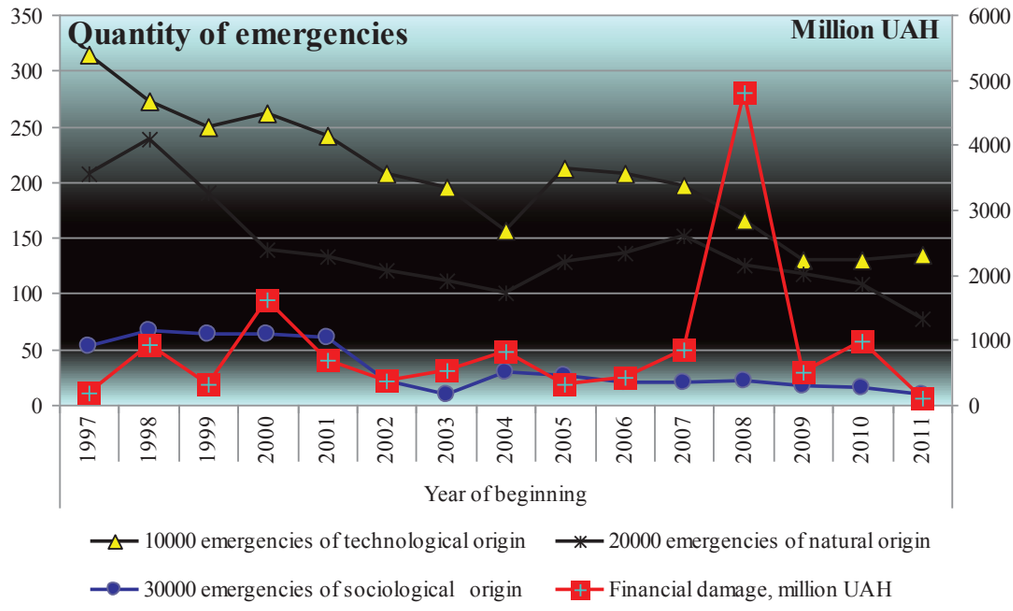
- achievement of effective indexes, determined by the passports of appropriate budgetary programs;
- the ability of existing emergency services to respond to emergencies, as defined by the appropriate inspections;
- the provision of public and individual non-military units with radiation and chemical protection equipment;
- installation of the automated early warning systems in potentially dangerous and hazardous objects;
- public awareness of the situation of civil protection, education of public safety, preventing injury and death due to emergencies.

Identification of the Characteristics of the Disaster

Analysis of emergency occurrence in Ukraine since 1997 (from the beginning of the systematic registration) allows isolating their characteristics.

In the period from January 1997 to 2011 more than 5,6 thousand emergencies were registered in Ukraine, among them 3074 – man-made, 2085 – natural and 498 – sociological origin.

Graph 1: Dynamics of the Emergencies Occurrence



The scale of the distribution of emergencies for the last 15 years is as follows: the state level – 2% (108 emergencies), the regional level – 7% (395 emergencies), the rest emergencies are local and site level (respectively 33% and 58%).

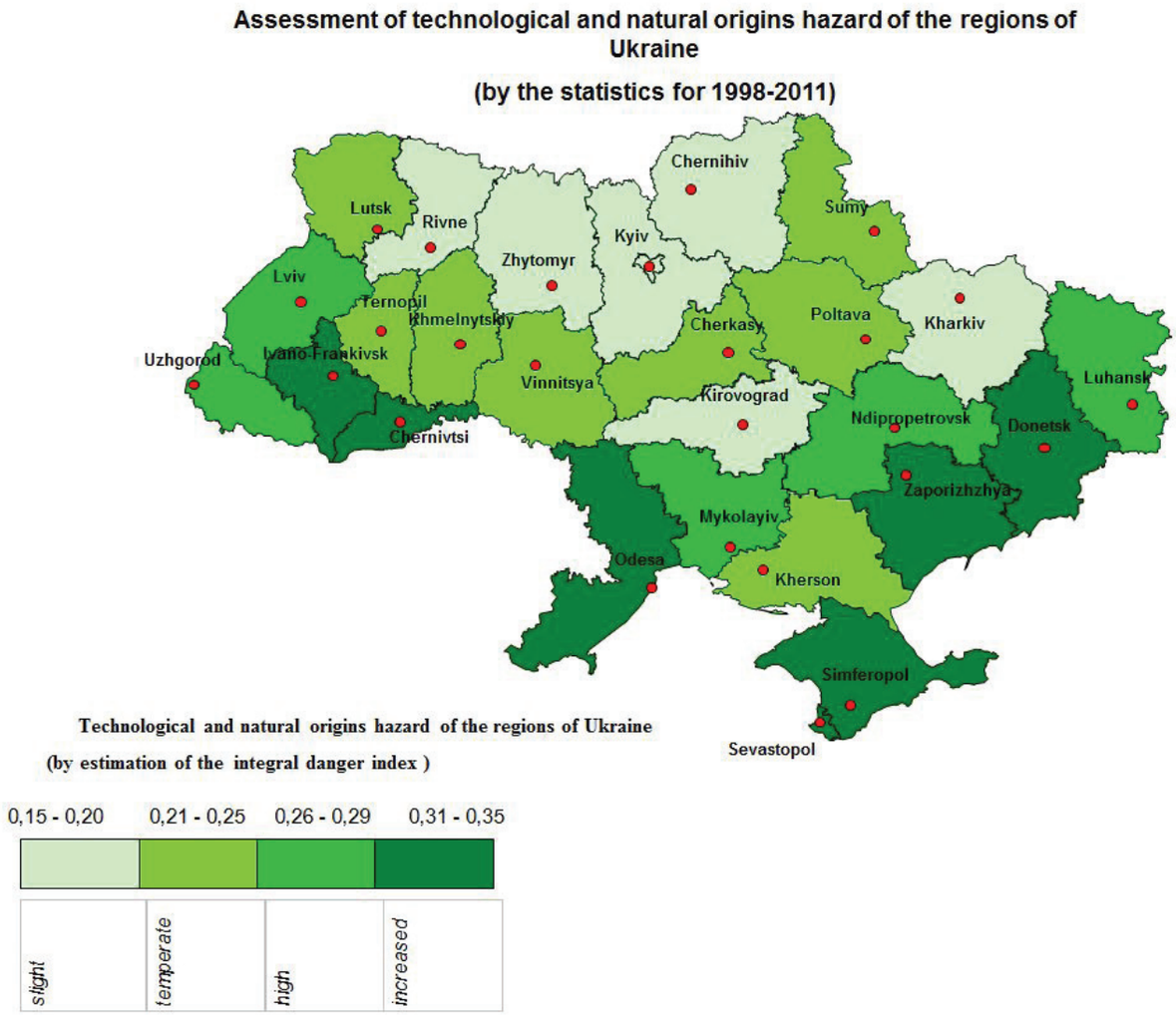
33,1 million people were affected in consequence of emergencies for 15 years, including 6,4 thousand people were perished.

Financial damage caused to the national economy by man-made and natural disasters totally estimated over 13,4 billion UAH excluding inflation, while 88% (11,8 billion UAH) constitute damages by natural disasters.There has been a tendency in the dynamics of the emergencies in the last 15 years to reduce the number of emergencies and reducing the number of perished and affected by emergencies. Significant annual fluctuations in the amounts of losses due to the dominant share of losses from emergency of natural origin, which had disastrous consequences for the economy and the population in some regions of Ukraine: in 1998 and 2001 – the catastrophic floods in the Carpathian region (losses respectively about 600 million UAH and about 300 million UAH), in 2000 – hard glazed frost in the central and south-western regions of Ukraine (loss about 700 million UAH), in July 2008 – the flood in the western areas caused damage worth more than $ 4,4 billion UAH.

To the disasters of technological origin is inherent the high index of quantity of perished, which constitutes more than 70% of the total number. Territory distribution of emergencies of technological origin almost every year coincides with the level of technological loads in the regions of Ukraine.

Among the disasters of technological origin the largest number of emergencies (up to 62%) and the overwhelming majority of the

victims and the perished (respectively 92% and 94%) nestles to two types: emergencies due to fire (explosions) and the emergencies due to traffic accidents. Also, a significant number of emergencies arise from the accidents on life-support systems and electric power systems (up to 24%). Evaluation of natural-technological security of Ukraine's regions statistically 1998-2011 years (mapping presentation) is put in Figure 1.



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Risk assessment Emergencies of natural origin set by using:

- prognostic information of the Ukrainian Hydrometeorological Centre and meteorological data sites through the Internet;
- statistics on the frequency and dangerous natural phenomena (for the last thirty years) and information on occurrence of emergencies for the previous periods (15 years);
- monitoring data of exogenous dangerous geological processes, system of seismic observations, the state system of meteorological observations, surveillance systems for fire situation, information of sanitary-epidemiological and sanitary and veterinary services, etc.

The risk of emergencies occurrence of technological origin is determined by using:

- statistical information about appearance of emergencies in previous periods;
- monitoring of technological objects condition (via the Register database of emergency hazardous facilities, the State Register of potentially dangerous objects, the State registry of high-risk, the results of inspections of hazardous facilities by control bodies of the Ministry of Emergencies of Ukraine (Derzhtehnohenbezpeky and Derzhgirpromnaglyad etc.) ;
- prognosis of emergencies of natural origin, which often occur as factors of emergencies of technological origin.

Practical results of forecasting in emergency situations are operational (twice a week) and long-term, or advisory (for month, season, year) forecasts of emergency situations of natural and technological origins. Besides, twice a week information on "warning about the probability of emergencies and possible complications" is preparing.

Estimation of current and future state of technological and natural security of regions is based on the study on material certification of the areas according to the risk of disasters and annual reports of regional fire units of the Ministry of Emergencies of Ukraine.

Based on analysis of these data background materials on the state of technological and natural safety of the regions are preparing and annually the National report on the state of technological and natural security in Ukraine is published, which contains general information about the natural and technological hazards in Ukraine, occurrence of emergencies and their tends, risk assessment of response and state civil protection, motions on legal, organizational and technical measures aimed at improving the protection of population and territories from emergencies, prevention and reducing the scale of emergencies and improvement of their elimination, which is set on the site of the Ministry of Emergencies.

Legal Arrangement

The following regulations define the principles of the integrated state system of prevention and response to emergencies of technological and natural origins, main objectives, composition of capabilities and means, the order of execution of tasks and interaction between structural units, and regulates key issues concerning functioning of the integrated system.

- The basis of the law on protecting population from harmful effects of technological accidents and disasters of technological, environmental, natural and military origin in the audit period, were the Laws of Ukraine "On Civil Defence of Ukraine", "On protection of population and territories from emergencies of technological and natural origin"(hereinafter - the Law № 1809)," On the legal framework of civil protection".
- The Code of Civil Protection of Ukraine was adopted by the Verkhovna Rada of Ukraine in October 2012 in order to unify the provisions of these regulations.
- The regulations on the integrated state system of prevention and response to emergencies of technological and natural origins approved by the Cabinet of Ministers of Ukraine of 03.08.98 № 1198.

Organisation and Coordination Structure

According to the Regulations, there is at each level of the integrated state system coordinating and permanent control body on solving problems in the field of prevention of disasters, protection of population and territories from their consequences, the common management system, capabilities and means, reserves of material and financial resources, the system of communication and information support. Schematically, the civil protection system is put in Figure 2.

Civil protection (CP) – is a state function, aimed at the defence of population, territories, environment and property from emergencies by prevention and elimination of their consequences and giving assistance to victims

State committee on technological and ecological safety and emergencies issues (TES and ES)

COORDINATION ACTIVITY — Orginizing-metodological support of the commission activity

Unified state system of civil protection

Prime-Minister of Ukraine – Chief of civil protection of Ukraine

GENERAL — **MANAGEMENT**

Minister of Emergencies of Ukraine – Deputy Chief of civil protection of Ukraine

Organizing — **methodological Management**

Ministry of Emergencies of Ukraine (MEU) Civil Protection Department

- is a set of management authorities, forces and means of central and local authorities of executive power, local authorities which are in charge with implementation of state policy in the field of civil protection during the peaceful time and special period

State Inspection of technological safety of Ukraine

State Service of Mining Supervision and Industrial Safety of Ukraine

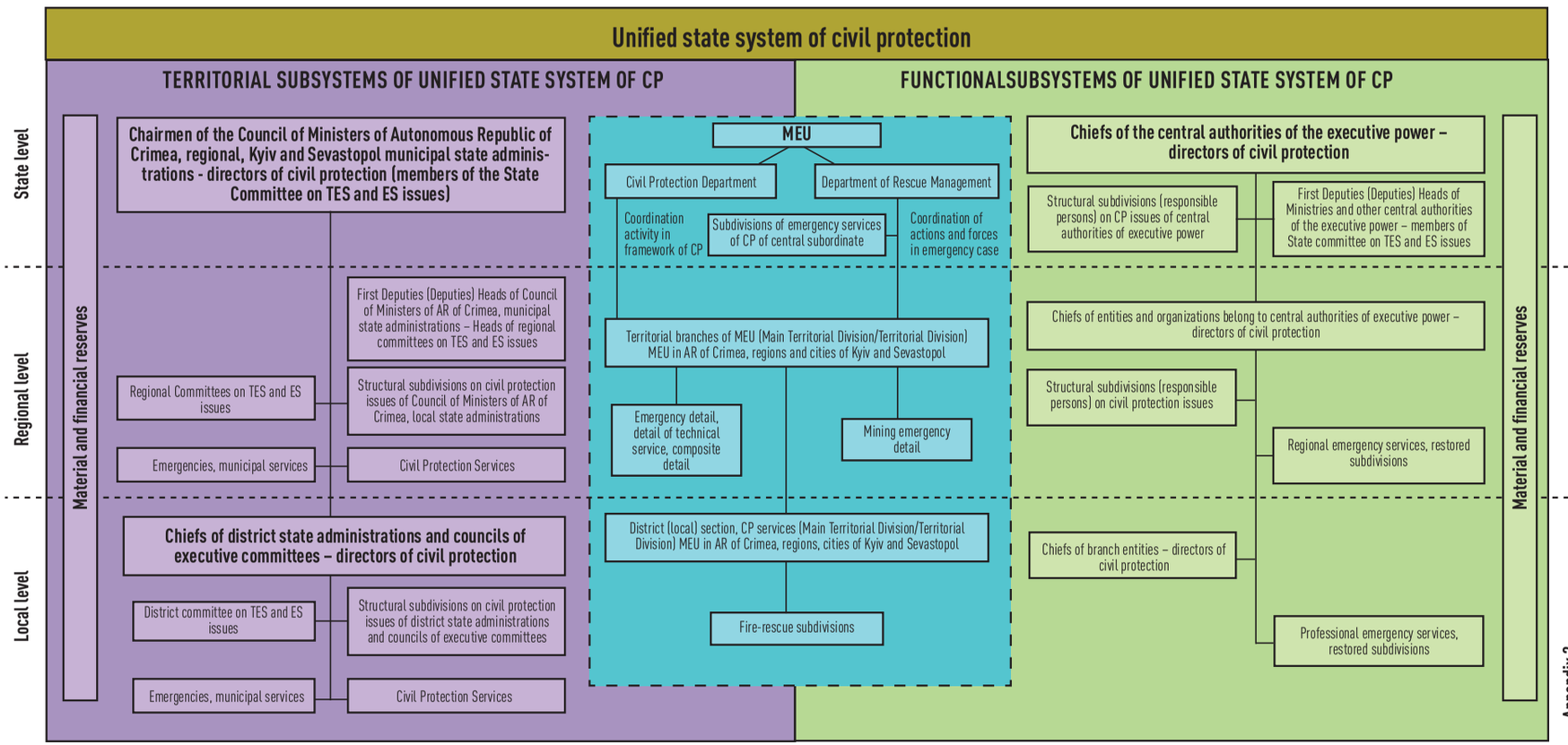

Figure 2: Unified State System of Civil Protection

Appendix 2

Coordinating bodies of the integrated state system are:

- at the national level - State Commission on technological and ecological safety and emergencies, the National Council on the population safety.

In some cases, a special government commission is formed for the elimination of the emergency and its consequences by decision of the Cabinet of Ministers of Ukraine.

- at the regional level - the Commission of the Council of Ministers of the Autonomous Republic of Crimea, Kyiv and Sevastopol municipal state administrations on technological and ecological safety and emergencies;
- at the local level - committee of regional state administrations and executive councils on technological and ecological safety and emergencies issues;
- at the site level - the Commission on emergencies issues of the object.

Territorial subsystem is established in the Autonomous Republic of Crimea, Kyiv and Sevastopol for prevention and elimination of emergencies of technological and natural origins within their territories (Part 4 of Art. 21 of Law №1809).

Functional subsystems are established by central authorities of the executive power for the organization of activity related to the prevention of disasters of technological and natural origins and the protection of population and territories as they occur (Part 2 art. 21 of Law №1809).

The main body in the system of central executive bodies of the formation and implementation of state policy in the field of civil protection, rescue and fire fighting, public control in technological, fire, industrial safety and mining supervision, radioactive waste management, elimination of the consequences of the Chernobyl disaster, measures to prevent injuries of non-productive origin and hydrometeorological activity is the Ministry of Emergencies of Ukraine.

To implement the recommendations of the Accounting Chamber's Board and the relevant decision of the Verkhovna Rada of Ukraine, the Ministry of Emergencies prepared the final version of the Code of Ukraine on civil protection, which, after appropriate approval by the Government, adopted as a basis by the resolution of the Verkhovna Rada of Ukraine of 05.06.2012 № 4876-VI .

Besides, the Verkhovna Rada of Ukraine with Law of Ukraine of 13.03.2012 № 4499-VI "On the system of emergency aid to the population by a single telephone number 112" defined legal and institutional frameworks for the system of emergency aid to the population by a single telephone number 112.

According to the law, the implementation and the functioning and the development of the 112 system assigned to the authority of office of the specially authorized central executive body on civil protection.

According to the technical requirements the system is designed for centralized receiving and processing emergency calls on a single telephone number 112 and centralized information support of emergency services in helping the public and the elimination of any emergency.

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The main purpose of the system is the implementation in Ukraine of unified and centralized mechanism for receiving and processing emergency calls on a single telephone number 112 and bring quality response to the European level, in accordance with EU directives 2002/22/ES (Directive 2002/22/Ec of The European Parliament and of the Council).

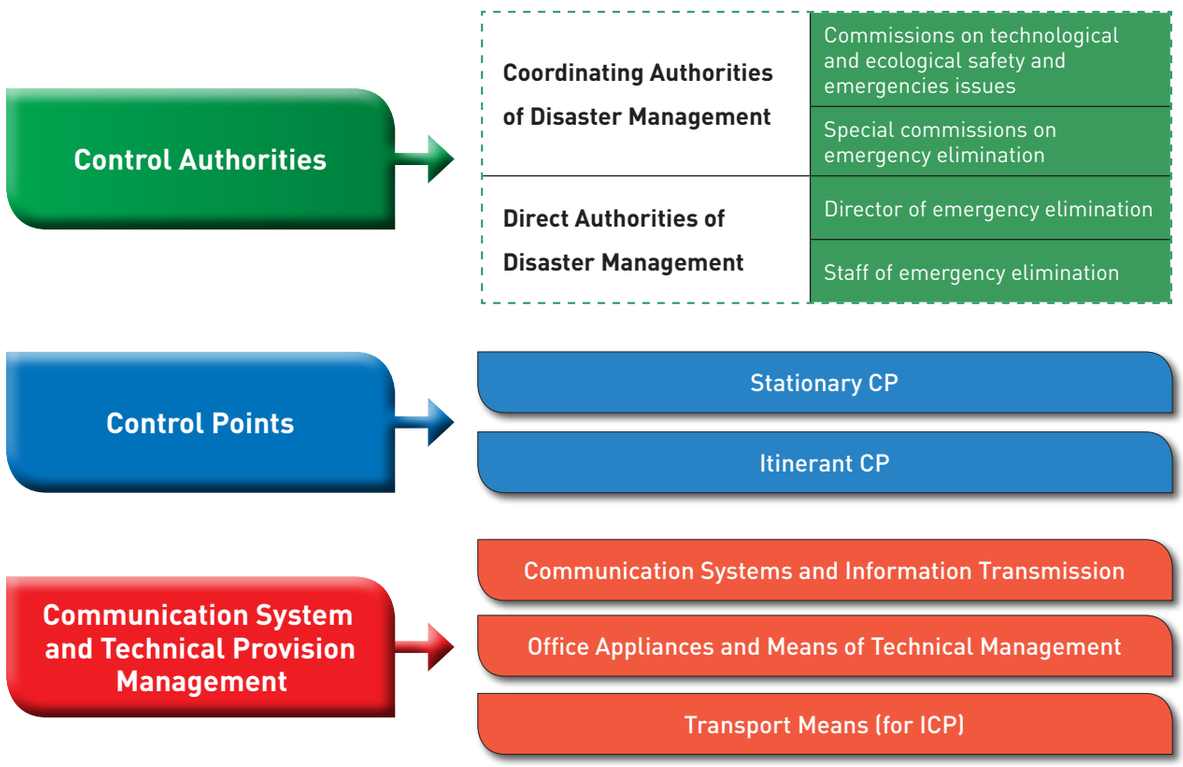
National Strategies and Action Plans

The Plan of emergency response at the state level was approved by the decision of the Cabinet of Ministers of Ukraine of 16.11.2001 № 1567 to organize and implement mutually complex of organizational and practical measures to conduct rescue operations of disaster management, security in the event of a threat or occurrence of emergencies rapid response of the control capabilities of functional and territorial subsystems of civil protection, prevention of loss of people, reduce material losses, organizing priority livelihood of the affected population and timely assistance.

In order to ensure preparedness for rapid response to emergencies by the authorities' subsystems of the Unified State System of Civil Protection at all levels the specific plans to respond to the most likely for a given territory, area, object, based on projected data and expert estimates are developing. If there is necessity to implement at the state level additional rapid response measures in case of a threat of large-scale emergencies or their consequences elimination, the emergency response plans are developed for individual case.

Planning for a rapid response is to ensure the effective functioning of the management during Emergencies and events and putting out fires. Disaster management system and events and firefighting as a set of control authorities, control points (CP) and communication systems, warning and control automation is shown in Fig. 3. (Disaster Management Control System)

Figure 3: Disaster Management Control System



The local authorities of the Ministry of Emergencies of Ukraine developed and approved by the Council of Ministers of the Autonomous Republic of Crimea, cities Kyiv and Sevastopol administrations plans for responding to projected emergencies at the regional level. These plans define the organizational and practical measures and procedures, the terms of their implementation, the order of the actions of the management capabilities, necessary resources and responsible agents to respond to emergencies.

In units which are subordinated to the territorial authorities of the Ministry of Emergencies of Ukraine in the Autonomous Republic of Crimea, Kyiv and Sevastopol under the Ministry's of Emergencies of Ukraine Order dated of 23.09.2011 № 1021 "On approval of guidelines on the compilation and use of operational plans and cards extinguishing system" developed and approved plans and fire cards of the most important and complex flammable objects, the massive presence of people and other important objects.

In case of emergency occurrence is clarifying appropriate response plan based on reality that is at the scene. Particular attention is paid to the organization of interaction between central and local authorities and timely public awareness, all interested governments, enterprises, institutions and organizations regardless of ownership and management of the threat of emergencies. Preparation, updating and practical testing of response plans shall be subject to annual scheduler working documents of rapid response.

Response plans testing and determination of their feasibility are carried out by the Ministry of tactical exercises involving capabilities of the Ministry of Emergencies of Ukraine central and territorial jurisdictions and regional civil protection service, special and command post exercises (training) territorial subsystems of the Unified State System of Civil Protection, tactical exercises and practical training on objects involving fire units, employees and technology facilities.

Training Activities and Public Awareness

In order to prevent emergencies caused by citizens, informing citizens about the progress of consequences elimination of the Chernobyl catastrophe and the state of social protection of victims, teaching people the rules of life safety, prevent injuries and deaths of citizens due to various types of emergencies the MEU initiated and was included in the state budget the Budget Programme "Informing the public on the consequences of the Chernobyl disaster and Civil Protection" (2009-2010 years), "Informing the public on Civil Protection" (2011).

Thus, the analysis of information and analytical information on Ministry of Emergencies of Ukraine, conducted during the audit showed that in Ukraine by types, dominated emergencies due to fires and explosions, poisoning and infectious human diseases, accidents in road transport. One of the main factors of emergencies is the human factor.

The main objectives of the program were:

- permanent and continuous public awareness of consequences of the Chernobyl disaster and on civil protection;
- raising awareness about potential threats secure life, the rules of safe life and on the correct action in the event of different emergencies;

- reduce the number of emergencies, deaths and injuries of citizens caused by ignorance of the citizens right action in an emergency, the rules of safe life;
- permanent targeted training and continuous reminder to citizens of basic principles of safe life.

Through these funds the journal "Emergency" is publishing. By 2012, also issued newspaper "Herald of Chernobyl", "Bulletin of the Ecological Zone and zone (compulsory) resettlement" (published twice a year and distributed by subscription and free to libraries and government agencies), and produced a weekly TV program "People rescue service - 101", which appeared on channel of Kyiv regional state broadcasting company.

Financial Structure

Implementation of the state programs aimed at the prevention and elimination consequences of disasters in 2009-2011, planned for ten budget programs in the field of the Ministry of Emergencies of Ukraine (MEU).

From mentioned programs - two were to complete in 2010.

Analysis of budget requests of MEU in terms of areas of budget planning showed that the major share of government expenditure planned by the Ministry to create an efficient telecommunications and information systems security management measures to prevent and respond to emergencies of man-made and natural disasters (two budget programs), money maintenance of civil defence forces (four budget programs) and technical upgrading of civil defence forces (four budget programs).

According to above-mentioned, the audit was conducted in two areas:

- State planning, operational appropriations and spending budget aimed at preventing emergencies;
- State planning, operational appropriations and spending budget aimed at allowance and technical civil defence forces. Thus, in order to create conditions for public safety and territories to improve their protection from harmful man-made, natural and environmental factors by increasing the efficiency of the communication system, alerts and information in March 4, 2004 approved the comprehensive program of development of communication system, alerts and Information of Ministry of Emergencies for 2004 - 2010 years (further the Comprehensive Program).

Implementation of the Comprehensive Programme envisaged in two phases: 2004 - 2006 and years 2007 - 2010 years. The total amount of financial resources required for its implementation amounted to 223 million 124,1 thousand UAH (in 2001 prices), including in 2009 – 11208,5 thousand UAH and in 2010 – 7098,6 thousand UAH. MEU was defined as the State consumer of the Comprehensive Programme.

Funding of the program it was supposed customer at a separate budget program "Implementation of a comprehensive program of development of communication, notification and Information of the Ministry of Emergencies of Ukraine and Affairs of Population Protection from the Chernobyl Catastrophe Consequences" main budget funds which acted MEU, lower-level managers - node communication and

automation of MEU, the Ministry of Emergencies in the Autonomous Republic of Crimea, the cities Kiev and Sevastopol.

For the purpose of information and analytical support of the preparation, adoption and execution control decisions on emergency by the Cabinet of Ministers of Ukraine in 1999 approved a program of government data-processing system for emergencies.

Action plan for the development and support of the Government Information Management System for Emergency Situations for 2006 - 2010 years was approved by the Cabinet of Ministers of Ukraine of 01.03.2006 № 115-p. Consumer work related to the implementation of this plan, defined MEU. The estimated funding for 2006 - 2010 years – 38607,3 thousand UAH, including in 2009 – 8030,2 thousand UAH and 2010 – 7052,3 thousand UAH.

Funding of this plan it was supposed by customer at a separate budget programme "Development and support of government data-processing system for emergencies." Primary spending unit is MEU, lower level managers - Ukrainian Scientific-Research Institute of Civil Protection and territories from emergency situations of technological and natural origins of MEU, communication and automation MEU and Research, Design and Technological Institute micrograph of MEU.

However, the audit showed that the comprehensive program and a programme of creation of a government information-analytical system for emergencies were not aligned with the Law "On State Special-Purpose Programme" as a result they did not actually had gained national importance, were institutional in nature, and their indicators could serve basis for the state budget for the current year.

As a result, funding for these programs since their implementation was not more than 32 percent, and the programs have not been fulfilled.

So, during this audit, it was found that indexes annually lie in the corresponding budget programs being achieved within budget allocations.

However, due to State limited financial resources directed to the relevant state programs, efficiency indexes inherent in the programs could not be assessed in terms of their achievement as the programs were not executed as a whole.

In order to create a unified system of civil protection and effective civil defence forces, to reduce the risk of disasters and achieve a guaranteed level of protection of population and territories from their effects has been developed and approved by the Cabinet of Ministers of Ukraine in 2008, the state social programme of civil defence in 2009 - 2013 (hereinafter Development Programme for Civil Protection).

Implementation of the Programme provides for two phases: 2009 - 2010 and years 2011-2013. The estimated budget of the program amounts to 10574,6 million UAH, including the state budget – 8138,9 million UAH, local budgets – 1958,2 million UAH, other sources – 477,5 million UAH.

The MEU was defined as the State consumer coordinator of activities of the programme.

It was the comprehensive document that, in particular, predicted improvement of the legal framework for the establishment of a unified system of civil protection, modernization of national, regional, specialized and centralized object automated alerts, technical re-equipment of government, civil defence forces, dispatchers, construction of fire stations and more.

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And the decision of the Cabinet of Ministers of Ukraine approved the State program preparation and hosting in Ukraine of the European Championship finals in 2012, one of the objectives of which are also predicted performance measures to create modern systems to assist in emergency situations.

Deadlines of these two programs at the time of the audit have not been completed, allowing estimating only intermediate results.

However, the audit found that the planning of the state budget for their activities carried out without taking into account inflation and did not maintain the existing needs for financial resources, which in turn leads to delays of execution of their individual actions and creates risks of failure programs in general.

Accordingly, the auditors had determined its own scale performance targets agreed with the audit, which were based on the plans and readiness of emergency services to respond during adverse weather conditions in autumn-winter 2010-2011.

The use of such indicators allowed distinguishing problems in a system of disasters and accidents in terms of efficiency and effectiveness of the use of budget funds and the priorities that were perceived by the auditee.

In 2011, the Ministry developed a new version of the National Target Program for Social protection of population and territories from emergencies of technological and natural disasters for 2013 - 2017 which was approved by the Verkhovna Rada of Ukraine Law of Ukraine of 07.06.2012 № 4909-VI (comes into force from 01.01.2013)

Findings/Conclusions;

- *There is legal and institutional framework of the realization of main objectives and measures for the protection of population and territories from emergencies of technological and natural origin in Ukraine.*
- *The appropriate special-purpose programs were developed and covered the main areas of civil protection, responsible executive authorities were defined.*
- *In Ukraine a system of early detection and warning is developing. However, its implementation is out of deadlines, requiring as greater responsibility of government as more effective management decisions.*
- *Due to restricted budgetary financing in 2009 - 2011 years measures of prevention and response to emergencies of technological and natural origin of the state special-purpose programs in this area are not complied in the planned scope and the warning and consequences elimination system does not function in full extent.*
- *Condition of implementation of policy measures in the field of civil protection, prevention of disasters, preparedness territorial subsystem of a unified system of civil protection is assessed as being limited to the requirements and needed to be improved.*

Abbreviations

MEU: Ministry of Emergencies of Ukraine

UAH: Ukrainian Hryvnia- Convert Money in Ukrainian

Published National Reports by Participating SAIs

AZERBAIJAN

National Report Title: Report on the audit of natural disaster preparedness in the Republic of Azerbaijan

Audit term: 2010-2011

Language: Azerbaijani

CHILE

National Report Title: Consolidated final report No. 219, 2012, on the audit of the national emergency office of the ministry of the interior and public security, intendances, governorates, municipalities and other constituent parties of the national civil protection system.

Publishing Year: 2014

Audit Term: The period from 2011, 2012 & 2013.

Language: Spanish

Web: http://www.contraloria.cl/SicaProd/SICAv3-BIFAPortalCGR/faces/detalleInforme?docIdcm=1b777376936442522607633bc23247e9&_adf.ctrl-state=dl3570gl5_43

INDIA

National Report Title: Report of the Comptroller and Auditor General of India on performance audit of disaster preparedness in India Report.

Union Government (Civil) Ministry of Home Affairs, Report No. 5 of 2013 (Performance Audit)

Publishing Year: 2013

Audit Term: the period from 2007-08 to 2011-12.

Language: English and Hindi

Web:http://saiindia.gov.in/english/home/Our_Products/Audit_Report/Government_Wise/union_audit/recent_reports/union_performance/2013/Civil/Report_5/Report_5.html

PHILIPPINES

(1) Assessment of Disaster Risk Reduction and Management at the Local Level (2014)

(2) Report on the Audit of Typhoon "Yolanda", internationally known as Typhoon "Haiyan" (2014)

See more information: http://www.coa.gov.ph/disaster_audit/

ROMANIA

National Report Title: Performance audit regarding the efficiency and effectiveness of the programs and measures implemented in order to prevent and relieve the effects of floods in Romania;

Performance audit on the efficiency and effectiveness of the programmes and steps taken to prevent as well as to rule out the impact of a major earthquake in Bucharest Municipality.

Publishing Year: Both reports will be published within 2014

Language: Romanian

UKRAINE

National Reports Title: Audit of the management of public funds allocated to prevention and elimination of emergencies' consequences" (carried out in 2011)

Audit of the management of public funds allocated to prevention and elimination of disasters' consequences" (carried out in 2012).

Language: Ukrainian

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