






MINISTERY OF INTERIOR
DEPUTY MINSTER FOR COORDINATION
OF DEVELOPMENT AFFAIRS

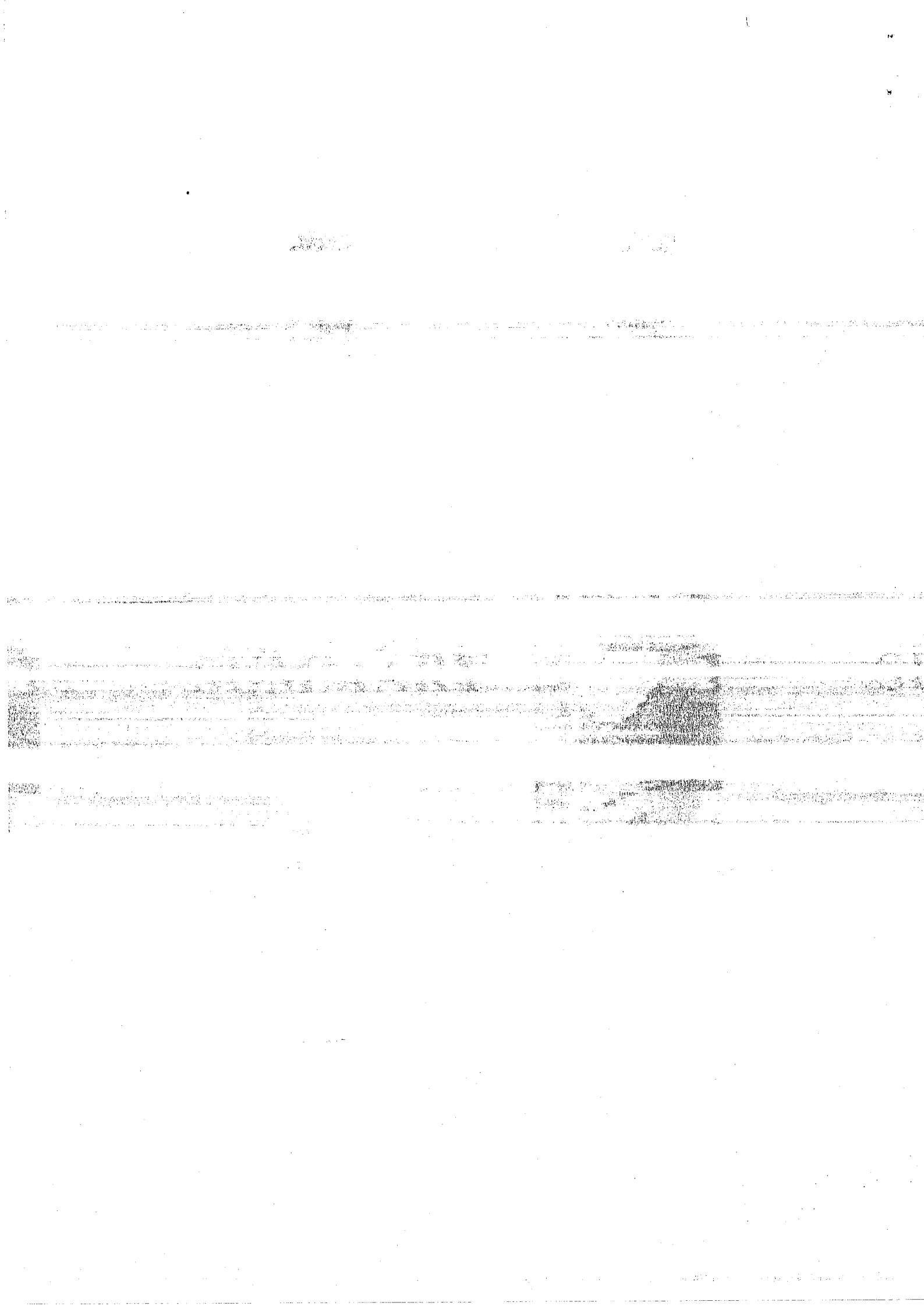
INTEGRATED NATIONAL DISASTER MANAGEMENT PLAN

Volume Seventeen
FINAL REPORT

EXECUTIVE SUMMARY

BUREAU FOR STUDIES AND
COORDINATION OF SAFETY
AND RECOVERY AFFAIRS

Third edition
June 2002



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ABBREVIATIONS

General

DMIS	Disaster Management Information System
IDNDR	International Decade For Natural Disasters Reduction
INDMP	Integrated National Disaster Management Plan
MIS	Management Information System
NTF	North Tehran Fault
SUIP	Simulation of Unorganized Individual Participation
UIT	Unorganized Individual Training

Organizations

BSCSRA	Bureau for Studies and Coordination of Safety and Recovery Affairs
CEST	Center for Earthquake and Environment Studies of Tehran, Tehran Municipality
CSO	Civil Society Organization
DOE	Department of Environment
DTF	Disaster Task Force
GDNCDM (GDNDC)	General Directorate for National Disaster Management Coordination
GSI	Geological Survey of Iran Organization
INMARSAT	International Maritime Satellite Organization
IRI	Islamic Republic of Iran
IRIB	Islamic Republic of Iran Broadcast Organization
JICA	Japan International Cooperation Agency
MOI	Ministry of Interior
NCNDR (NCRND)	National Committee for Natural Disaster Reduction
NCPND	National Committee for Preparedness against Natural Disasters
NDTFS	National Disaster Task Force Secretariat
NGO	Non - Governmental Organization
MPO	Management and Planning Organization
NPD	National Project Director
PDTF	Provincial Disaster Task Force

TETCO	Tehran Engineering and Technical Consulting, Tehran Municipality
UN	United Nations
UNDP	United Nations Development Program
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund

Technical Terms

BUILDING CODE 2800	The Iranian Code for Seismic Resistant Design of Buildings (Standard No. 2800), Building and Housing Research Center, Ministry of Housing and City Planning
ECR	Emergency Command Room
EOC	Emergency Operations Center
GIS	Geographical Information System
GPS	Global Positioning System
HAZMAT	Hazardous Material
HF	High Frequency
ICS	Incident Command System
ISP	Internet Service Provider
LAN	Local Area Network
NEOC	National Emergency Operations Center
PEOC	Provincial Emergency Operations Center
RC	Reinforced Concrete
UHF	Ultra High Frequency
VHF	Very High Frequency

DEFINITIONS

Disaster

A dangerous event that causes significant human or economic losses which requires a critical response beyond the scope of any single agency or service such as the fire or police departments. Disasters are distinguished from emergencies by the greater level of required response.

Emergency

An emergency is a dangerous event or circumstance that normally can be managed at the local level. However, general government assistance may be needed to supplement provincial or local efforts and capabilities to save lives and to protect property and public health and safety, or lessen or avert the threat of a catastrophe in any part of Iran.

Emergency management

Emergency management comprises organized analysis, planning, decision making and assessment of available resources to mitigate (lessen the effects or prevent), prepare for, respond to and recovery from the effects of all hazards

Hazard

A hazard is a dangerous event or circumstance that has the potential to lead to an emergency or disaster

Phases of emergency management:

Emergency management is done in four phases:

Mitigation- taking sustained actions to reduce or eliminate long-term risks to people and properties from hazards and their effects.

Preparedness- building the emergency management profession to effectively prepare for, mitigate against, respond to, and recovery from any hazard by planning, training and exercising.

Response- conducting emergency operations to save lives and properties by positioning emergency equipments and supplies, evacuating potential victims, providing food, water, shelter and medical care to those in need, and restoring critical public services.

Recovery- rebuilding communities so individuals, businesses, and governments can function on their own, return to normal life and protect against future hazards.

Risk

Risk is a concept which describes a potential set of consequences that may arise from a given set of circumstances. In the context of emergency management, risks are generated when hazards interact with communities.

Vulnerability

Vulnerability is a concept which describes constraints of an economic, social, ethnic, physical or geographic nature, which reduce the ability to cope with the impact of hazards.

INTRODUCTION

INTRODUCTION

Iran is a disaster prone country. Major natural disasters include frequent severe earthquakes, floods, droughts, cold weather stress, landslide, desertification, deforestation and storms.

Earthquake takes a heavy toll. Iran is a part of the Alpe Himalaya orogenic belt which belongs to the youngest and latest orogenic region of the world. As a result Iran suffers severe economic and social damages caused by seismic activities within its territory. Earthquakes have killed 130,000 people during the last 90 years. Many cities including Tehran, Tabriz, Rudsar, Manjil, Tabas, Lar, etc. have sustained substantial damages due to high magnitude earthquake activities. Review of the historical seismic data shows that almost all parts of the country have been affected or under threat to be affected by the physical, social, and economic problems associated with earthquakes.

The most recent major earthquake jolted the agricultural rich provinces of Gilan and Zanjan in the northern part of the country killing 19,000 people and causing financial losses of over one billion US Dollars. In 1993 over 700 small earthquakes completely destroyed large part of Firrozabad in the southern Fars province. It is feared that a major earthquake in Tehran, a megalopolis of over 10 million inhabitants, situated on a number of major faults, could lead to high amount of dead and injured people as well as to substantial financial damages if appropriate mitigation measures are not taken.

Floods have been equally if not more costly in terms of financial losses. Actually more people have been affected by flood than by earthquakes. Prompted by rapid urbanization, unprecedented deforestation is destroying forests and vegetation coverage resulting in floods, soil erosion and water pollution. The population pressure has also resulted in building upon marginal land too close to riverbeds or on vulnerable hill slopes. During the last decade three major floods have occurred in the country. In 1991 heavy flooding almost destroyed the provincial capital of Zabol with its surrounding areas causing hundreds of millions US $ worth of damage. In 1992 floods brought havoc to 11 provinces in the south of the country. In 1994 floods again devastated large areas in the south, north and west leading to considerable financial losses. In 2001 a major flood destroyed parts of Golestan and Khorasan provinces. These major floods have been in addition to hundreds of smaller ones that have every year had an impact on all provinces of the country. Floods have become a menace in Iran and need to be seriously addressed

Drought is another major disaster in Iran. During the last three years (1998-2001) Iran confronted with one of the worst drought periods. The damages incurred by this disaster amount to 80 billion US $.

The MOI data on fire incidents in the urban areas reveal the necessity for safety increasing measures against fire incidents. These data indicate that every year more than 50,000 fire incidents take place in the cities which lead to 1400 human fatalities, 4500 injuries and 60 millions US $ material damages.

Disaster management has become a part of the process for evaluating development programs, which will guarantee the sustainability and the continuity of government programs. After the **International Decade for Natural Disasters Reduction**

(IDNDR) in the 90s, many countries have prepared their own national plan for disaster management.

In Iran many studies have also been carried out on disaster management. However they have not resulted in any action plans for comprehensive disaster management.

Due to special topographic, geographic, social and economic conditions, Iran has a special situation, e.g., every decade an earthquake of 7 Richter intensity and every year one of 6 Richter intensity has occurred. Moreover, droughts, floods and fire have persistently disordered the development of the country.

To cope with these problems it was considered necessary to prepare an Integrated National Disaster Management Plan (INDMP) for Iran. This plan clearly defines organizational functions, strengthens and coordinates the activities of various organizations, which will result in a reduction of human casualties and economic damages in a situation of natural disaster. A principal element of the INDMP consists of planning an Emergency Operations Center (EOC) and organizing related communication and information systems that will continue to work in any disaster situation. Furthermore, methods have been found to enhance public awareness to earthquake and other forms of natural disasters and facilitate people participation in activities that will mitigate effects of a disaster. Finally, safety checklists for development projects have been prepared that should be used by government agencies, contractors and other related persons or institutions.

The INDMP will be presented to the National Committee for Natural Disasters Preparedness for approval as a comprehensive disaster management plan for the Islamic Republic of Iran.

The INDMP consists of 18 volumes of reports as follows:

No.	Title
1	*Vol. 1: Comprehensive Feasibility Report*
2	*Vol. 2: Draft Articles for Approval of the National Committee for Natural Disaster Preparedness*
3	*Vol. 3: Summary Report of the Comprehensive Disaster Management Plan for City of Tehran*
4	*Vol. 4: Summary Report, Comprehensive Feasibility Report*
5	*Vol. 5: Structure of the Mitigation Plan*
6	*Vol. 6: Structure of the Preparedness Plan*
7	*Vol. 7: Operations of 14 Responsible Organizations in Provinces*
8	*Vol. 8: Structure of the Recovery Plan*
9	*Vol. 9: Flood Management Plan*
10	*Vol. 10: Safety Checklists for National, Regional and Local Major Development Projects*
11	*Vol.11: Formulation of an Improved Disaster Communication and Information System*
12	*Vol. 12: Plan for People Participation and Enhanced Public Awareness to Earthquake in Urban Areas*
13	*Vol. 13: Design, Structure, Function and Technical Requirements of National EOC*
14	*Vol. 14: Localization Studies of National EOC*
15	*Vol. 15: INDMP Validation Workshop Report*
16	*Vol. 16: Executive Summary Report of INDMP (Persian)*
17	*Vol. 17:Executive Summary Report of INDMP (English)*
18	*Vol. 18: Executive Summary Report of EOC (Persian)*

General objective:

The general objective of the INDMP is to increase the national capacities and abilities regarding preparedness, mitigation, response and recovery in a disaster situation.

Specific objectives:

The specific objectives of the INDMP are as follows:

- Preparation of the structure of the Integrated National Disaster Management Plan (INDMP);
- Preparation of disaster implication checklists for major development projects;
- Preparation of improved plan for disaster management communication and information systems;
- Preparation of operational and public participatory procedures for earthquakes response and enhanced public awareness to earthquake in urban areas;
- Provision of layout, structure, functions and technical requirements of Emergency Operations Center (EOC).

Methodology:

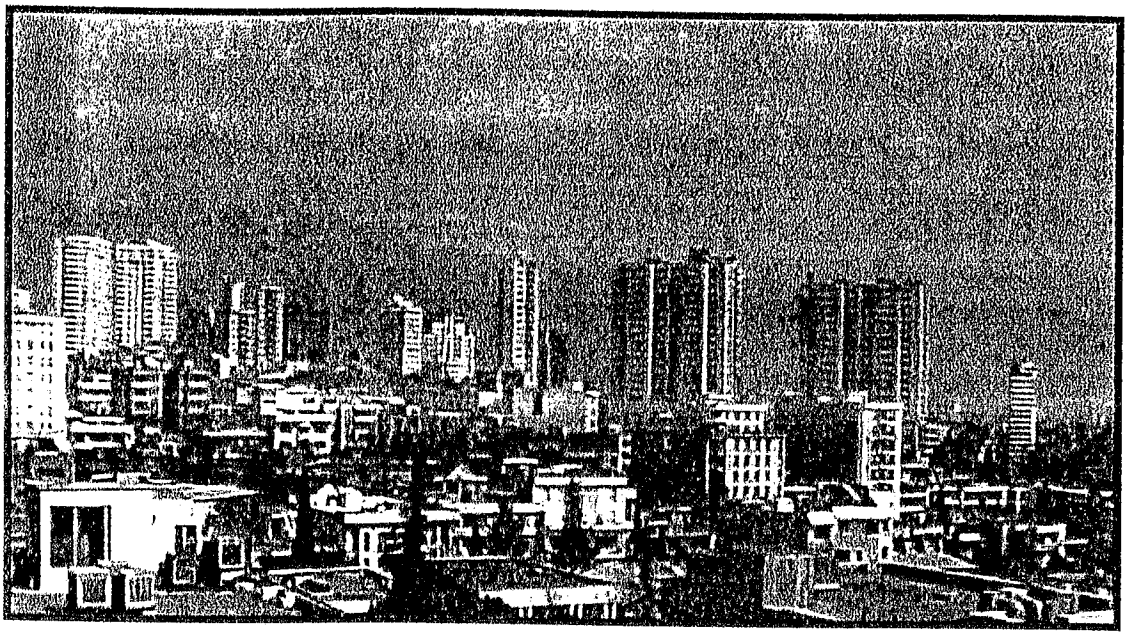
This study has applied a research and development procedure aimed at producing a concrete, implementable Integrated National Disaster Management Plan. The procedure has included the following activities:

- Study of the existing documents in Iran
- Search for and study of new documents
- Expert works
- Field studies
- Consultancies
- Investigation of authorities viewpoints:

  Viewpoints of different authorities were investigated in the different phases of plan. Investigations were made both by correspondence and by interviewing relevant authorities and experts. Their viewpoints were used for strengthening the operational aspects of the project.

- INDMP validation workshop:

  A validation workshop held before the final draft was prepared. In this workshop the representatives of related organizations and the experts on disaster management participated and had the opportunity to criticize and express their views on the contents of the Plan. The results of this workshop, including expressed views and critiques have been incorporated into the final reports of the INDMP.



Chapter I
STRUCTURE OF THE INTEGRATED NATIONAL DISASTER MANAGEMENT PLAN (INDMP)

1-STRUCTURE OF THE INTEGRATED NATIONAL DISASTER MANAGEMENT PLAN (INDMP)

1-1-Structure of disaster management at national, provincial and local levels

The framework and details of the INTEGRATED NATIONAL DISASTER MANAGEMENT PLAN has been prepared in four volumes. For the formulation of the Plan, relevant subjects have been discussed with the appropriate authorities of the Ministry of Interior. Moreover, The preliminary plan has been discussed at the Social Security Commission of the Board of Ministers and had been commented by the experts of the National Management and Planning Organization.

Before the finalization of the plan the views of authorities and organizations related to disaster management at national, regional and local levels have been investigated and taken into consideration.

The existing disaster management structure in Iran and the structure of the INDMP are briefly described below:

1-1-1-Investigation of the existing disaster management structure in Iran

Before 1991 handling of natural disasters was the responsibility of a special disaster task force within the office of the president (see Figure 1-1). By a budget act in1991 the Ministry of Interior was formally assigned the responsibilities and functions related to disasters. The previous structure of national disaster management in Iran is shown in Figure 1-2.

To discharge the assigned disaster management functions, the ministry formed the Bureau for Studies and Coordination of Safety and Recovery Affairs (BSCSRA). The BSCSRA mandate included research in safety measures, formulation of mitigation and preparedness plan, disaster information analysis and dissemination, provision of coordination services for relief and recovery activities.

The BSCSRA was also mandated to liaise with national and international centers to utilize their potentials to achieve its given mandate.

The ministry also formed a National Disaster Task Force (NDTF). NDTF is a coordinating inter-organizational body. NDTF activities vary during different phases of disasters. When a sudden disaster strikes, the NDTF assumes the major task of coordinating relief operations carried out by technical ministries and relief organizations.

Enactment of the national committee for reduction of natural disasters act in 1991 established the role of the Ministry of Interior and designed this committee as a policy and decision making body with the mandate to research and explore practical ways to mitigate natural disasters. The existing structure of natural disaster management is shown in Figure 1-2.

A number of technical ministries and organizations contribute to disaster management in IRAN. These include Ministry of Energy, Ministry of Housing and Urban Planning and its affiliated Housing Foundation, Ministry of Agriculture Jihad, Ministry of Roads and Transportation, Ministry of Health, Management and Planning Organization, Red Crescent Society of I.R.IRAN, Mobilization of the Oppressed Organization known as the Basij. All these ministries and organizations are members of the NCRND and the NDTF.

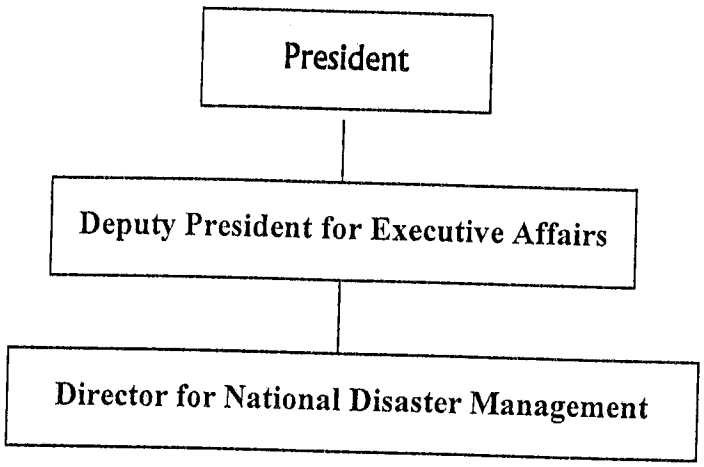


Figure 1-1 The previous structure of National Disaster Management in Iran before 1990

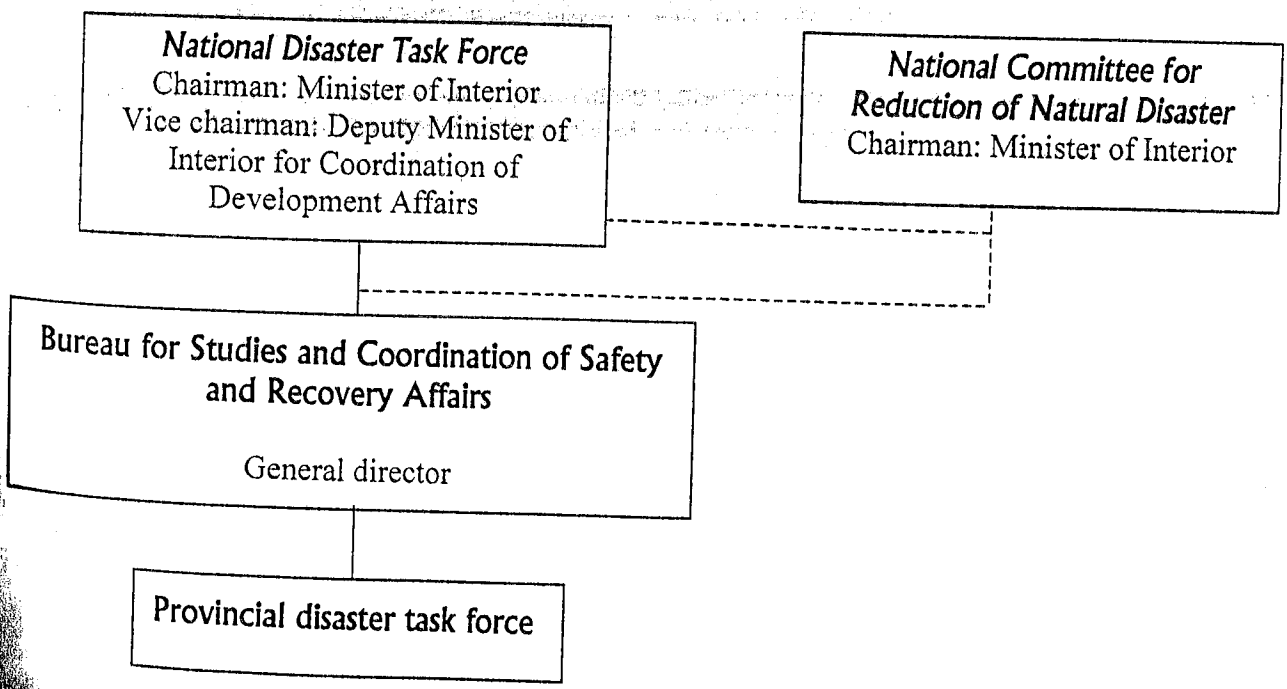


Figure 1-2- The exiting structure of National Disaster Management in Iran since 1990

1-1-2-Analysis of the existing structure

The main shortcomings of the existing disaster management mechanisms are the followings:

- The disaster response is often an unplanned undertaking. When a disaster strikes, disaster partners assume their traditional roles, which could be overlapping and often not quite appropriate. Accordingly, there is a need for clarifying the definitions of roles and functions of the various partners in disaster management.
- Although relief and rescue aspects of disaster management appear to be fairly satisfactory, the same cannot be said for the forecasting, mitigation and preparedness to disasters. Disaster management is basically not viewed in the holistic context of sustainable development.
- In spite of the repeated and well-intended attempts, the country still lacks an integrated disaster response plan for which the need is strongly felt especially in large cities with high population density.
- The causes for heavy financial losses in recent earthquakes and floods in Iran are mostly due to lack of mandatory earthquake and flood mitigation measures.
- The existing disaster management structure does not provide for applying a holistic approach to public awareness to natural disaster and for training people to assist themselves when faced with a sudden disaster.

1-1-3-Justification of the proposed structure of the INDMP

A- The multi-disciplinary nature of disaster management requires strong leadership for coordination of various activities. By thorough review of the disasters related mandates of the involved organizations the proposed structure of the INDMP should strengthen the coordination of their activities.

B- The principles that the proposed structure considered are:

- Optimum use of the existing possibilities and organizational structures in Iran.
- Use of international scientific concepts of disaster management
- Provision of similar disaster management structures at different levels of the government in order to achieve a common organizational language
- Incorporation of the national geographical boundaries in the structure of INDMP
- Inclusion of the four phases of disaster management (mitigation, preparedness, response and recovery) in the structure of INDMP
- Practicality of the proposed structure for execution in Iran

1-2-The Proposed Structure of the Integrated National Disaster Management Plan

This plan consists of all elements required in the structure of the INDMP, with respect to the existing laws, principles and existing organization structure for disaster management. Furthermore, the national government policy of not expanding the total number of government employees has been considered in the formulation of the INDMP. The contents of this chapter are formulated as legal articles and will be approved by the National Committee for Natural Disasters Preparedness (the new name for NCRND). The main subjects covered in this plan are as follows:

Strategic plan for the General Directorate for Coordination of the National Disaster Management

1- Structure of the INDMP
   - Structure of the General Directorate for Coordination of the National Disaster Management
   - Structure of the General Directorate for Coordination of the Provincial Disaster Management
   - Structure of the Directorate for Coordination of the Township Disaster Management
   - Structure of the Disaster Management Organization in Cities
   - Structure of the Coordination Unit of Disaster Management of the Cities
   - Structure of the Disaster Management in the Central City of the Province
2- Financial resources and procurement
3- Participation procedures of governmental organizations (standard operations procedures for 12 responsible organizations)
4- Information flow and the role of Media including the role of Islamic Republic of Iran Broadcast (IRIB)
5- National, Provincial and Local Emergency Operations Center (EOC)

1-2-1-The proposed structure of INDMP

The major elements of this structure are described below:

A- National Disaster Task Force (NDTF)

Minister of Interior chairs the National Disaster Task Force. The main functions of the NDTF will be policy-making, decision- making and coordination of different organizations activities in the mitigation, response and recovery phases of national disaster management. The members of the NDTF are the following:

- Minister of Interior (chairman)
- Deputy Minister of Interior for Development Affairs (Vice chairman)
- Minister of Energy

- Minister of Health
- Minister of Roads and Transportation
- Minister of Communications
- Minister of Housing and Urban Planning
- Minister of Agriculture Jihad
- Chief of Staff of the General Commander of Armed Forces
- Vice President and Director of the Management and Planning Organization
- Director of I.R.IRAN Red Crescent Society
- Director of I.R.IRAN Broadcasting Organization

B- General directorate for national disaster management coordination (GDNDMC)

The general directorate for national disaster coordination is responsible for the daily activities concerning coordination of national comprehensive disaster management including the four phases of disaster management (mitigation, preparedness, response and recovery). This directorate also coordinates disaster management at city, township and province levels. This centralized coordination, will hopefully contribute to a free flow of data and information as well as unified commands.

C- National committee for preparedness against natural disaster (NCPND)

The duties of this committee include training, research, planning and exercises for disaster management. The members of NCPND are the followings:

- Deputy Minister of Interior for Development Affairs (chairman)
- Deputy Minister of Energy
- Deputy Minister of Health and Medical Education
- Deputy Minister of Roads and Transportation
- Deputy Minister of Housing and Urban Planning
- Deputy Minister of Commerce
- Director of Meteorological Organization
- Director of Management and Planning Organization
- Director of Environment Protection Organization
- Director of I.R.IRAN Red Crescent Society
- Director of Forests and Animals Husbandry Organization
- Director of Geophysics Institute of University of Tehran

Two specialized subcommittees work under this committee:

- Risk management subcommittees
- Operational subcommittees

These subcommittees work conjointly to prepare relevant preparedness programs.

D- Deputy for planning of the general director for national disaster management coordination

The deputy for planning of GDNDC will act as the secretary of NCPND and be in

charges of all the administrative functions of the preparedness phase of disaster management.

E-Directorate for mitigation

This directorate will be responsible for coordination of operations regarding the mitigation phase of the disaster management.

F- Deputy for executive affairs

Deputy for executive affairs in cooperation with the four sections of operations; logistics; data collection and planning; and administration and finance of the "incident command system" is responsible for the response and recovery phases of disaster management.

The "Incident Command System" (ICS) is used as a standard management system for response and recovery phases. The ICS is used by all specialized disaster management responsible organizations for response and recovery phases of disaster management.

The proposed structure for response and recovery operations allows all the response organizations to perform their specialized duties in emergency situations.

The twelve responsible ministries and organizations for disaster response and recovery management are as follows:

1. Water, Sewage and Electricity affairs: Ministry of Energy
2. Fire and HAZMAT affairs: Ministry of Interior- Fire Fighting Coordination Unit
3. Shelter and Housing affairs: Ministry of Housing and Urban Planning
4. Communications affairs: Ministry of Communications
5. Fuel and Petroleum products: Ministry of Petroleum
6. Search and Rescue affairs: I.R.IRAN Red Crescent Society
7. Security and Police affairs: Ministry of Interior
8. Health and Medical Care Affairs: Ministry of Health and Medical Education
9. Transportation affairs: Ministry of Roads and Transportation
10. Debris and Burial affairs: Ministry of Interior - Municipalities Organization
11. Agriculture and Animal Husbandry affairs: Ministry of Agriculture Jihad
12. Mines and Industries affairs: Ministry of Industries and Mines

The structures of the INDMP at National and Provincial levels are shown in Figures 1-3 to 1-11.

1-2-2-The Comprehensive Disaster Management Plan for the City of Tehran

The structure of the disaster management plan for the City of Tehran will be a model for disaster management in large cities of Iran. This plan was prepared in March 2001 by the Secretariat of the Comprehensive Disaster Management Plan for

the City of Tehran and was approved by the National Committee for Natural Disasters Reduction in May 2001. The structure of this plan is shown in Figures 1-12 and 1-13.

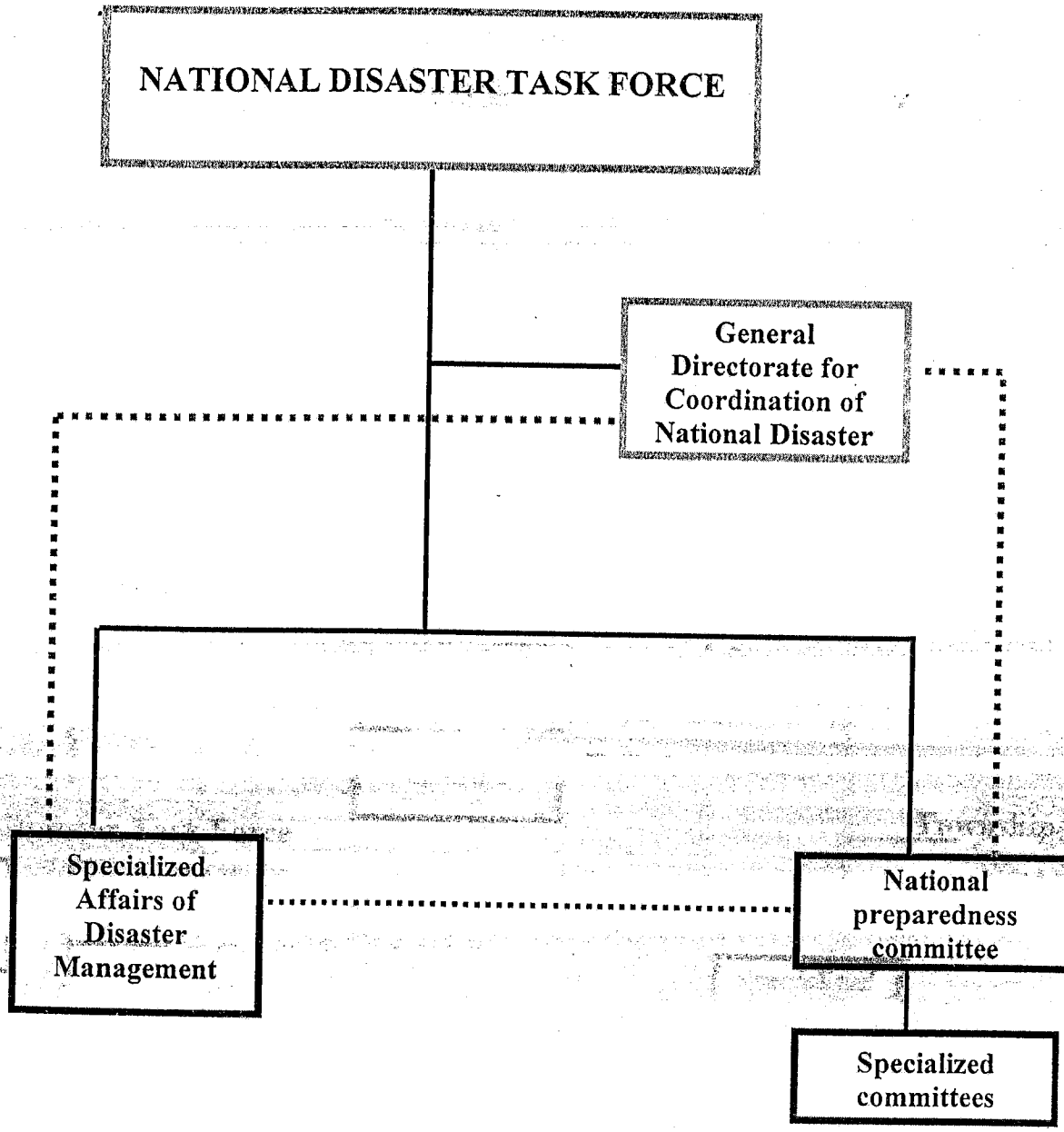


Figure 1-3-Integrated Structure of National Disaster Management

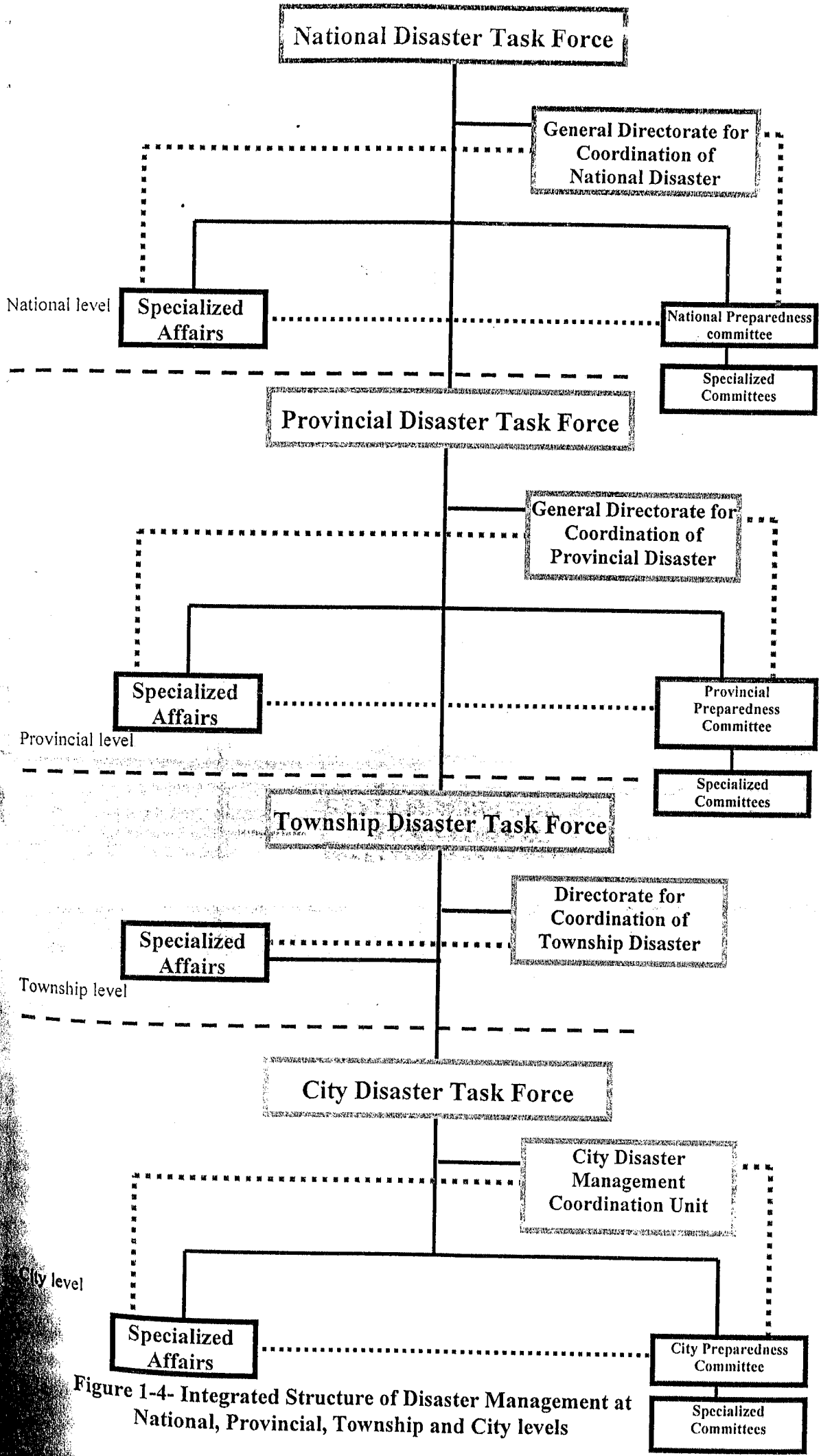


Figure 1-4- Integrated Structure of Disaster Management at National, Provincial, Township and City levels

NATIONAL DISASTER TASK FORCE

1. MINISTER OF INTERIOR (CHAIRMAN)
2. DEPUTY MINISTER OF INTERIOR FOR DEVELOPMANT AFFAIRS (VICE CHAIRMAN)
3. MINISTER OF ENERGY
4. MINISTER OF HEALTH AND MEDICAL EDUCATION
5. MINISTER OF ROADS AND TRANSPORTATION
6. MINISTER OF COMMUNICATIONS
7. MINISTER OF HOUSING AND URBAN PLANNING
8. MINISTER OF AGRICULTURE JIHAD
9. CHIEF OF STAFF OF THE GENERAL COMMANDER OF ARMED FORCES
10. DIRECTOR OF I.R.IRAN RED CRESCENT SOCIETY
11. COMMANDER IN CHIEF OF BASIJ
12. DIRECTOR OF I.R.IRAN BROADCASTING ORGANIZATION
13. VICE PRESIDENT AND DIRECTOR OF MANAGEMENT AND PLANNING ORGANIZATION

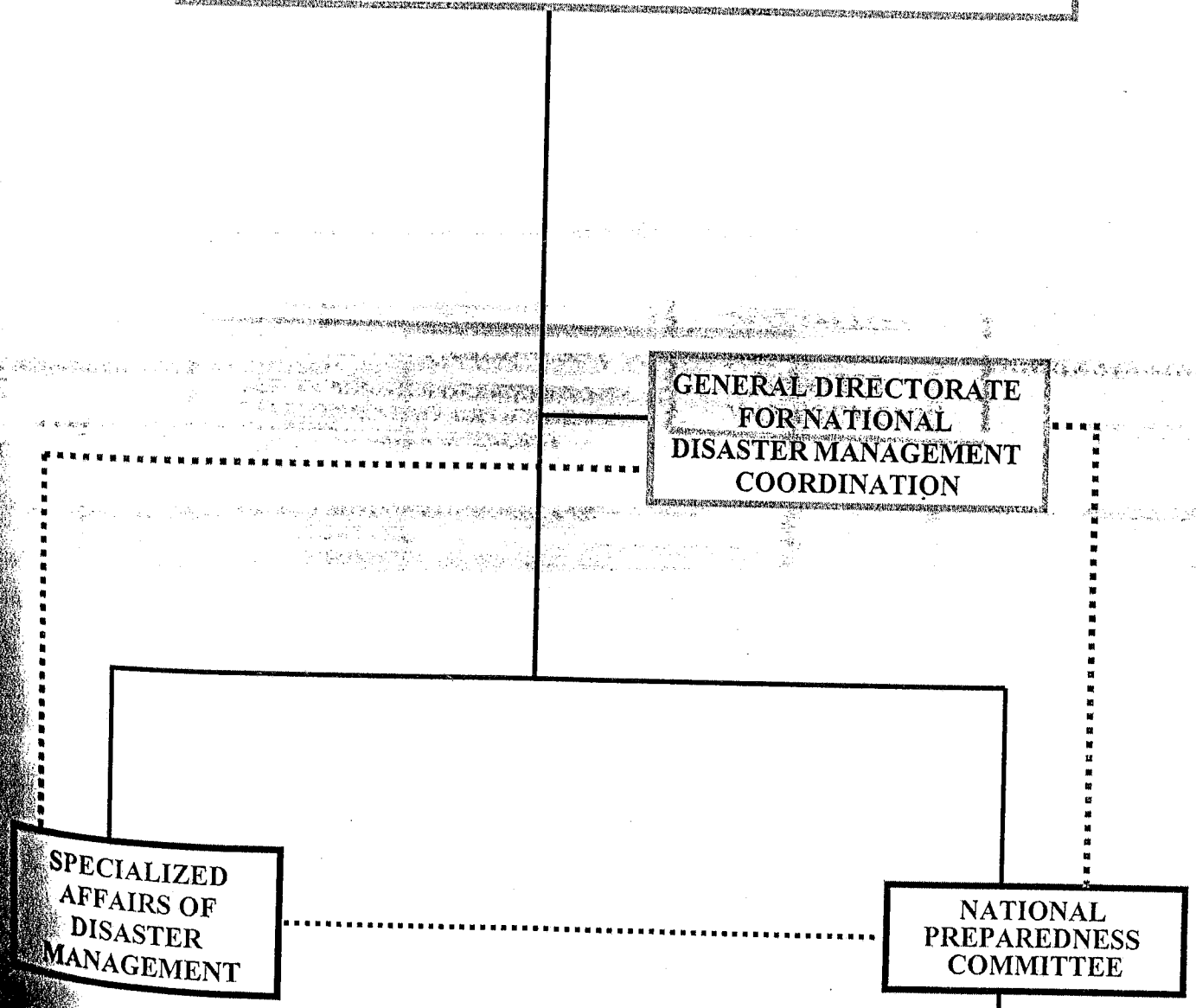


Figure 1-5- Integerated structure of national disaster management including members of NDTF

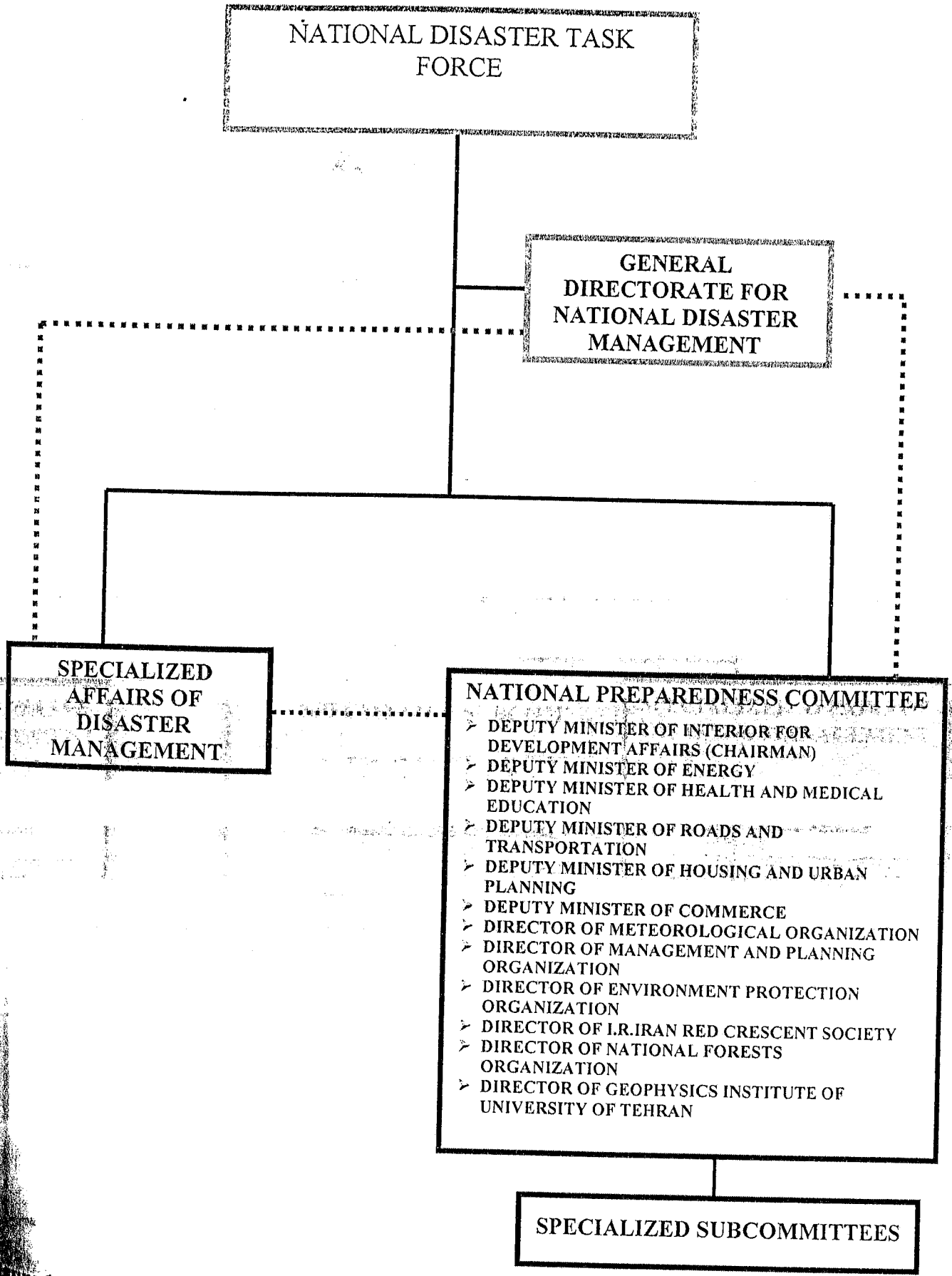


Figure 1-6- Structure of National Disaster Task Force including members of national preparedness committee

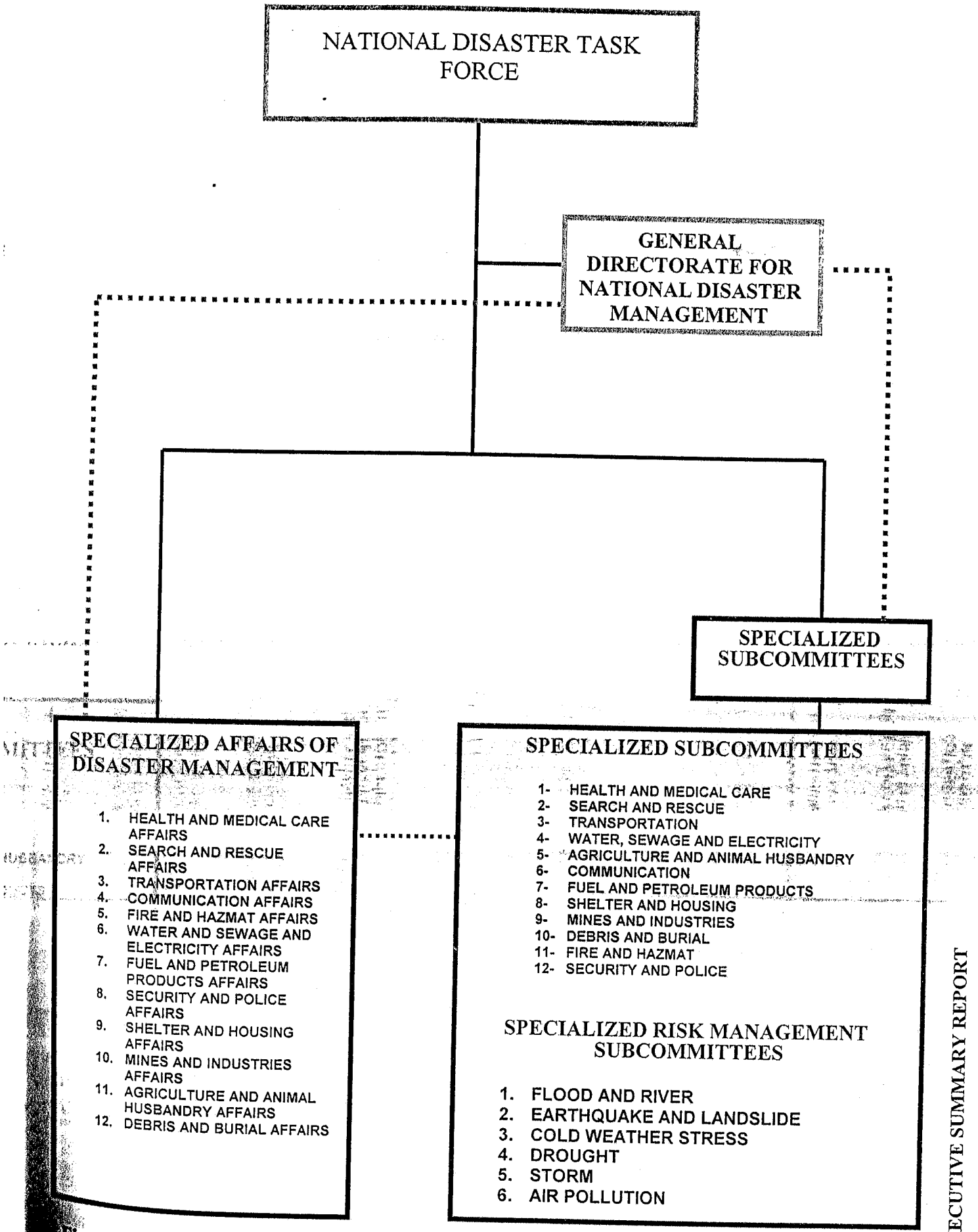


Figure 1-7- Structure of National Disaster Task Force including names of specialized operational committees and specialized disaster management affairs

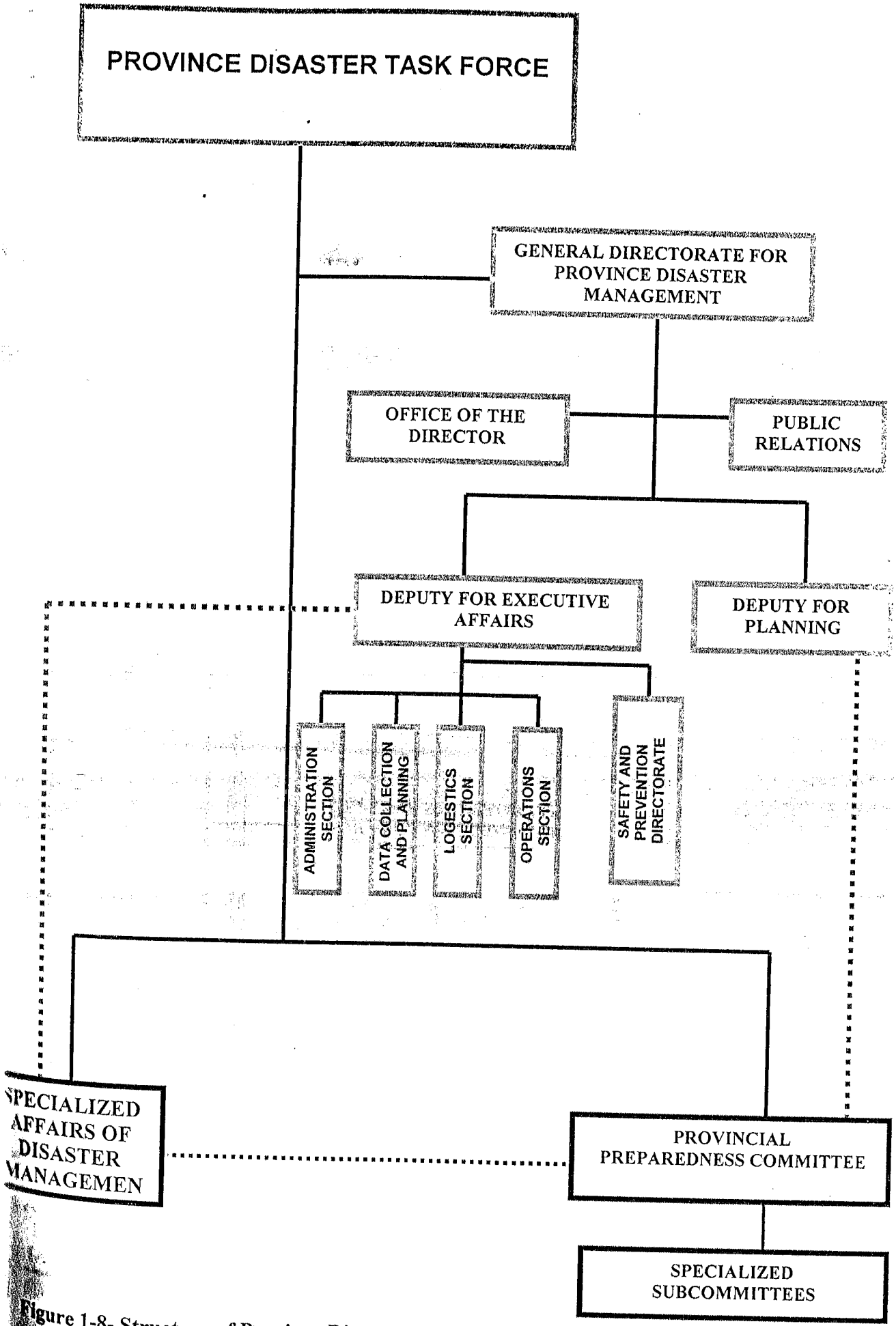
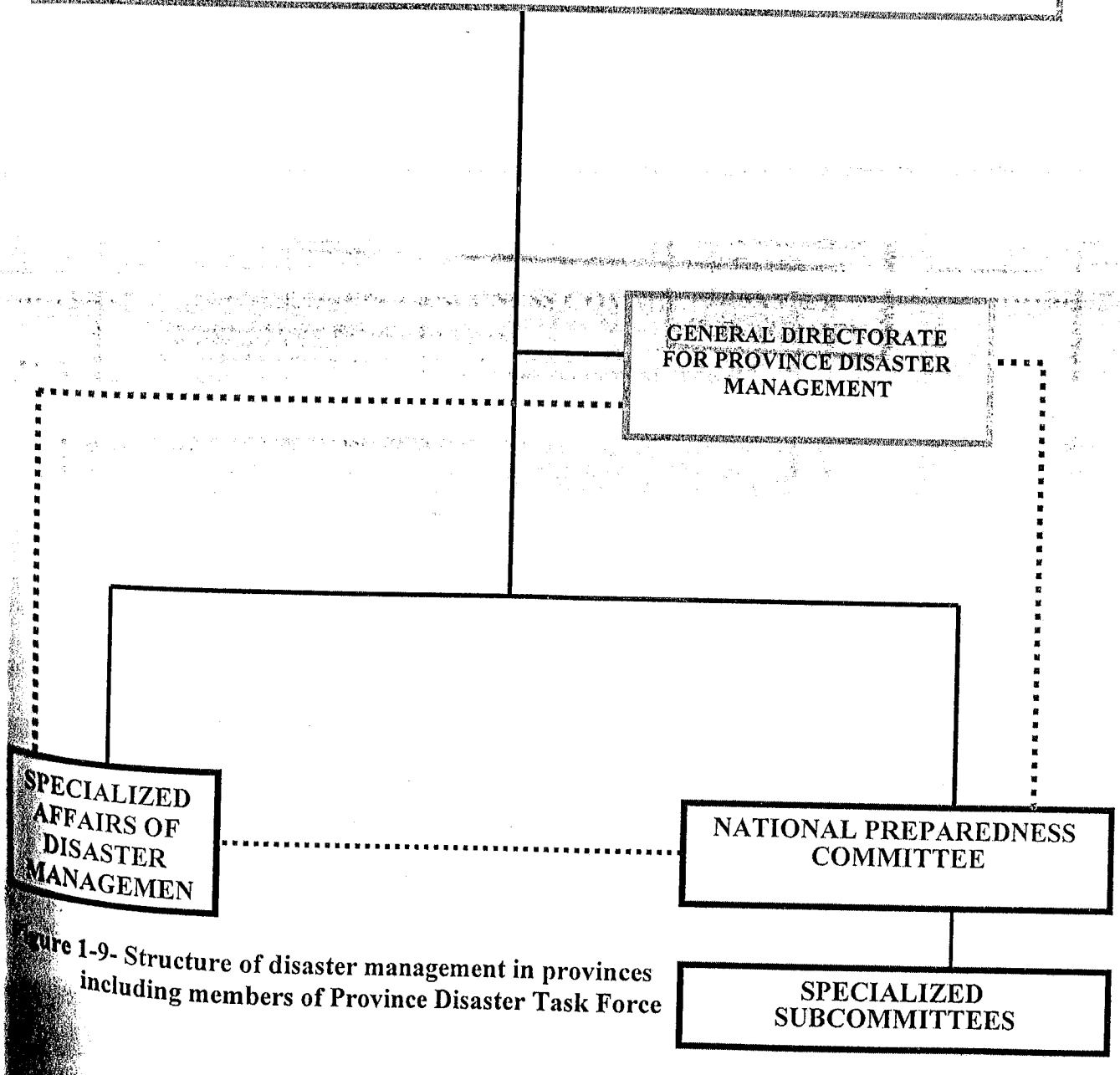


Figure 1-8- Structure of Province Disaster Task Force

PROVINCE DISASTER TASK FORCE

- GENERAL GOVERNOR (CHAIRMAN)
- GENERAL DIRECTOR FOR DISASTER MANAGEMENT COORDINATION (SECRETARY)
- EXECUTIVE DEPUTY OF GENERAL DIRECTORATE FOR DISASTER MANAGEMENT COORDINATION
- DIRECTOR OF PROVINCE AGRICULTURE JIHAD ORGANIZATION
- DIRECTOR OF PROVINCE HOUSING AND URBAN PLANNING ORGANIZATION
- DIRECTOR OF PROVINCE ELECTRICITY COMPANY
- GENERAL DIRECTOR OF PROVINCE RENEWAL AND DEVELOPMENT OF SCHOOLS
- GENERAL DIRECTOR OF PROVINCE METEOROGICAL ORGANIZATION
- GENERAL DIRECTOR OF PROVINCE I.R.IRAN BROADCASTING ORGANIZATION
- COMMENDER IN CHIEF OF PROVINCE BASIJ
- PRESIDENT OF PROVINCE MEDICAL SCIENCE AND HEALTH CARE SERVICES
- DEPUTY GENERAL GOVERNOR (VICE CHAIRMAN)
- DIRECTOR OF PROVINCE MANAGEMENT AND PLANNING ORGANIZATION
- GENERAL DIRECTOR OF PROVINCE ROADS AND TRANSPORTATION
- DIRECTOR OF PROVINCE WATER ORGANIZATION
- DIRECTOR OF PROVINCE HOUSING FOUNDATION
- GENERAL DIRECTOR OF PROVINCE ENVIRONMENT PROTECTION ORGANIZATION
- GENERAL DIRECTOR OF PROVINCE I.R. RED CRESCENT SOCIETY
- MANAGING DIRECTOR OF PROVINCE COMMUNICATIONS COMPANY
- COMMANDER IN CHIEF OF PROVINCE POLICE FORCE
- COMMANDER IN CHIEF OF PROVINCE ARMY



ure 1-9- Structure of disaster management in provinces including members of Province Disaster Task Force

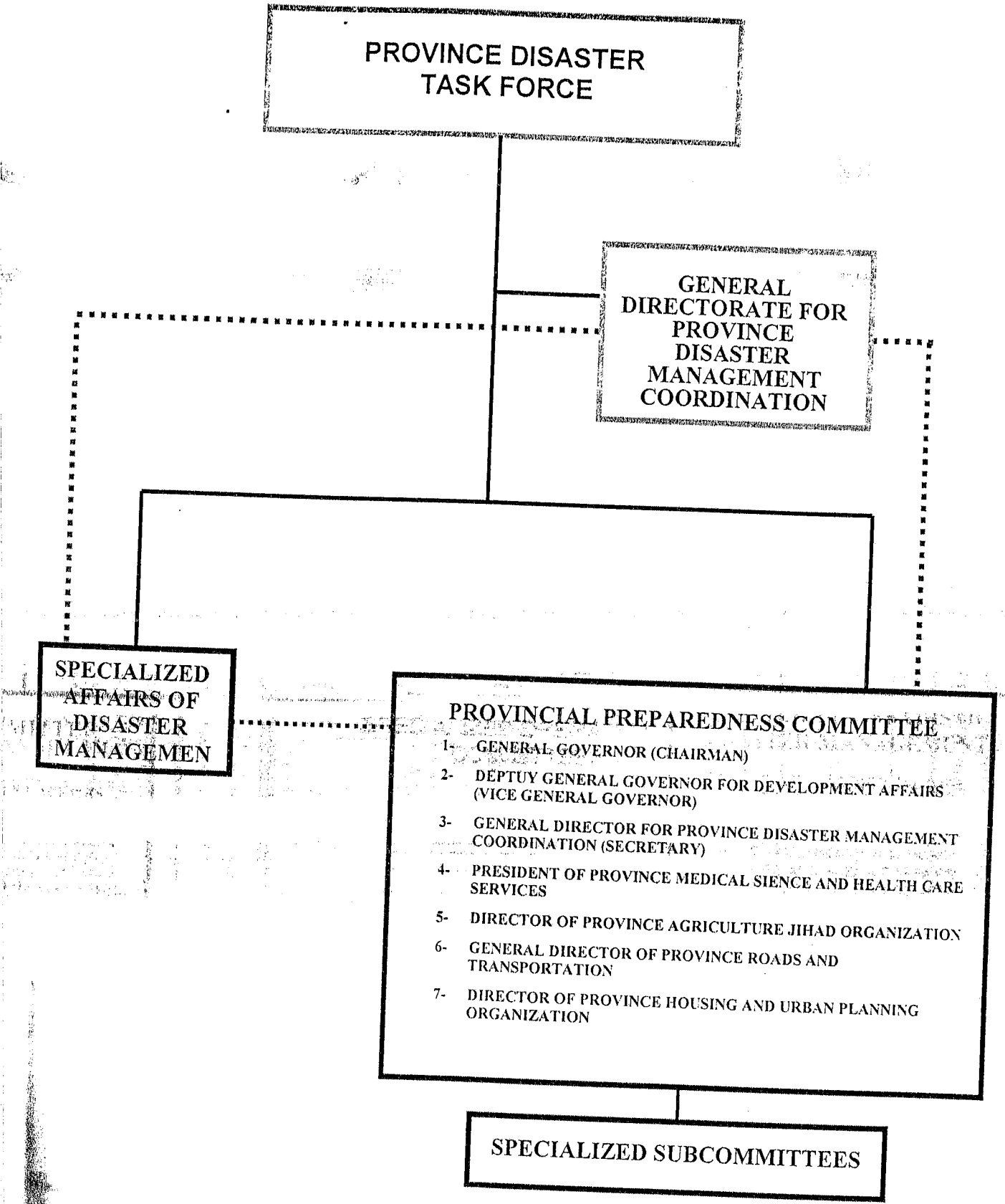


Figure 1-10- Structure of Province Disaster Task Force including members of province preparedness committee

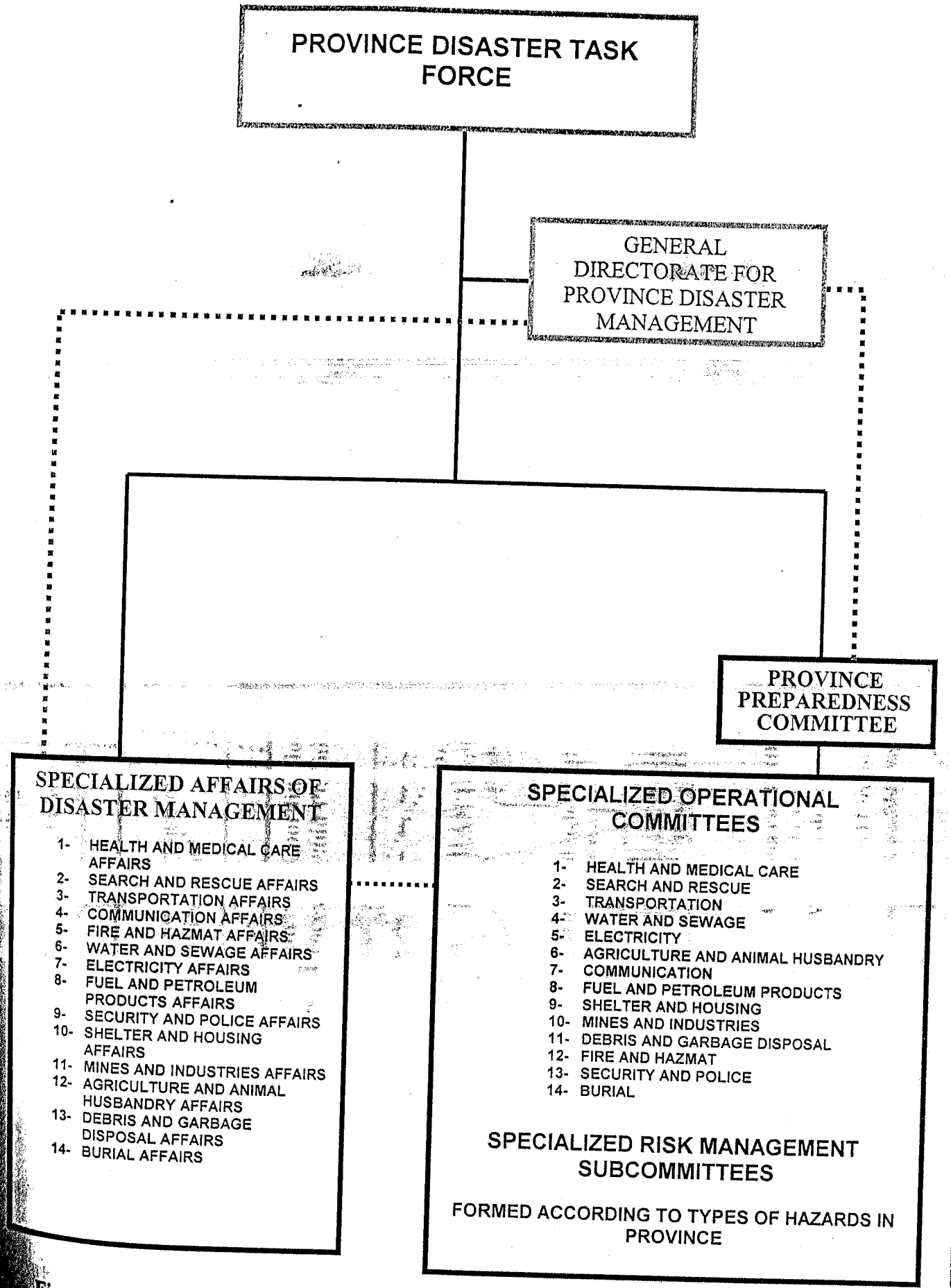


Figure 1-11- structure of Province Disaster Task Force including names of specialized operational committees and specialized disaster management affairs

Figure1-12-Organization Structure of TEHRAN Disaster Management Task Force (For Commanding in Emergency Situations)

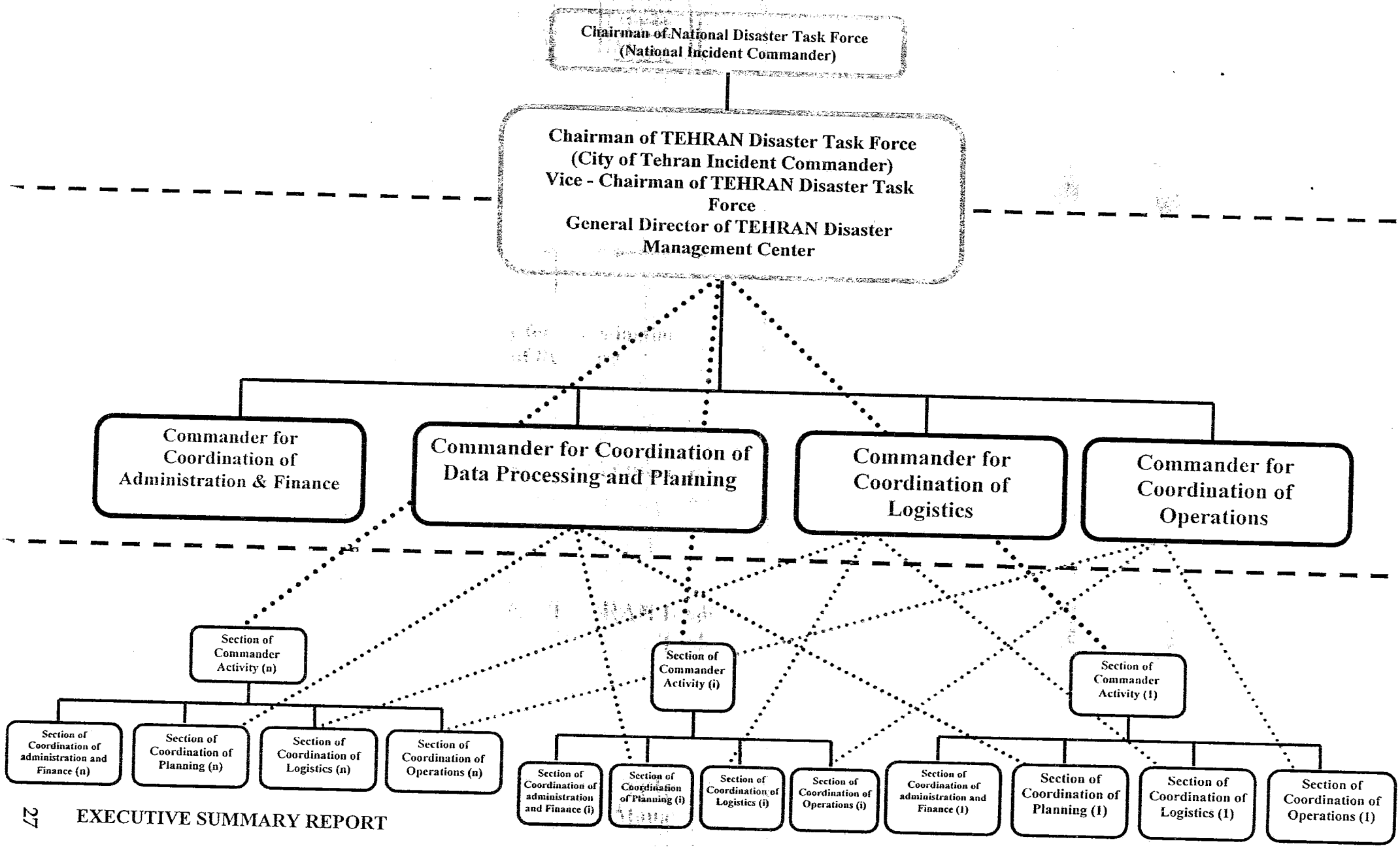
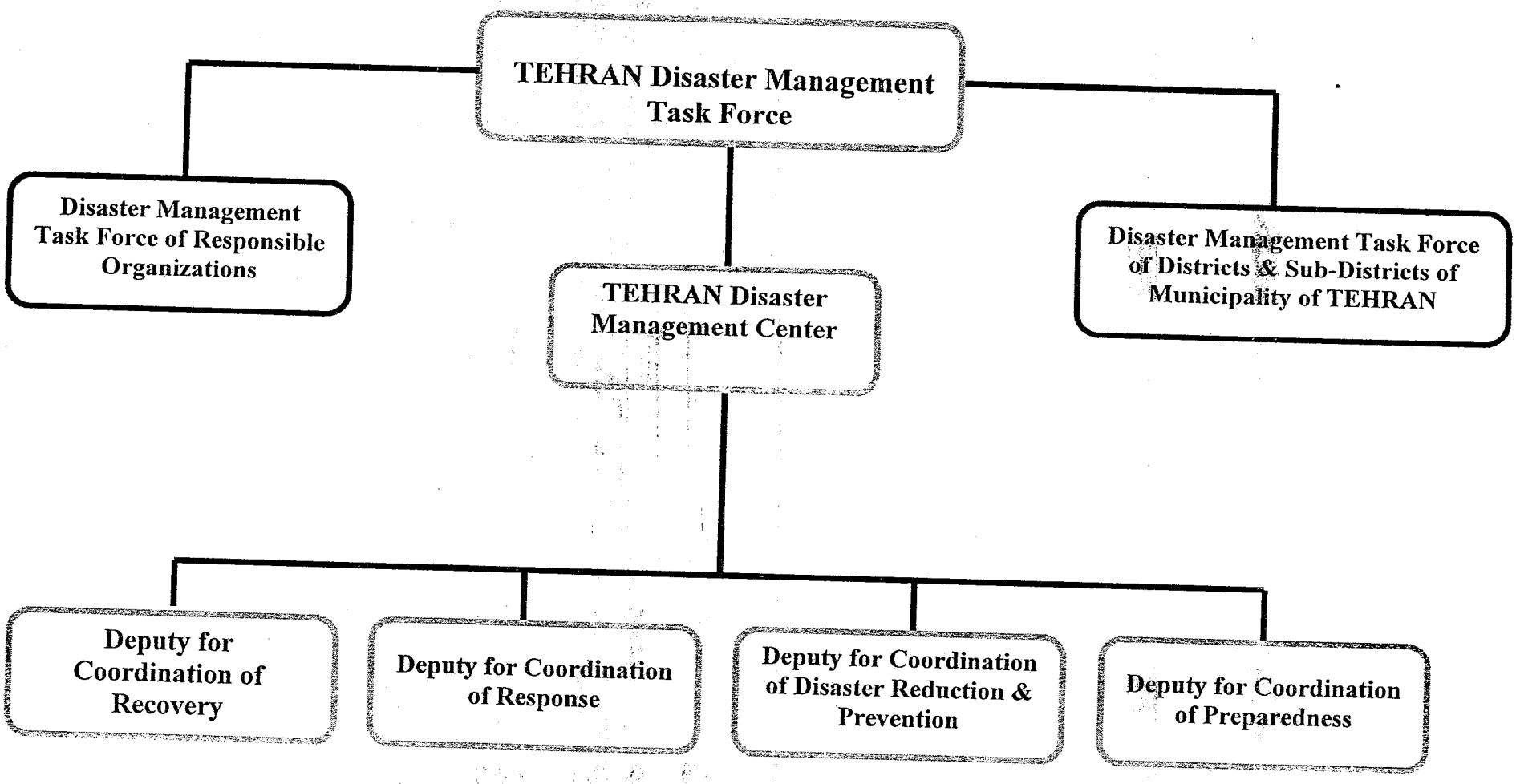


Figure 1-13- Organization Structure of Disaster Management of the City of Tehran (Normal Situation)



1-3-Description of phases of disaster management

Structure of the Integrated National Disaster Management is described in four phases as follows:

- Mitigation Phase
- Preparedness Phase
- Response Phase (Operations of 14 responsible organizations in provinces)
- Recovery Phase

1-3-1- Mitigation Phase

The main goals of Disaster Mitigation phase are the following:

- To save life
- To reduce economic damages
- To reduce risk and vulnerability
- To strengthen building structure against disaster effects

Establishment of standards for disaster mitigation planning is recommended in the following five areas:

1- Engineering and construction
2- Physical planning
3- Economic planning
4- Management and organizational aspects
5- Social aspects

Furthermore duties and responsibilities of different organizations for disaster reduction are presented and action plans for disaster mitigation are provided too.

1-3-2- Preparedness phase

The Preparedness Phase of INDMP contains the followings:

- Existing laws and regulations at National, Provincial, Township and City levels
- The role of Preparedness in the proposed Structure of National Disaster Management

Principles of preparedness

The following principles of preparedness are included in the plan:

A. Education and Training
   Educational policy- making and plans for all the Institutions, Governmental Organizations, NGOs and the general public

B. Research
   Policy- making and plans for execution of research for Preparedness against Natural Disasters

C. Exercise, Review
Policy- making and plans for conducting Exercise and Maneuver in order to strengthen the preparedness against Natural Disasters

The role of Preparedness and disaster planning in the proposed structure of INDMP are specified at the National, Provincial, Township and City levels and standard operations procedures for 14 responsible organizations for Disaster Management at response phase are also presented.

The role of the preparedness at the emergency operations center is also specified as follows:

A. Specification of Organizational communications related to Preparedness at the Emergency Operations Center at the National, Provincial, Township and City levels

B. Specification of Organizational and Inter- Organizational communications in Preparedness Management

C. The role of NGOs in Preparedness

1-3-3- Response phase (Operations of 14 responsible organizations in Provinces)

Response operations procedures at the provincial level for 14 responsible organizations are specified including the followings: (see figure 1-11 for the names of 14 responsible organizations)

D. The position of Response in the Structure of INDMP at National, Provincial, Township and City levels

E. Incident Command System at the Provincial level

F. Specification of the objectives of each specialized programs for 14 Responsible Organizations

G. Policy- making for formulation of operations procedures at the Provincial levels

H. Specification of operations at different levels of disaster at the Provincial level for each of 14 Specialized Organizations

I. Specification of level and cooperation procedure for Responsible, Substitute, Support, Assistant Organizations in execution of operations procedures

1-3-4- Structure of the recovery plan of INDMP

Structure of the recovery phase of INDMP includes the followings:

Primary definitions and concepts of the recovery phase

Primary definitions and concepts of the recovery phase are discussed including the followings:

A. Existing Laws and Regulations concerning recovery

B. Strong and weak points in the existing structure

Principles of recovery

The followings principles of recovery are considered in structuring the recovery phase:

A. Primary and immediate recovery
B. Later recovery
C. Recovery patterns
D. Capacity building of communities as well as individuals
E. Coordination between different organizations

Recovery operations procedures for 14 responsible organizations

In the recovery operations procedures for 14 responsible organizations, the following subjects are included:

A. Subject of the program
B. Objectives of operations procedures for each activity
C. Specific actions of each responsible organization
D. Specification of disaster level and kind of inter-organizational cooperation related to specific activities

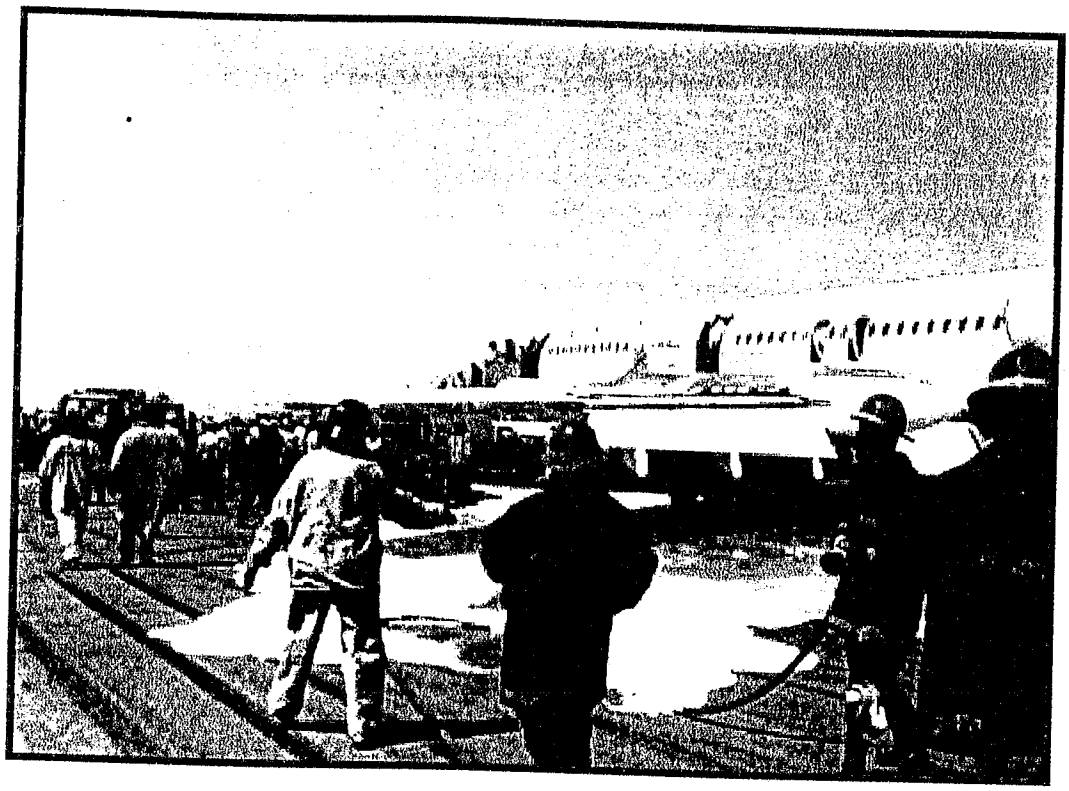
The role of people participation in the recovery process

The role of people participation in the recovery process is specified as follows:

A. Training on the recovery programs
B. Specification of what kind of individual and institutional participation
C. Presentation of standards and laws supporting people and institutional participation in the recovery process

Recovery checklists

Recovery checklist includes Recovery checklists at the National, Provincial, Township and City levels and formulation of regulations and standards for recovery in INDMP.



Chapter II SAFETY CHECKLISTS FOR NATIONAL, REGIONAL & LOCAL MAJOR DEVELOPMENT PROJECTS

2- SAFETY CHECKLISTS FOR NATIONAL, REGIONAL AND LOCAL MAJOR DEVELOPMENT PROJECTS

2-1- Introduction

Natural disasters can destroy development projects and ruin the results of many years of planning, design and construction of such projects. Therefore establishing safety checklists to which development projects could be checked might result in both strengthening public utility systems and increasing their functional safety.

This report includes the most important actions to be taken for providing safe development projects and their functioning in both normal and emergency situations of natural disasters.

Due to reduction of disasters effects on major development projects is an integrated part of disaster management, National Development Projects for Year 1380 (2001-2002) approved by the Islamic Republic Of Iran has been investigated and classified in this report. In this respect, high priority areas have been identified using this year's annual development plan.

2-2- Distribution of the national development projects budget among different affairs

The National Development Projects are classified in the following categories:

A. Economic affairs
Including: Agriculture, Water, Electricity, Industry, Petroleum, Mines, Commerce, Roads and Transportation, Post and Communication.

B. Social affairs
Including: Education, Arts and Culture, Health care and Nutrition, Social Security and Welfare, Body Building, Youth and Women Affairs, Urban Development and Development and Renewal of Villages.

C. Public affairs
Including: General Administration of the Country, Justice and Real Estate Records, Administration, Internal Security Affairs, Financial Affairs, Statistics and General Technical Services, Information and Public Media, Government Buildings and Facilities.

D. National defense affairs
Including Military Defense.

As it is seen, the main parts of the major National Development Projects are classified either in Economic and/or Social Affairs.

According to the National budget book for the year 2000-2001, 44 major national development projects were approved which consume about %9 of the national

budget. Most of these projects are related to the Ministry of Energy. Theses projects have very important impacts on the National Economic and Social Development.

Therefore establishing safety checklists to which development projects could be checked might result in both the strengthening of public utility systems and increase of their functional safety.

This report includes the most important actions to be taken in order to provide safe development projects and facilitate their normal functioning in a situation of natural disaster.

2-3-Major development projects in the third economic, social and cultural development plan, year 1380 (2001-2002)

In the Budget of Development Projects in the year 1380 (2001-2002), approved by the IRI Parliament (Appendix of the year 1380 National Budget Law), the major national, regional and local development projects are classified in the following categories:

A. Major Urban Development Projects, including major Administrative Buildings, Residential Buildings Complex, Industrial Buildings Complex.

B. Major Art and Cultural Construction Projects including: Museums, Historical and Ancient Buildings.

C. Major Hospitals.

D. Major Athletics Construction Projects including; Athletics Stadiums, Athletics Complexes.

E. Major Water and Electricity Projects including Dams and Power Plants.

F. Major Industrial Buildings including Steel Industries, Petroleum Industries, Mines, Refineries, Petrochemical Factories.

G. Major Passenger and Goods Transport Terminals like Airports, Seaports.

H. Major Road Construction Projects including Freeways, Highways and Main Roads.

I. Major Nuclear Energy Projects including Nuclear Power Plants.

An important part of the Third National Economic, Social and Cultural Plan consists of Major Development Projects, which have a construction time of three to five years. Naturally it is important to safe guard the huge amount of resources expanded on these projects by increasing the safety of their construction and securing their functions in a situation of natural or technological disaster.

2-4-Investigation of vulnerability of the site of projects with respect to earthquake zoning

The site vulnerability of major projects according to the Map of the Zoning of Relative Risk of Earthquake (Scale 1:2,500,000), prepared by the Center for City Planning and Architecture Studies and Research of the Ministry of Housing and Urban Planning, has been studied (see Figure 2-1).

Site selections of major projects have to be made with respect to this map or similar ones. Further studies are needed for seismic microzoning of different provinces of Iran.

2-5-Investigation of vulnerability of the site of the major projects with respect to flood occurrence

In this section vulnerability of a site to floods is investigated. When selecting a site for major projects, available flood occurrence maps have to be considered. A sample of flood vulnerability map in different provinces of Iran prepared by the Ministry of Energy (Water Engineering Standards, Flood Control Guide, Tehran, 2000) is presented in this chapter (see Figure 2-2).

2-6-List of prepared safety checklists

The following checklists are presented :

1. A checklist that investigates the general and disaster management aspects of the project
2. A checklist that investigates the safety and disaster management aspects of the project against flood
3. A checklist that investigates the safety of the equipment and utilities of the project against flood
4. A checklist that investigates the safety and disaster management aspects of the project against earthquake including checklists for urban development projects, industries, nuclear power plants and checklist for non-structural building elements against earthquake
5. A checklist that investigates the safety and disaster management aspects of the project against fire
6. A checklist that investigates the safety and disaster management aspects of the project against drought
7. A checklist that investigates the safety and disaster management aspects of the project against cold weather stress
8. A checklist that investigates a disaster management system in the project to supervise special safety aspects of the project
9. A detailed natural disaster checklist of development project aiming to minimize the vulnerability and the risk of disturbances to the development activities.

The detailed checklist includes the following factors:

- Localization of the project
- Size of the project
- Plan, form and the site of buildings
- Design of buildings
- Design of buildings with respect to risk of fire
- Emergency reserve water
- Emergency reserve electricity
- Emergency reserve heat
- Emergency reserve sewage disposal system
- Emergency reserve air conditioning

It is proposed that a report that considers these safety checklists have to be made by relevant organizations, consultants or contractors. This report should be submitted to the Management and Planning Organization as one of the requisite for the approval of the project progress and the approval of budget allocation to the project.

Figure 2-3 shows the proposed procedure for application of different safety increasing checklists for major development projects.

The checklists for flood and earthquake use flood risk zoning respectively earthquake risk zoning maps such as those shown in Figures 2-1 and 2-2.

2-7-Presentation of safety checklists

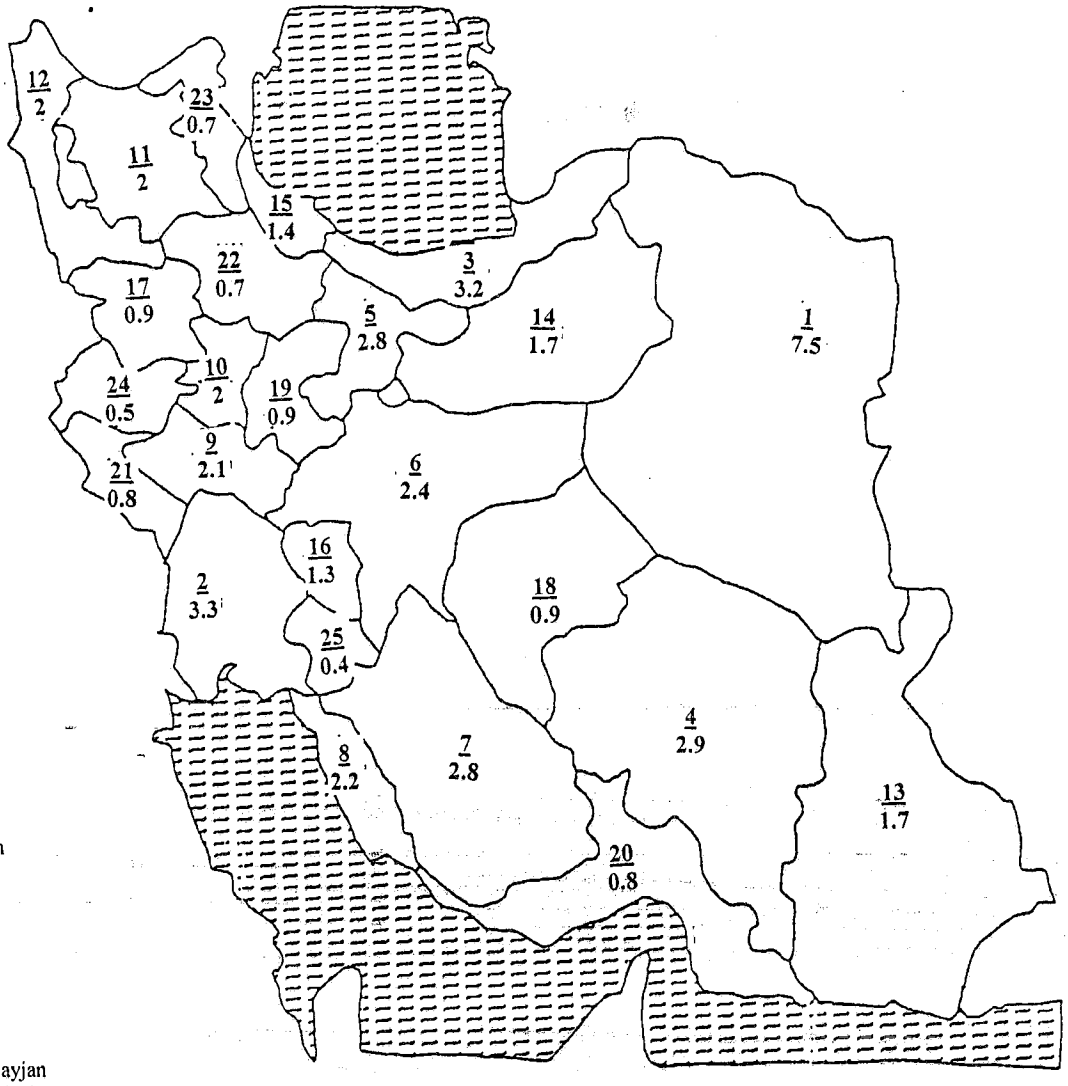
The following is a presentation of the most important safety increasing checklists that have been designed and prepared in this project.

2-8-Approval and application of checklists

The proposed approval and budget allocation procedure for major development projects is shown in Figure 2-4. This procedure is to be followed by the Management and Planning Organization, General Directorate for National Coordination of Disaster Management (Secretariat of the National Disaster Task Force) and the project directors (project consultants and contractors).

A proposed draft of legal articles is prepared. These legal articles will ensure the obligatory use of safety checklists in major projects approval and budget allocation process. This proposed draft of legal articles will be submitted for approval to the National Committee for Disaster Reduction as well as, to the Cabinet of Ministers.

Figure 2-1- Earthquake risk zoning map of Iran



Guide:

1. Khorasan
2. Khozestan
3. Mazandaran
4. Kerman
5. Tehran
6. Isfahan
7. Fars
8. Booshehr
9. Lorestan
10. Hamedan
11. Ardebil
12. West Azarbayjan
13. Sistan & Balochestan
14. Semnan
15. Gilan
16. Yasooj
17. Kordestan
18. Yazd
19. Arak
20. Bandar Abbas
21. Ilam
22. Zanjan
23. East Azarbayjan
24. Kermanshah
25. Kahkilooye & Booyer Ahmad

$$\frac{X}{Y} = \frac{\text{Flood Risk Figure}}{\text{Average Number of flood Incidents per Year}}$$

Figure 2-2

Map of Flood Risk Intensity in Different Provinces of Iran

Source: Ministry of Energy, Water Engineering Standards, Flood Control Guide. Tehran, 2000.

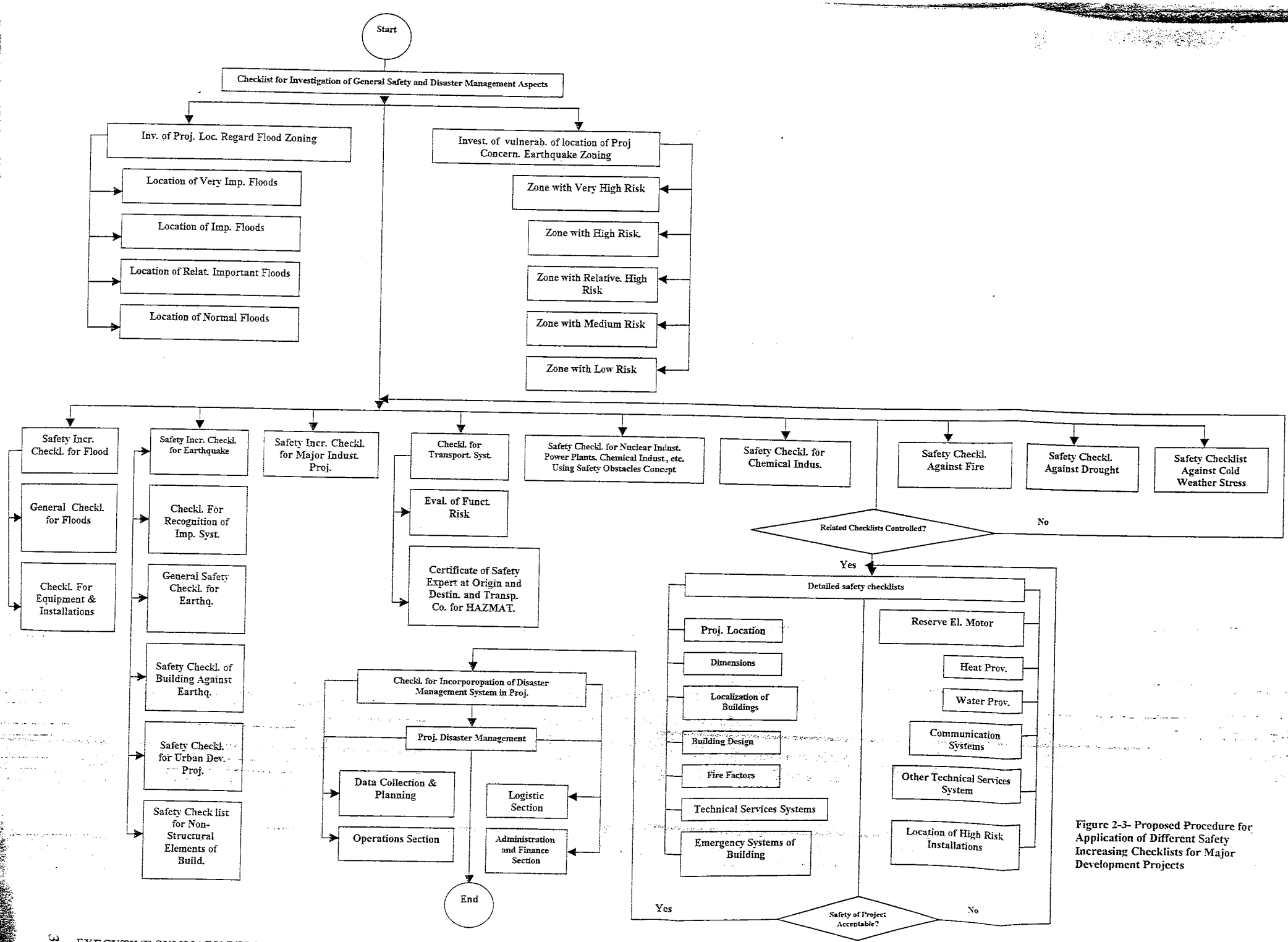


Figure 2-3- Proposed Procedure for Application of Different Safety Increasing Checklists for Major Development Projects

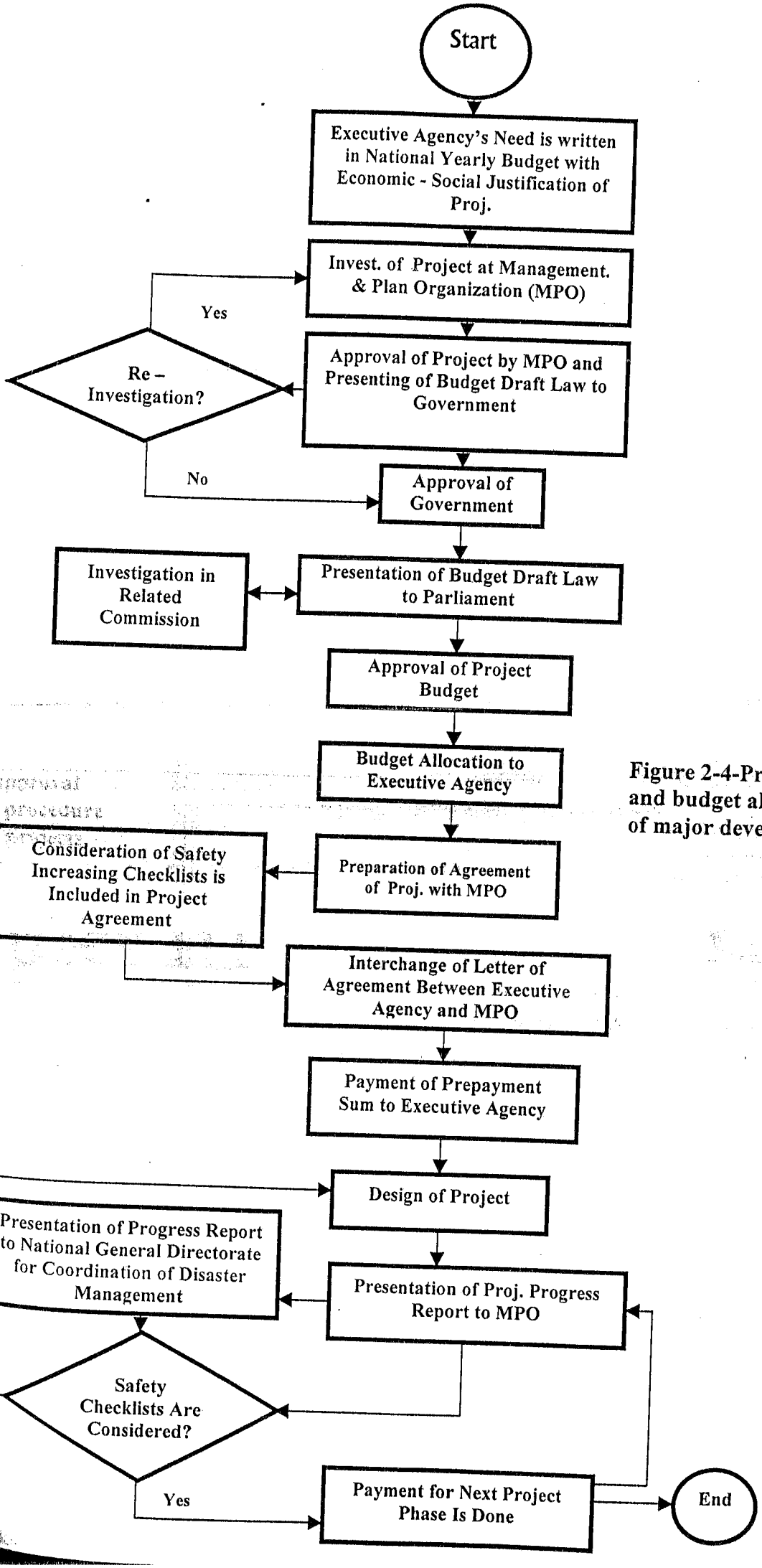
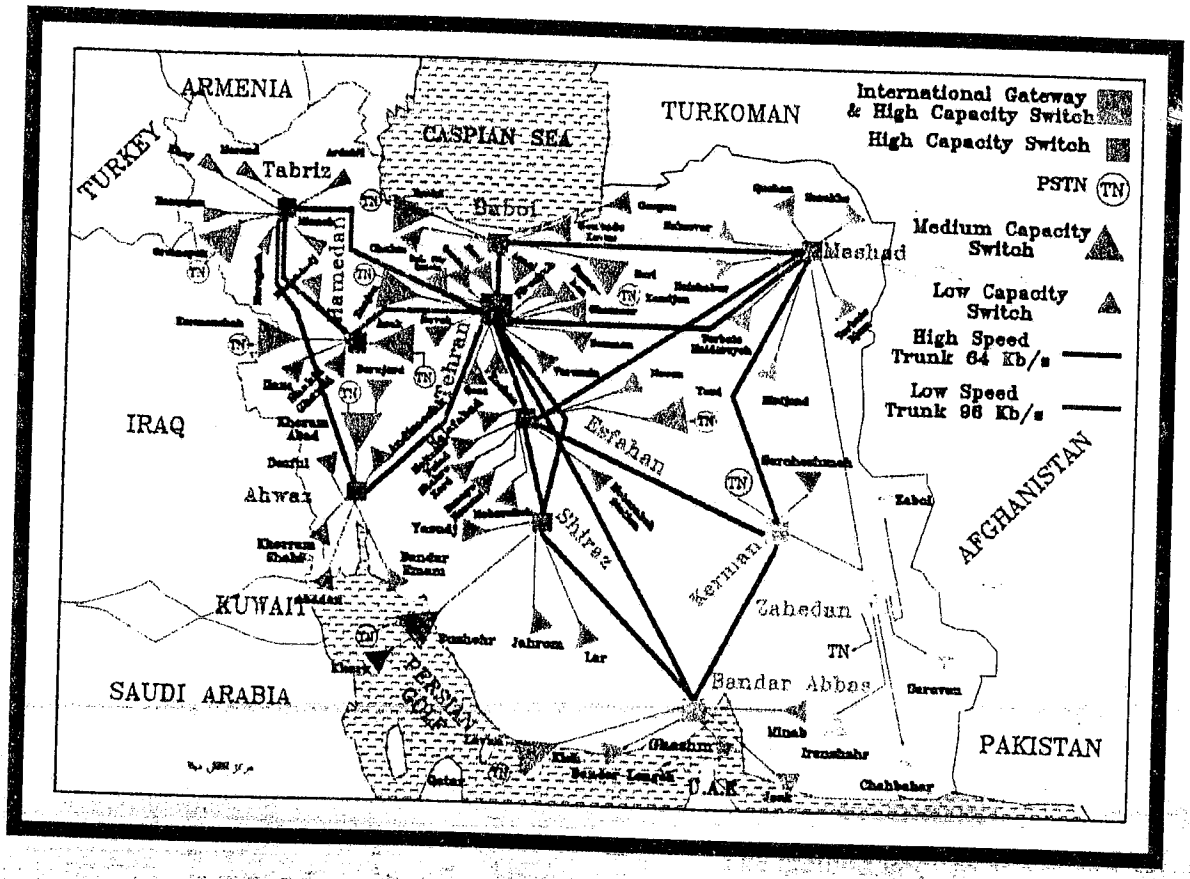


Figure 2-4-Proposed approval and budget allocation procedure of major development projects



Chapter III

FORMULATION OF AN IMPROVED DISASTER COMMUNICATION AND INFORMATION SYSTEM

3-Formulation of an improved disaster information and communication system

3-1-General purpose

The general purpose of this chapter is the design of a Disaster Management Information System (DMIS) for INDMP, which will respond to the data and information needs of the National Disaster Management.

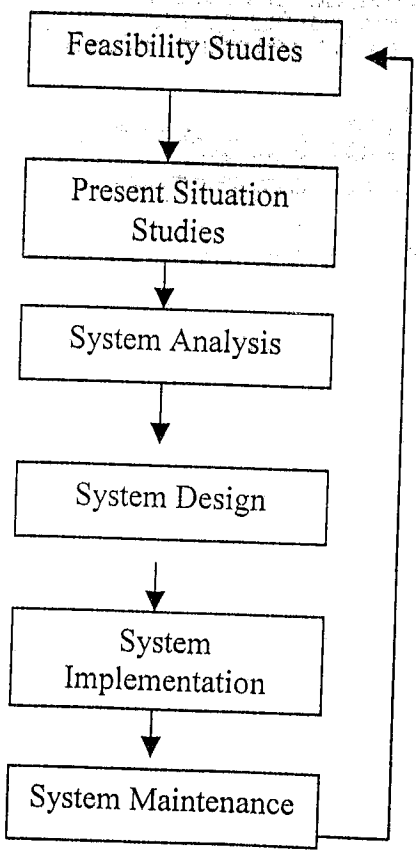
3-2-Specific objectives

Specific objectives of DMIS are as follows:

- Improvement of decision making during and after disasters through better and faster access to information and improvement of the quality of information
- Identification of users and specification of their needs and their level of access to data and information
- Collection and processing data needed by users
- Provision of early warning system using DMIS for preparedness and response to disasters
- Improvement of the effectiveness of disaster management activities
- Facilitating disaster mitigation activities

3-3- Methodology

The methodology to design and provide DMIS is shown in figure 3-1.



igure 3-1: Flow chart for design and mplementation of DMIS

3-4-Structure of the integrated DMIS for disaster management

This system includes a complex of institutions, organizations and centers and the relations between them. The elements and the relations of this network are designed according to standards and needs of Disaster Management Information Systems. The integrated DMIS includes national and international relevant organizations.

These organizations include those which participate directly in the national disaster management. Some of them are producers of disaster data and information, some act as supporters to disaster management by supplying their equipment and resources and some provide financial support and help. These organizations include the followings:

- United Nations related organizations
- These include organizations related to United Nations, such as: UNDP, UNHCR, UNICEF, UNCHS. These organizations cooperate with disaster management all over the world.
- International organizations other than UN related ones
- These organizations include international Red Cross and Red Crescent organizations. These organizations provide help and rescue facilities as well as personnel in case of disasters.
- Emergency dispatch center
- Emergency dispatch center is a system for guidance and control of emergency incidents, which has the possibilities of responding to health, police, fire and similar emergency situations.
- NGOs
- NGOs are considered as important community based organizations, whose participation can be effective in disaster management.
- People
- People are the largest groups that are affected by disasters. DMIS has usable and effective information flows to and from people. Figure 3-2 shows the structure of DMIS. To each one of the organizations related to INDMP identification code is assigned in DMIS (see Table 3-1).

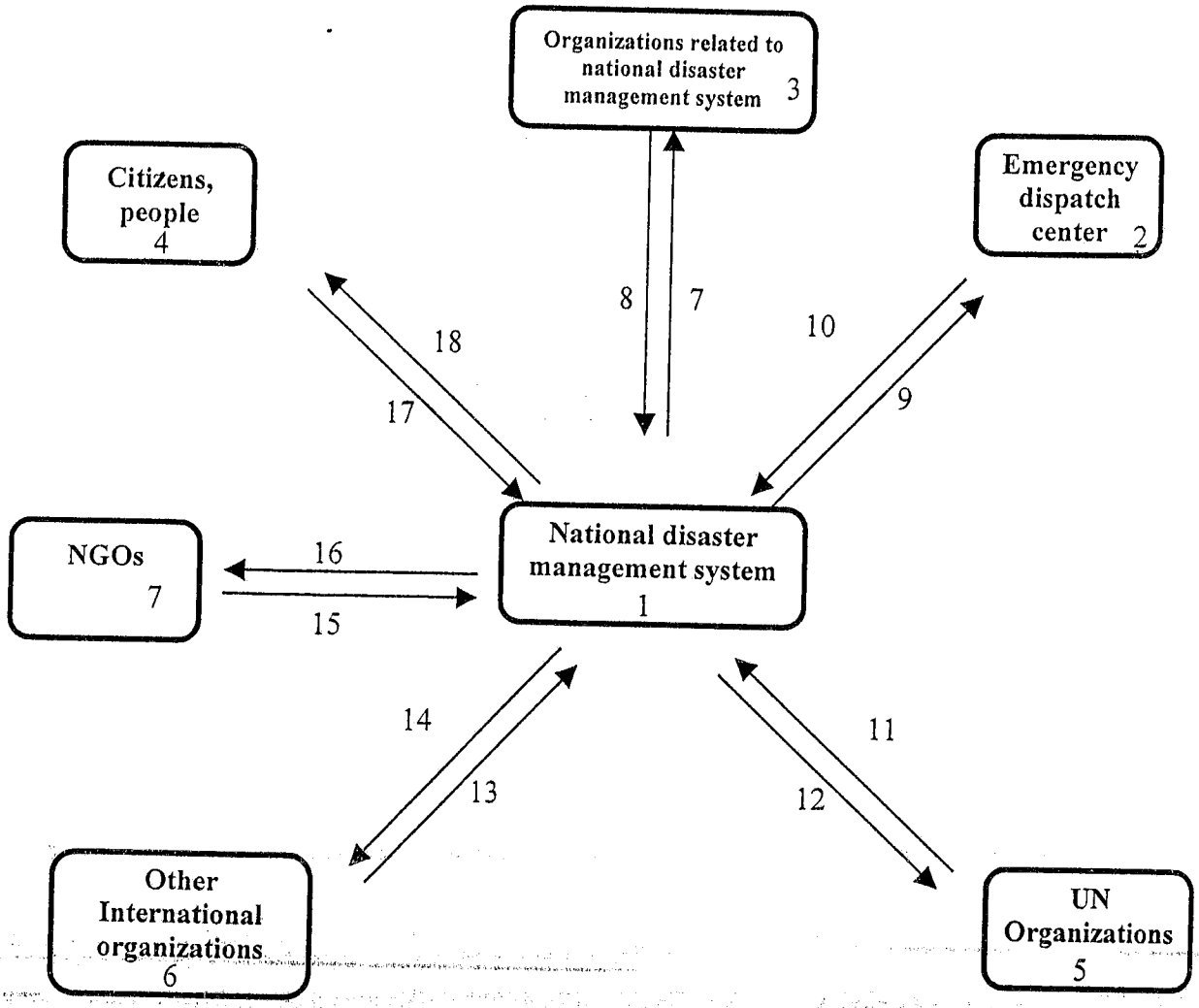


Figure 3-2- Structure of DMIS
Note: in this figure, the arrows show the data flow direction

3-5-Input data for DMIS

Input data for DMIS is selected according to objectives of the INDMP. The sources of the input data are at least sixty-four domestic organizations and about thirty United Nations and other international organizations. The supplied data is classified in the following categories:

a) General
b) Scientific
c) Technical and engineering
d) Economic
e) Environment
f) Disasters of previous years
g) Important incidents
h) Disaster management

Table shows a sample of the data flow matrix in which data required from each organization as the origin of data, is specified.

Table 3-1- A sample of identification codes for organizations related to INDMP

1-National Disaster Management Structure		1-1-1-National Preparedness Committee	
Code	**Organizations**	**Code**	**Organizations**
1-1	National Disaster Task Force (NDTF)	1-1-1-1	Specialized Committee Group for Operations
1-1-1	NCPND	1-1-1-2	Specialized Committee Group for Risk Management
1-1-2	General Directorate for National Disaster Management Coordination		
1-1-3	Tehran Emergency Management Task Force		
1-2	Province Disaster Task Force (PDTF)		
1-2-1	Province Preparedness Committee		
1-2-2	Province Disaster Management Coordination Office		
1-3	Township Disaster Task Force		
1-3-1	Township Disaster Management Coordination Office		
1-3-2	Village Disaster Management Task Force		
1-4	City Disaster Task Force		
1-4-1	City Preparedness Committee		
1-4-2	City Disaster Management Coordination Unit		

Table 3-2- List of needed data in comprehensive disaster management and some data providers

Data group	Code	Kind of data	Institutions and organizations: Geophysics Institute	Forest organization	Environment protection org.	Ministry of commerce	Ministry of economic and financial affairs	Ministry of information	Ministry of culture	Ministry of education	Ministry of labor	IRI army	Pasdaran army	National police organization	National rehabilitation organization	IRI broadcasting organization	IRI news agency	Red crescent society	Nuclear energy organization	Imam Khomeini help committee	Medical profession organization	Engineering profession organization	Municipality of Tehran	Housing foundation	Ministry of Justice	Justice department	Central insurance company	Central bank	Ministry of Defense	Ministry of interior	National communication company	National social welfare company	Basij	Chamber of commerce	Management and planning organization	National ports and shipping organization	Housing and construction research center	Youth organization	Center for studies and research of natural disasters	Special diseases foundation	Public health institutions coordination center	President office
A : general	1	Geographic data		*	*							*	*										*																		
	2	National boundaries										*	*										*																		
	3	Anthropology						*	*	*	*	*	*	*	*	*				*			*		*																
	4	Land data																					*	*																	*
	5	Essential facilities										*	*	*	*						*		*	*			*				*	*			*						
	6	Agriculture		*																																					
	7	Forests		*	*																																				
B : scientific	1	Sea, lakes			*							*																										*			
	2	Soil	*	*								*	*																													
	3	Geology	*		*								*										*																		
	4	Meteorology																																							
	5	Archeology							*														*																		
	6	Seismology	*									*	*										*																		
C : technical and engineering	1	Dams			*							*	*																										*			
	2	Building codes																					*				*												*			
	3	Transportation, bridges																					*																		
	4	Life lines																																							
	5	Critical facilities										*	*			*			*				*						*												
	6	Communication net.										*	*	*									*								*										
D : economic	1	Financial affairs				*	*				*							*		*	*						*	*		*		*	*		*						
	2	Insurance					*											*			*						*					*		*							
	3	Legislation																																	*							
	4	Administrative structure																																	*							
E : environmental	1	Wild animals		*	*																																				
	2	Pollutions		*	*														*																						
	3	Dangerous industries			*							*	*						*										*												
F : happened disasters	1	Natural		*										*		*	*													*								*			
	2	Manmade			*							*	*	*		*	*		*											*			*					*			
G : important incidents	1	Social, political						*	*			*	*	*		*	*													*			*								*
	2	World disasters												*		*	*													*											
	3	Dispatch center												*				*					*							*	*										
H : disaster management	1	Management programs				*			*	*		*	*	*	*	*	*	*	*	*			*			*			*	*	*		*				*		*	*	*	
	2	Employees									*							*					*							*											
	3	Equipment										*	*					*					*							*											
	4	Early warning						*	*	*		*	*	*		*	*	*	*				*							*	*		*					*			
	5	Vulnerability	*																				*							*											
	6	Monitoring system										*	*	*				*	*				*							*											
	7	Evacuation										*	*	*				*					*							*											
	8	Emergency traffic net.										*	*	*				*					*	*						*					*						

3-6-Required software

The required software for DMIS are eighteen computer programs as follows:

- Information management
- Data analysis
- Laws and regulations management
- Standard operations procedure management
- Daily activities management
- Financial management
- Situation management
- Training management
- Recovery management
- Systems users connection management
- Systems management
- Flood early warning management
- National GIS
- Seismic and building damage evaluation information management system
- Satellite information collection and distribution system
- Map information system
- Visual operations information system
- Damage assessment system

These computer programs will be used to process the input data, data interchange and the routine system management.

3-7-Required hardware and communication systems

The required hardware and communication systems for DMIS are specified as follows:

- Local Area Network (LAN)
- National communication network (including public telephone lines, FX telephone lines, three figure service lines, pager, WLL, leased lines, data lines)
- Radio wireless communication (VHF, UHF, HF)
- INMARSAT
- Mobile-sat.
- ISP (internet service providers)

3-8-Communications system of disaster management

In the INDMP there is a need to communicate and coordinate with many national and international organizations, NGOs and people. These communications and coordination could be accomplished in two ways either by voice contact or by data communications

Accordingly, the following comprehensive communication structure is formulated.

Comprehensive communication structure

It is assumed that a proper building for EOC will be available and the following communication structure is used:

1- Suitable internal cabling in the building
2- Proper telephone center
3- Radio communication center
4- Voice to data link equipment
5- Global positioning system (GPS) and pager
6- Portable computer equipment
7- Imaging equipment
8- Communication with internet
9- Satellite mobile phone

Using the communication systems introduced above, the necessary hardware for interchanging information has been formulated. Each communication system has been given a code and the necessary equipment for communicating between different organizations at different levels of disasters has been specified. Table 3-3 shows the codes for different communication systems.

The principal elements in a disaster management information flow system are the organizations related to disaster management, United Nations, international organizations, NGOs and people. The general information flow in the integrated disaster information and communication system is shown in Figure 3-3 and the following Figure 3-4 shows the proposed disaster management system and the role of the proposed disaster management information system in case of an incident .

Table 3-3- Codes for different communication systems

No.	Code	Communication system
1	L1	Data transfer by telephone and data entry by operator in DMIS
2	L2	Fax transfer and data entry in the system by operator
3	L3	Data transfer on disks by messenger
4	L4	Using telephone lines or mobile phones or modems
5	L5	Leased line (direct connection by copper cable)
6	L6	Local Area Network (LAN)
7	L7	Data transfer in imaging formats or video camera or voice devices
8	L8	National data network
9	L9	Internet services
10	W1	Voice message transfer via UHF, VHF, HF radio
11	W2	Data transfer in form of packet data through VHF, UHF,HF radio
12	W3	Pager, beeper
13	W4	GPS
14	W5	Spread spectrum radio modems
15	W6	Satellite links
16	W7	Portable satellite links

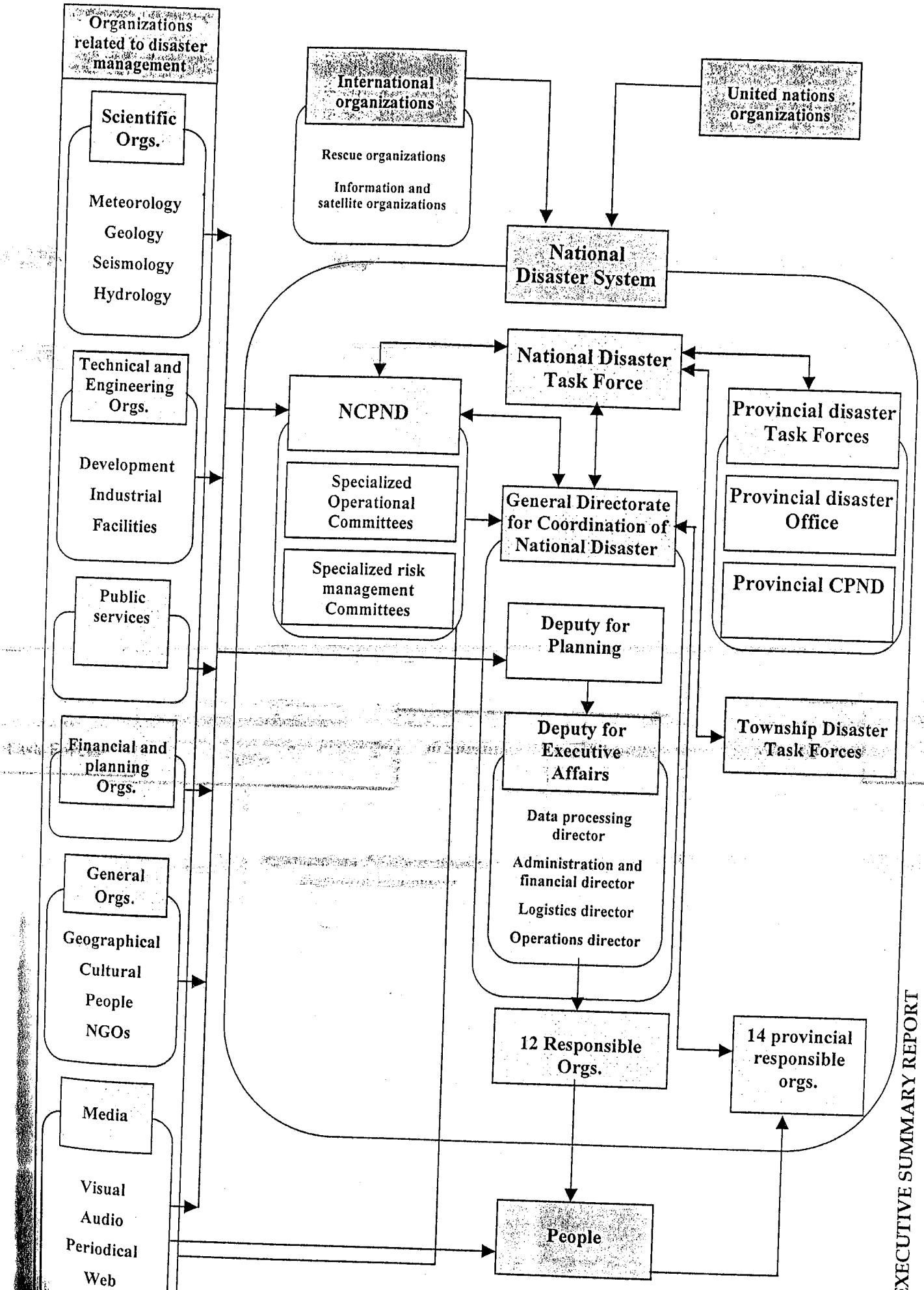


Figure 3-3- National comprehensive information and communication system data flow

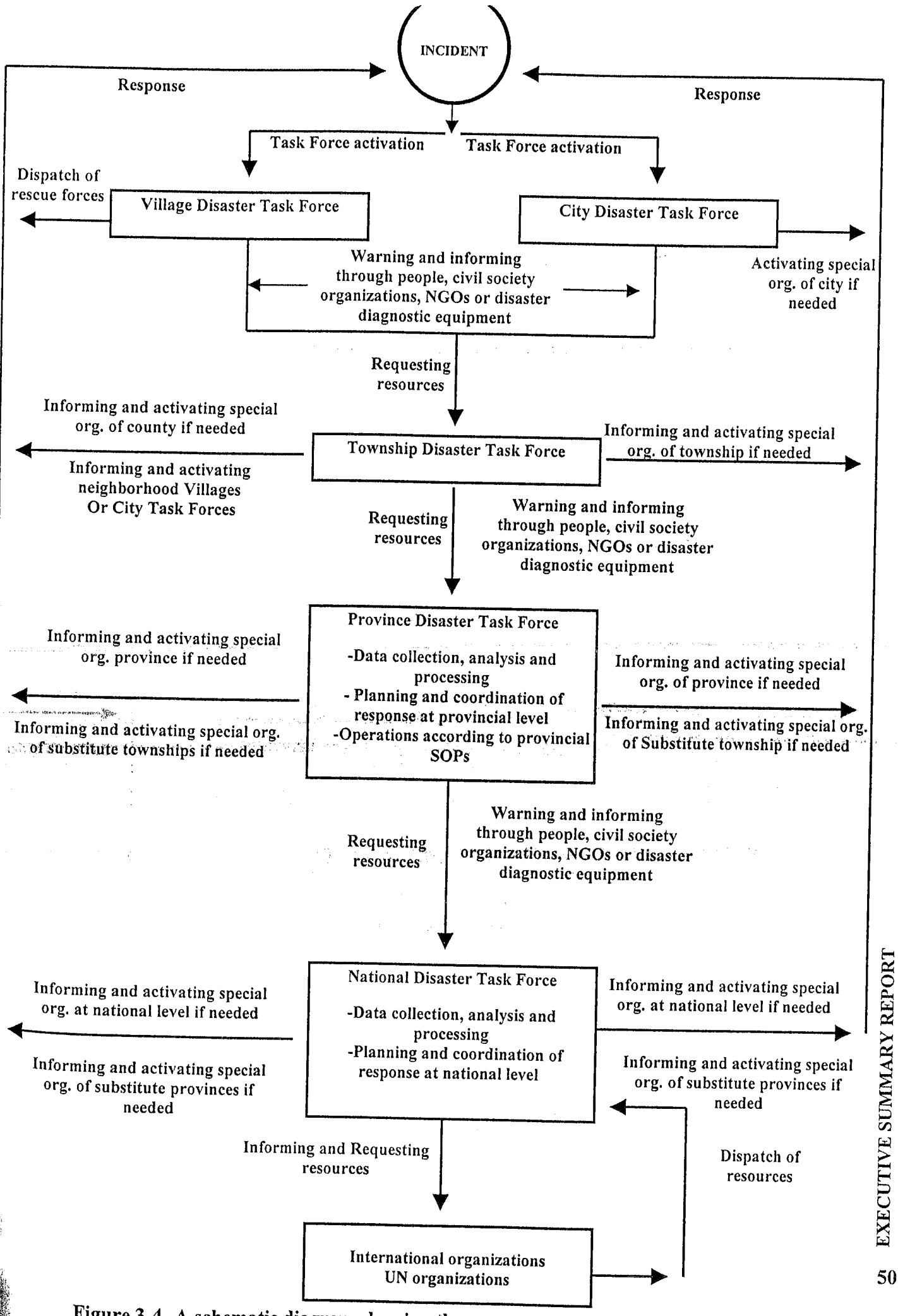


Figure 3-4- A schematic diagram showing the proposed national disaster management system and the flow of disaster management information

3-9 - Supporting Legislation

The following draft of legal articles is formulated for approval by NCPND.

Article one: The proposed structure of the integrated national disaster information and communication system is approved for implementation.

Article two: The national pattern of DMIS should be applied at provincial, township and city levels.

Article three: The National Disaster Task Force Secretariat (The General Directorate for National Coordination of Disaster Management) is responsible to provide budget and necessary consultations in order to install the national, provincial, township DMIS within 3 years.

Article four: DMIS must include all four phases of disaster management, namely, mitigation, preparedness, response and recovery.

Article five: All the related disaster management organizations must provide all the necessary disaster information to the National Disaster Task Force Secretariat (NDTFS).

Article six: Ministry of Communications is responsible to provide all the necessary communication equipment for NDTFS. Disaster management data and information are valid after confirmation of NDTFS.

Article seven: NDTFS is responsible to actively provide disaster management information to related national and international organizations.

Chapter IV

PLAN FOR PEOPLE PARTICIPATION AND ENHANCED PUBLIC AWARENESS TO EARTHQUAKE IN URBAN AREAS

4-PLAN FOR PEOPLE PARTICIPATION AND ENHANCED PUBLIC AWARENESS TO EARTHQUAKE IN URBAN AREAS

4-1- Introduction

People participation and an enhanced awareness to earthquakes in urban areas are analyzed in four parts:

- Unorganized individual participation
- Participation of civil institutions and NGOs
- Unorganized individual training
- Unorganized individual participation simulation

In this chapter public training and people participation are discussed and relevant policies and action plans are presented.

4-2-Unorganized Individual Participation

Unorganized individual participation is any activity, which protects the health and the well-being of individual persons or their neighbors without any group actions or any help by organizations. Such activities must result in the reduction of incident damages.

In INDMP a special committee for people participation has seen formed with IRI Red-Crescent Society as the responsible organization with the following members:

1. IRI Red Crescent Society
2. Ministry of Interior
3. Ministry of Education
4. Ministry of Science, Research and Technology
5. Management and Planning Organization
6. Baseej
7. IRI Broadcasting Organization
8. National Welfare Organization
9. Imam-Khomeini Committee
10. Iran Physical Education Organization

The objective of this committee is to reduce the damages of earthquake and other disasters with the help of people participation. Another objective is information about the tools of self-help and self-defense against earthquake.
In order to fulfill these objectives important roles and functions have been assigned both to IRI Broadcasting Organization and school students in the recommended unorganized individual participation plan.

4-3-Participation of Civil Society Organizations and NGOs

Objectives

The objectives of participation of Civil Society Organizations and NGOs in disaster management are as follows:

1) Encouragement of people participation at national, provincial, Township, city and village levels
2) Enhanced preparedness and awareness of Civil Society Organizations and NGOs against earthquake
3) Coordination of the activities of these organizations with the responsible organizations of National Disaster Task Force in the four stages of disaster management

An action plan is recommended for participation of Civil Society Organizations and NGOs. In this action plan all CSOs and NGOs are encouraged to train their members for preparedness, response and self-defense against earthquake.

In all of these activities coordination with the responding government organizations and relevant disaster Task Forces should be made.

The policies formulated as guidelines for this action plan are as follows:

1) The participation of community based civil society organizations and NGOs is extensive and non-selective so that all institutions and organizations might be included.
2) People and NGOs participations should not be limited to any specific institution. Neither should any professional, political, racial or religious biases be considered. In other words all community based civil society organizations, without any discrimination, should participate in people participation program.
3) For participation of civil society organizations, suitable participation patterns should be formulated.
4) Participation of these organizations should take place in all four phases of disaster management: preparedness, response, recovery and mitigation.
5) Participation should be in such a way that each individual member would be able to participate in training and participation activities.
6) The members of these organizations should be trained in such way that they may not cause any injury to themselves or to others.
7) The members of these civil societies should properly learn methods of self-help and rescue.
8) Participation of these organizations should be coordinated with relevant local government organizations according to formalized rules.
9) Encouragement mechanisms should be formulated and implemented in order to enhance the participation of these organizations.
10) The extent of these organizations participation should be compatible with their capabilities.

11) Planning and formulation of procedures for participation of these organizations are complicated and require expert work. Accordingly, relevant authorities and planners of the people participation programs should formulate these procedures.

12) Special training budget and encouragement mechanisms should be formulated for these organizations by the government authorities and responsible organizations.

13) Participation programs for civil societies should be based on local and regional problems and needs and should utilize relevant domestic and international experiences. Accordingly, close cooperation with other international NGOs and civil societies should be sought.

14) Design and implementation of a data bank for NGOs and their capabilities in participation in disaster management activities, is very useful for effective participation planning.

15) Participation programs for these civil societies and NGOs should emphasize on the preparedness against earthquakes, especially by structural strengthening of buildings.

4-4-Unorganized individual training (UIT)

4-4-1-Target groups

The target groups for UIT are:

- Children
- Teenagers and the young people
- Grown ups
- Working groups

4-4-2-Objective

The main objective of UIT is to present an action plan for public training such that people and their environment are highly prepared against disasters such that minimum casualties and damages are incurred to them. Moreover after the incident people would be able to help themselves effectively to return to normal condition and activities.

4-4-3-Trainers

The main organizations in IRI who have legal responsibilities regarding disaster management education and training are as follows:

1) National Disaster Task Force
2) National Committee for Preparedness of Natural Disasters
3) General Directorate for Studies and Coordination of Safety and Reconstruction
4) IRI Red-Crescent Society

5) Islamic Revolution Housing Foundation
6) Building and Housing Research Center, Ministry of Housing and Urban Planning
7) Firefighting and Rescue Organization
8) Pasdaran Army of Islamic Revolution
9) Baseej
10) IRI Army
11) IRI Police Organization
12) Ministry of Agriculture
13) Earthquake Committee of National Scientific Research Council
14) Center for Research and Studies on Natural Disasters
15) Geo-Physics Institute of the University of Tehran
16) National Welfare Organization
17) Ministry of Health

These organizations must regularly provide training courses for enhancement of public awareness to disasters, especially earthquake according to recommendations presented here.

4-4-4-Action plan

For public training, formal, non-formal and informal training methods are recommended. The proposed action plan includes following major principles:

1) UIT should include all four stages: Preparedness, Mitigation, Response and Recovery.
2) All responsible and cooperative organizations at national, provincial, urban and rural levels should participate in presentation of public earthquake training.
3) All responsible and cooperative organizations of the INDMP should coordinate their training activities with the General Directorate of National Disaster Management.
4) Public training on earthquake preparedness and response should be offered free of charge.

4-4-5-Responsible organizations for the disaster management and public training of earthquake

The character and the extent of natural disasters in Iran especially in the case of earthquakes require that a great number of organizations and institutions cooperate in the different phases of disaster management. It is recommended that all involved organizations take part in training in order to enhance public awareness of earthquakes. Table 4-1 presents kind of required training with respect to different groups in need of special training.

Table 4-1-Kind of training required with respect to different groups

Time	Kind of training	Authorities	Academicians	Directors	Teachers	Building Construction workers	Building Maintenance Workers	Building Owners
Action before earthquake	Importance of Earthquake in Iran	* *(1)	** *	*	*	*	*	*
	Ability to Respond to Earthquake Effects	*	**					
	Importance of Proper Building Construction and Strengthening Existing Building	* *		*	*	**		**
	Physical Preparedness			*	*		**	
	Human Preparedness			*	**			
Action during earthquake	Proper Behavior During Earthquake			*	**		*	
	Methods for Guidance of Employees			*	**			
Action after earthquake	Emergency						*	
	Search and Rescue			*			*	
	Firefighting			*			*	
	Public & Individual Health			*				
	Traffic & Communication	*						
	Help & Procurement	*						
	Psychological Health	*	*					

(1) Number of stars shows the degree of importance of training

4-5-Simulation of unorganized individual participation (SUIP)

4-5-1-General description

The recommended plans should be practiced and simulated in order to be understandable. One of the important tasks of the planning department of General Directorate for Coordination of National Disaster Management is the management

of exercises and continual revision of plans. Different exercises for natural disaster management are as follows:

5) Orientation exercise
6) ·Field exercise
7) Round the table exercise
8) Functional exercise
9) Full scale exercise
10)

Among different kinds of exercise, field exercise and full-scale exercise are suitable for evaluation of public earthquake training and people participation situations. With respect to the high vulnerability of Iran to earthquake, it is recommended that school students should participate in most exercises of disaster response to earthquake.

4-5-2-Objectives

The main objectives of SUIP are as follows:

11) Enhancement of the preparedness level of people and organizations for response to earthquake
12) Discovery of weaknesses in any presented plan and of any deficiency of resources
13) Control of the implementability of the plans
14) Improvement of coordination between responsible organizations for earthquake response

4-5-3-Action plans

An action plan is presented for execution of maneuvers or exercises. Some of the recommended actions are the following:

15) Exercises should first be executed in large cities and in the central cities of the provinces and later on in small towns and villages. Priority should be given to those regions most vulnerable to earthquakes, floods or any other natural disasters.
16) Before execution of these exercises, coordination meetings should be held with the participation of the organizations responsible for the arrangement of people participation.
17) These exercises should be executed within the framework of the organizational structure of the National Disaster Management.

4-6-Supporting legislation

The following draft of major legal articles is formulated to be approved by NCPND and the board of ministers.

Article one- The Planning and Management Organization is responsible for the allocation of funds to relevant ministries which in their turn are responsible to

distribute these funds to organizations active in enhancing public awareness to disasters and facilitating peoples participation in disaster management. The allocated funds are to be expended on all four phases of disaster management (Mitigation, Preparedness, Response and Recovery). The Ministry of Interior has to provide funds necessary to cover the cost for public media (including IRIB) in their activities to promote people participation and enhance public awareness to earthquake and other disasters.

Article two- Provincial planning and development councils are responsible to allocate sufficient funds from their own budgets to local programs and activities that will enhance public awareness to earthquake and other disasters.

Article three- The Ministry of Education in cooperation with NDDTF is to establish safety councils in every school in order to encourage and expand participation of students in disaster management activities.

Article four- the Ministry of Science, Research and Technology is to establish and execute programs for university students that will train them and facilitate their participation in disaster prevention and management activities. It is of utmost importance that in subjects related to building construction, techniques resistant to earthquake are taught.

Article five- IRIB Organization in coordination with GDNCDM is to prepare and broadcast programs for enhancement of public awareness to disasters.

Article six- The GDNCDM is to provide all concerned organizations and civil societies with documents and information related to the training of the public in disaster management.

Article seven- The Ministry of Education has to include subjects related to the enhancement of public awareness to earth quake and other disasters in the obligatory curriculum.

Article eight- The provincial education departments have to have obligatory teaching programs for enhancement of public awareness to those kinds of disasters most common in their area.

Article nine- All ministries and organizations participating in instructing in disaster management have to provide the courses free of charge. The organizations concerned include the following ones: Basij; Organizations for Better Living; IRIB; Physical Education Organization; IRI Red Crescent Society; International Research Center for Earthquake and Seismology; Building and Housing Research Center, Municipal Fire Department; Housing Foundation; Earthquake Committee of National Scientific Research Council; Center for Natural Disaster Research and Studies; Ministry of Agriculture Jihad; Ministry of Labor and Social Affairs; Ministry of Petroleum; Ministry of Health and Medical Education; Ministry of Energy; Ministry of Industries and Mines; Geophysics Institute of Tehran.

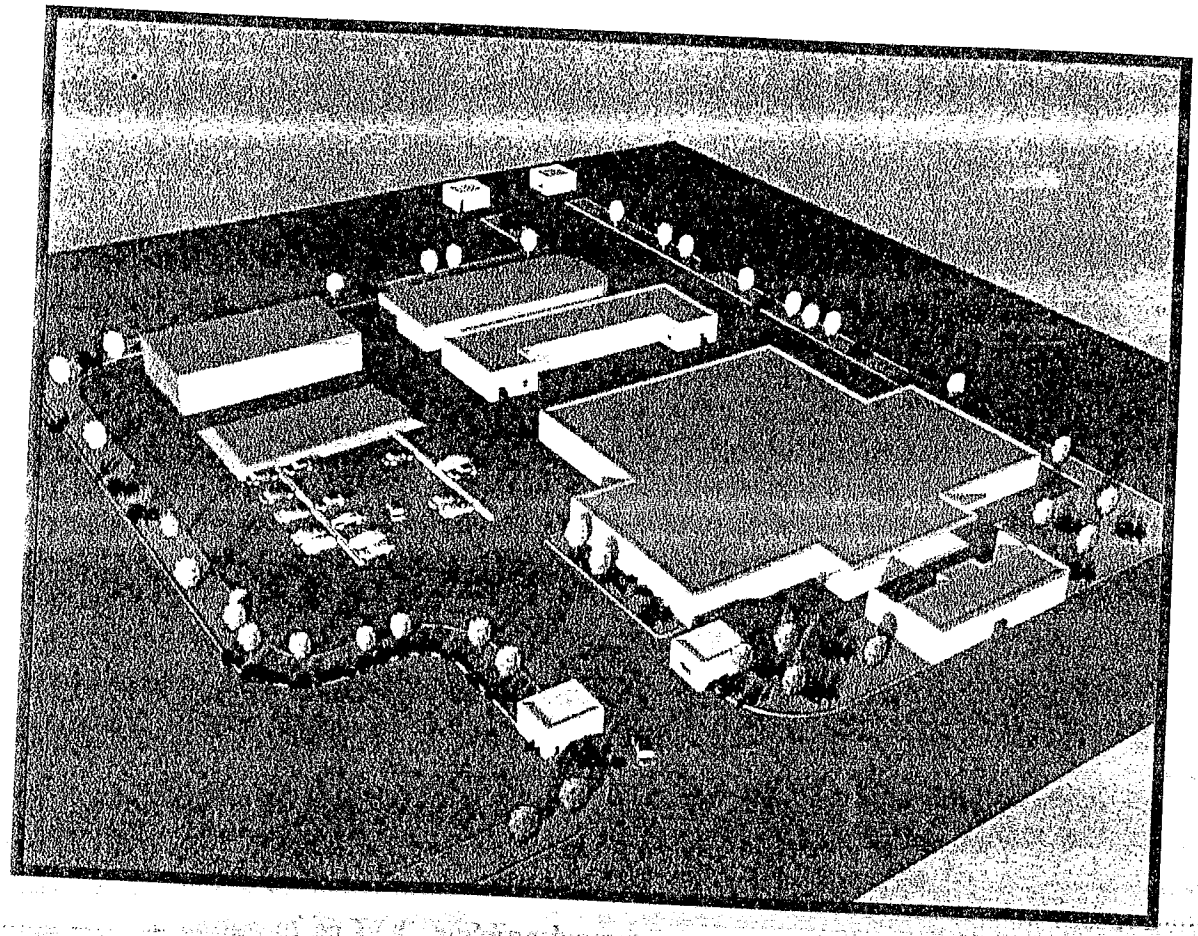
Article ten- All ministries and organizations participating in training the public in disaster management are responsible to provide this training to different organizations according to their field of duties and responsibilities.

Article eleven-The municipalities of all provincial capitals have to build and operate at least one amusement –training park (especially for children) in order to enhance the public awareness to natural disasters (especially earthquake).

Article twelve- Civil societies and NGOs in corporation with the Ministry of Interior have to participate in disaster response programs.

Article thirteen- All government organizations have to facilitate NGOs activities regarding preparedness and response to disasters.

Article fourteen- GDNCDM has to provide NGOs with continuous disaster management information and training programs.



Chapter V
DESIGN, STRUCTURE, FUNCTION AND TECHNICAL REQUIREMENTS OF THE NATIONAL EMERGENCY OPERATIONS CENTER (NEOC)

5 –DESIGN, STRUCTURE, FUNCTION AND TECHNICAL REQUIREMENTS OF THE NATIONAL EMERGENCY OPERATIONS CENTER (NEOC)

5-1- Characteristics of NEOC

The national emergency operations center (NEOC) will be a facility designated for managing the disaster emergency at the national level. It will be there GDNDC has its office and the incident management team will make decision about allocation and coordination of resources, will coordinate communication and will direct the overall disaster emergency response. The GDNDMC consists of five functional sections of the incident management team (Command, Operations, Logistics, Planning and Finance), which will be directed by the deputy for executive's affairs at the GDNCDMs (see Figure 1-4).

The building complex, where the activities of the National Disaster Management will take place, will be called EMERGENCY MANAGEMENT CENTER OR DISASTER MANAGEMENT OPERATIONS COMMAND CENTER. The aim of constructing a National EOC, is both to provide a safe and secure building against Natural or Technological Disasters and to serve as the working place for the Directorate for Coordination of National Disaster Management. This administration building is functionally designed to coordinate the National Disaster Management Operations.

The principles for the planning and the design of an EOC building have been as follows:

- Design, construction and equipping EOC should respond effectively to the functions of the Directorate for Coordination of the National Disaster Management
- EOC should act as the Center for all data and information regarding disasters in IRAN
- The National EOC should be able to communicate with all provincial, township, city and village EOCs in IRAN
- EOC should be able to communicate with all organizations and institutions related to disaster management in IRAN
- EOC should be able to communicate with all United Nations and other international organizations related to disaster management.
- EOC building should be resistant to all kinds of natural or technological disasters

The safety characteristics of EOC are considered as follows:

- Building safety
- Safety against fire

- Safety Against Chemical, Radio Active and Biologic pollutions
- Resistance to Earthquake
- Resistance to Land slide
- Resistance to Air Attack and other Military assaults
- Specially designed installations, equipment, lighting, building security control system

5-2- Studies of similar EOC in some countries of the world

The existing applicable experience in different countries has been used in designing the national EOC. The existing working place of the national disaster management in Iran is located on the sixth floor of the main building of the Ministry of Interior, has neither been designed nor equipped for this purpose.
Although the function of NECC, ECC and EOC are relatively different, the equipment, the design and the communication systems are similar. In IRAN, the Traffic Control Center of the Municipality of Tehran is located in a building resembling an EOC building.

5-3-Different elements of NEOC building

The main elements of the NEOC building and its functions are the followings:

- Layout of different parts of the building
- Definition of duties and responsibilities of the staff
- Written functional system and procedures
- Integrated disaster information and communication system
- Linkage of NEOC with local, national and international organizations
- Staff training

Based on the structure of the General Directorate For Coordination of The National Disaster Management and the characteristics of the NEOC, different sections of the NEOC have been specified as follows:(see Table 5-1)

- Specifications of the security level for each section
- Specifications of the number of employees in each section
- Provision of the inter-sectional relations diagram and proposal of location of each section in the building
- Specification of the function of each section and its relations with other sections
- Specifications of the external relations and the persons who are in contact with the Disaster Control Room (Disaster Operations Command Room)
- Specification of all elements in the Disaster Control Room as the heart of the Center

The space design of the NEOC includes the following:

Office of the Minister of Interior

Office of the Director of NEOC building

- Office of the Legal Adviser
- Office of the Internal Administration-Finance Manager of General Directorate for Coordination of National Disaster Management
- Public Relations Office

Emergency Control Room (ECR)

- Different sections of ECR
- The Decision - Making Unit (A Conference Room with 70 seats capacity)

Internal Management of ECR

- Information and Communication Coordination unit
- Employees Situation Reporting
- Safety and Security Control of the Building and ECR
- Director for Information Processing and Planning
- Director for Operations
- Director for Logistics
- Director for Administration and Finance

Director for Prevention and Disaster Reduction
Deputy Director for Planning

- Coordination Manager
- Research Manager
- Training Manager

Library
Documents Archives
Audio-Visual Equipment
Computer Site
Restaurant
Helicopter Site
Parking
Other Sections of NEOC

Presentation of design pattern of EOC

After the above studies, Architectural Patterns for NEOC including ECR are presented. These patterns are presented as two-dimensional plans and in some cases as three-dimensional plans. The floor plans are also presented in this section (see Figures 5-1 to 5-5).

Presentation of design pattern for provincial EOC

Each of the provinces of Iran has its own geographical, cultural and social characteristics. Moreover, each of them is confronted with special sort of incidents. Although a General Design Pattern is presented that shows general rules for

localization, design and equipment, specific studies for each province should be carried out before designing the provincial EOC in detail (Figure 5 - 6).

The duties and responsibilities of the incident command systems five sections are described. The position descriptions include specification of the ICS forms that the EOC staff will prepare, review or approve.

Forms for functional procedures

A series of forms to be completed by relevant EOC staff are provided (ICS forms). These forms will act as standard procedures and will facilitate system operation, information flow and communication. These forms cover the following topics:

- Initial incident briefing
- Incident map
- Incident objectives
- Organization assignment list
- Radio communication plan
- Medical plan
- Incident status summary
- Check in list
- General message form
- Resource request message
- Support vehicle inventory
- Health and safety message
- Demobilization checkout.

Integrated disaster information and communication system

The disaster communication and information system described in chapter III will be installed in the EOC. Communication equipment and operators are located at this center in order to receive and transmit information from field operations, off-site agencies, off-site facilities and any other communication points that need to communicate with the GDNDMC. The communication center with its rigorous control of information flow to and from the center will be the focal point of the NEOC.

Accordingly, no effective disaster management could function without this critical communication flow.

The communication center functions under the logistics section (see Figure 1-4).

Various types of communication equipment including telephone banks, switchboards, fax machines, radios and computers will be located within this communication center linked to all relevant Local, Provincial, National and International organizations.

Development of the incident action plan

The GDNDMC will use the incident command system to plan systematically during the response to a disaster. The incident action plan will be prepared by the planning section with input from the appropriate sections and units of the GDNDMC.

This plan should be written at the beginning of the response phase and continually revised throughout the response.

Incidents in Iran vary in their kind, size and complexity, consequently the requirements for detailed and written plans may also vary. In an initial response to an easily controlled incident, a written plan may not be necessary but larger, more complex incidents e.g. major earthquakes or big floods will require an incident action plan to coordinate the activities of different organizations. The GDNDMC will decide the required level of detail of the incident action plan according to the size and the complexity of the necessary response to the incident.

The plan must be accurate and completely transmit the information generated during the planning process. The plan will be prepared and distributed before the briefing of the operations shift. Furthermore for each operational period a plan must be prepared.

EOC staff training

The EOC staff, including GDNDMC staff will be trained in the following subjects:

- Incident command system organizational structure
- Incident command system position description and duties checklists
- Incident command system forms required by incident management team (GDNDMC) and instructions how to complete the forms.
- Information pertaining to the planning process necessary to compile a written incident action plan.
- Conducting staff briefing.
- Completing resource-ordering forms.

According to next table, net main area of center (Without peripheral areas) with minimum number of employees 200 persons = **4100 m^2**
Required consultants for final design of NEOC based on presented design pattern:

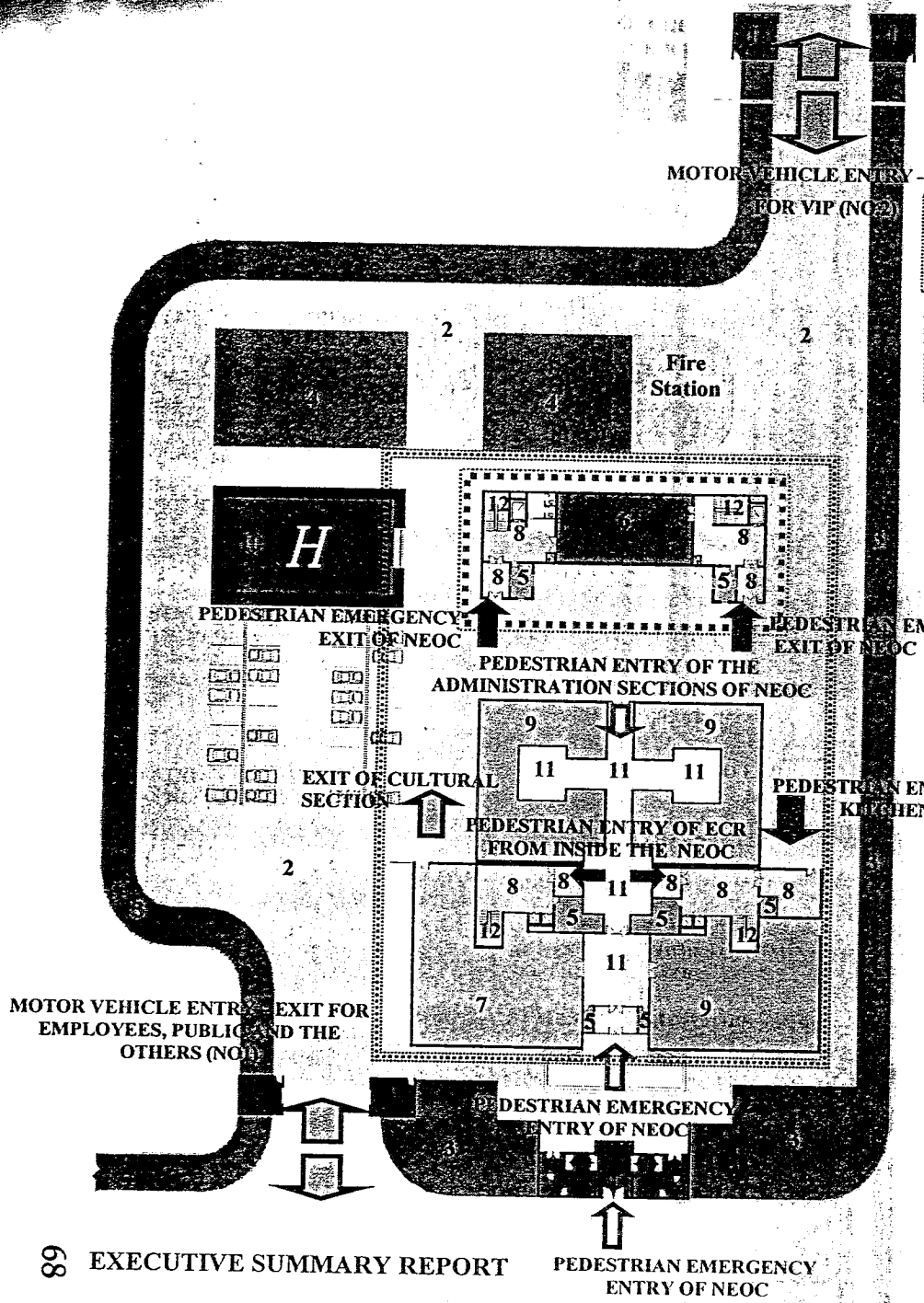
1. **Administration and organization structure of disaster management**
2. **Architecture and structure**
3. **Electrical, technical equipment and installations**
4. **Communication**
5. **Computer**
6. **Security**
7. **Safety (planning and equipment)**

Table 5-1- Different parts of NEOC building

SPACE NAME	SPACE CONTENTS		AREA (m^2)	MINIMUM NUMBER OF EMPLOYEES
OFFICE OF MINISTER OF INTERIOR	Rest room + shower + WC		90	6
DIRECTOR'S OFFICE	Office of the directors of NEOC		325	15
	Waiting			
	Legal adviser office	Clerk		
	Financial adviser office (inside NEOC)			
	Public relations			
	Tea room + toilets +cleaning articles			
ECR	Conference room (Command unit and meeting places of authorities)		250	—
	Executive Deputy	Finance, administration director	150	8
		Data processing director	600	30
		Operation deputy	400	20
		Support deputy	150	8
		Safety and mitigation adviser office	40	2
	Internal management of ECR		300	20
	Other parts of ECR	Restaurant	170	—
		Tea Room	100	—
		Rest room and praying room	500	—
		WC		
PLANNING DEPUTY	Training director		615	63
	Data collection-research director			
	Exercise & maneuver manager			
	Planning director			
	Resources manager			
CULTURAL SECTION	Computer site Disaster communication and information center		200	—
	Library		200	
	Document center		150	
	Video room–Audio		170	
Administration Sections			600	28
TOTAL			4100	200
OTHER REQUIRED SPACES FOR ECR	Fuel tanks, reserve equipment and materials		Area as suitable to physical program and required resources	
	Fire station inside the site			
	Guard, control and security units			
	Heli - site			
	Parking			
	Media room			
	Repair shop			

Figure 5-1- Pattern 1: command center of National Emergency Operations Center

SITE PLAN



LEGEND	
NEOC CONSIST OF ECR	
PEDESTRIAN EMERGENCY EXIT OF ECR	
INFORMATION & GUARD UNIT	1
COURT	2
GREEN SPACE	3
STORAGE	4
CONTROL BOX	5
INSTALLATIONS OF ECR	6
CULTURAL SECTION	7
ACCESS CORRIDOR TO ECR	8
ADMINISTRATION SECTIONS OF NEOC	9
HELI - SITE	11
ACCESS CORRIDOR TO ADMINISTRATION SECTIONS OF NEOC	11
STAIRS AND ELEVATORS	12

Figure 5-2- **Pattern 1: command center of National Emergency Operations Center**

PLAN (FIRST FLOOR UNDERGROUND)

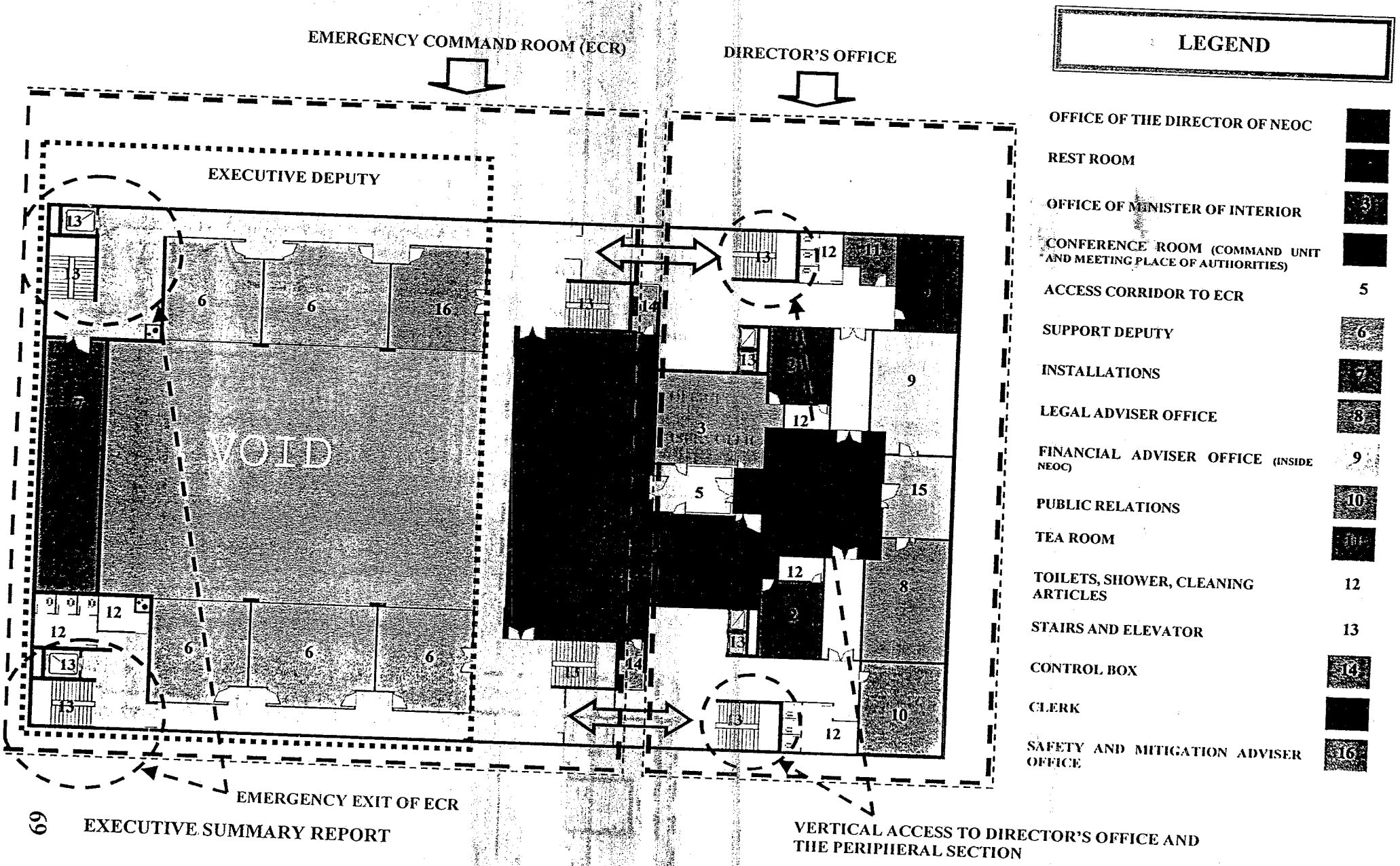
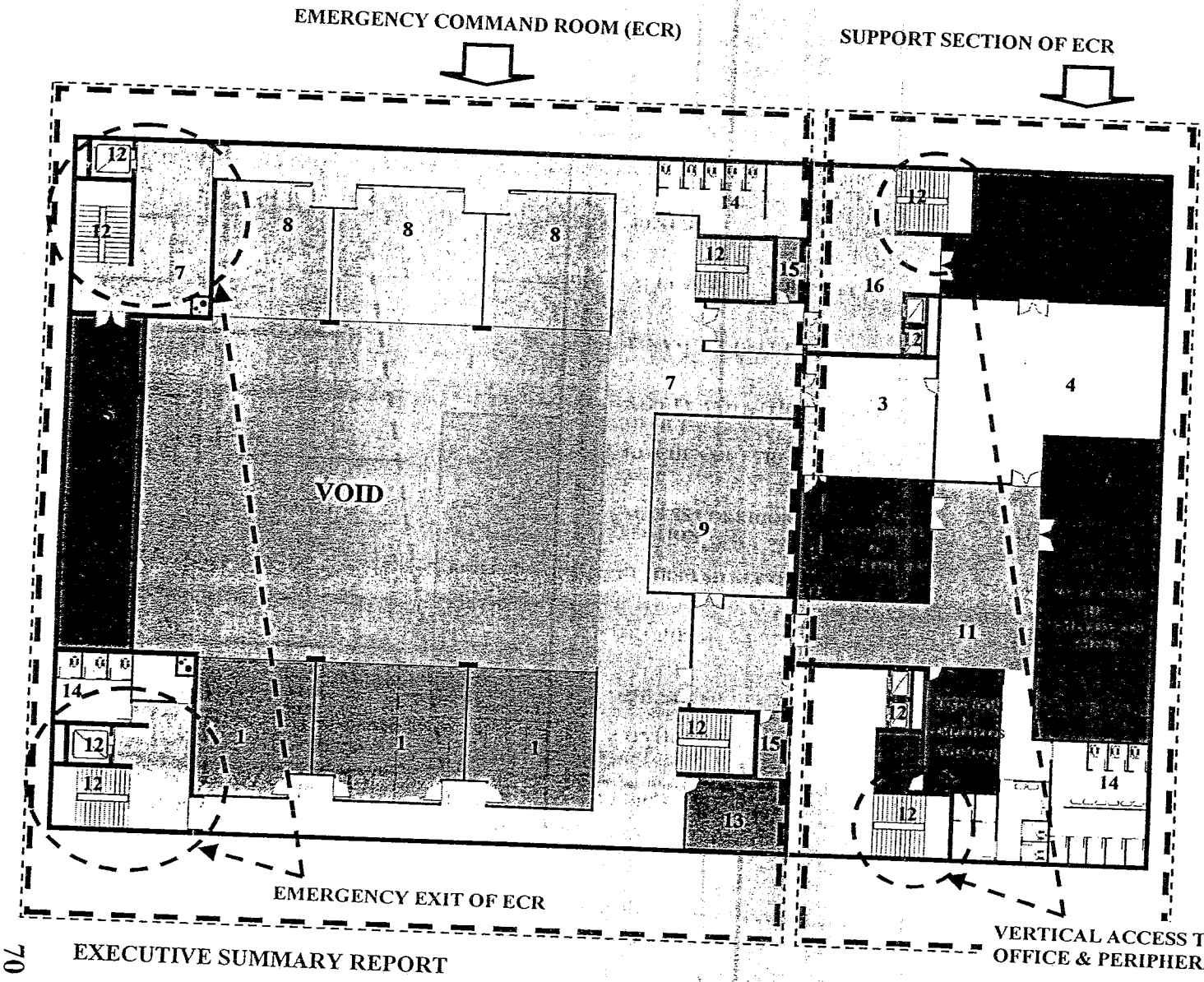


Figure 5-3- Pattern 1: command center of National Emergency Operations Center

PLAN (SECOND FLOOR UNDERGROUND)



LEGEND

OPERATION DEPUTY	1
VOID	2
RESTAURANT OF AUTHORITIES	3
RESTAURANT OF EMPLOYEES	4
INSTALLATIONS	5
REST ROOM	
ACCESS CORRIDOR TO ECR	7
FINANCIAL DEPUTY	8
SAFETY AND MITIGATION ADVISER OFFICE	9
KITCHEN OF ECR	
ACCESS CORRIDOR TO FACILITIES SECTION	11
STAIRS AND ELEVATOR	12
TEA ROOM	13
TOILETS, SHOWER, CLEANING ARTICLES	14
CONTROL BOX	15
LOBBY	16

Figure 5-4- pattern 1 – command center of National Emergency Operations Center *plan (third floor underground)*

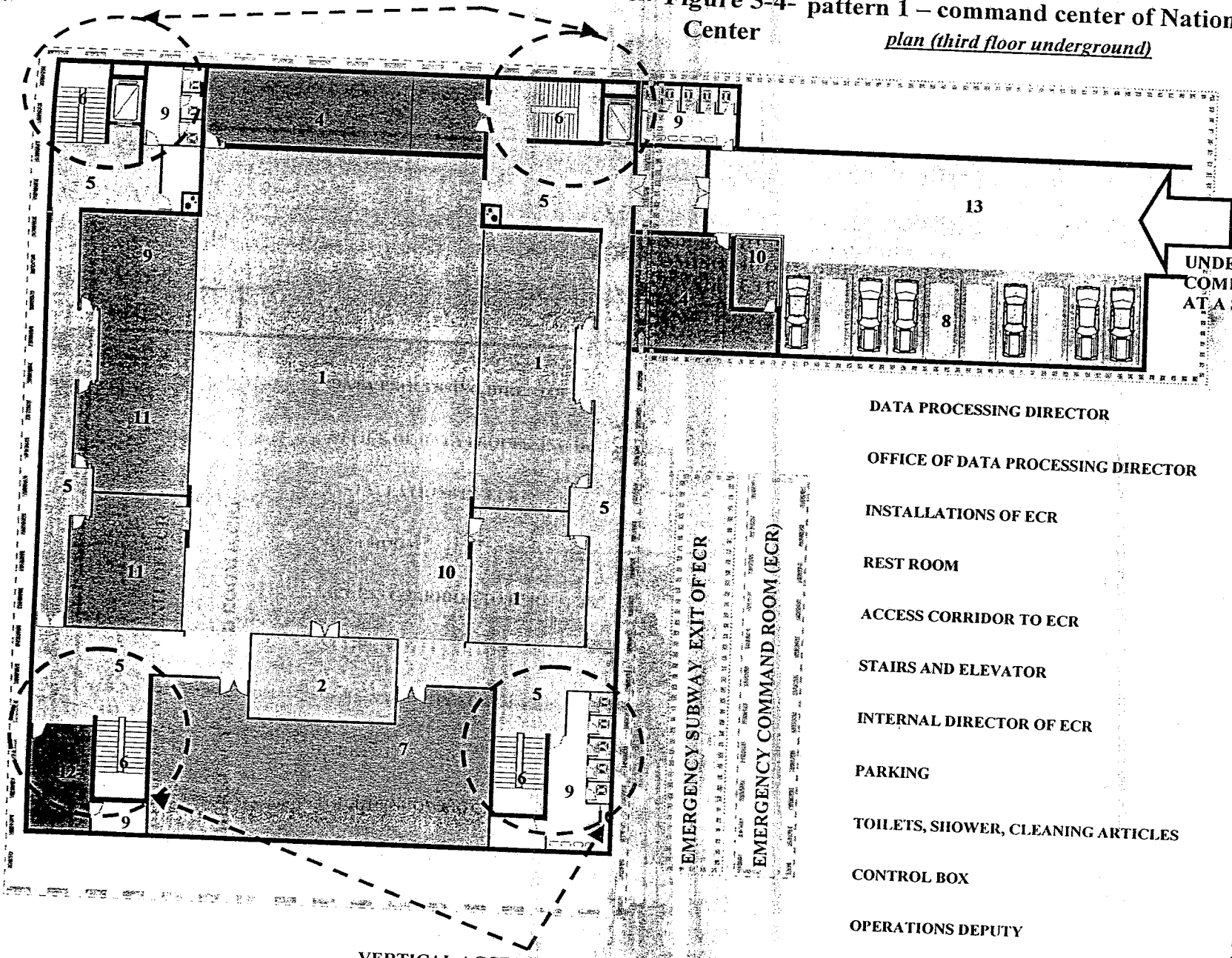
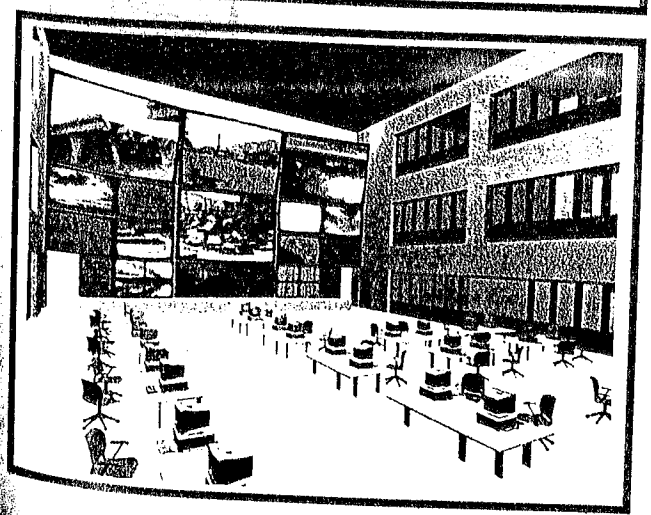


Figure 5-5- Pattern 1 NEOC

VIEW FROM ECR TO COMPUTER MONITORS OF INFORMATION ACQUISITION & PROCESSING UNIT



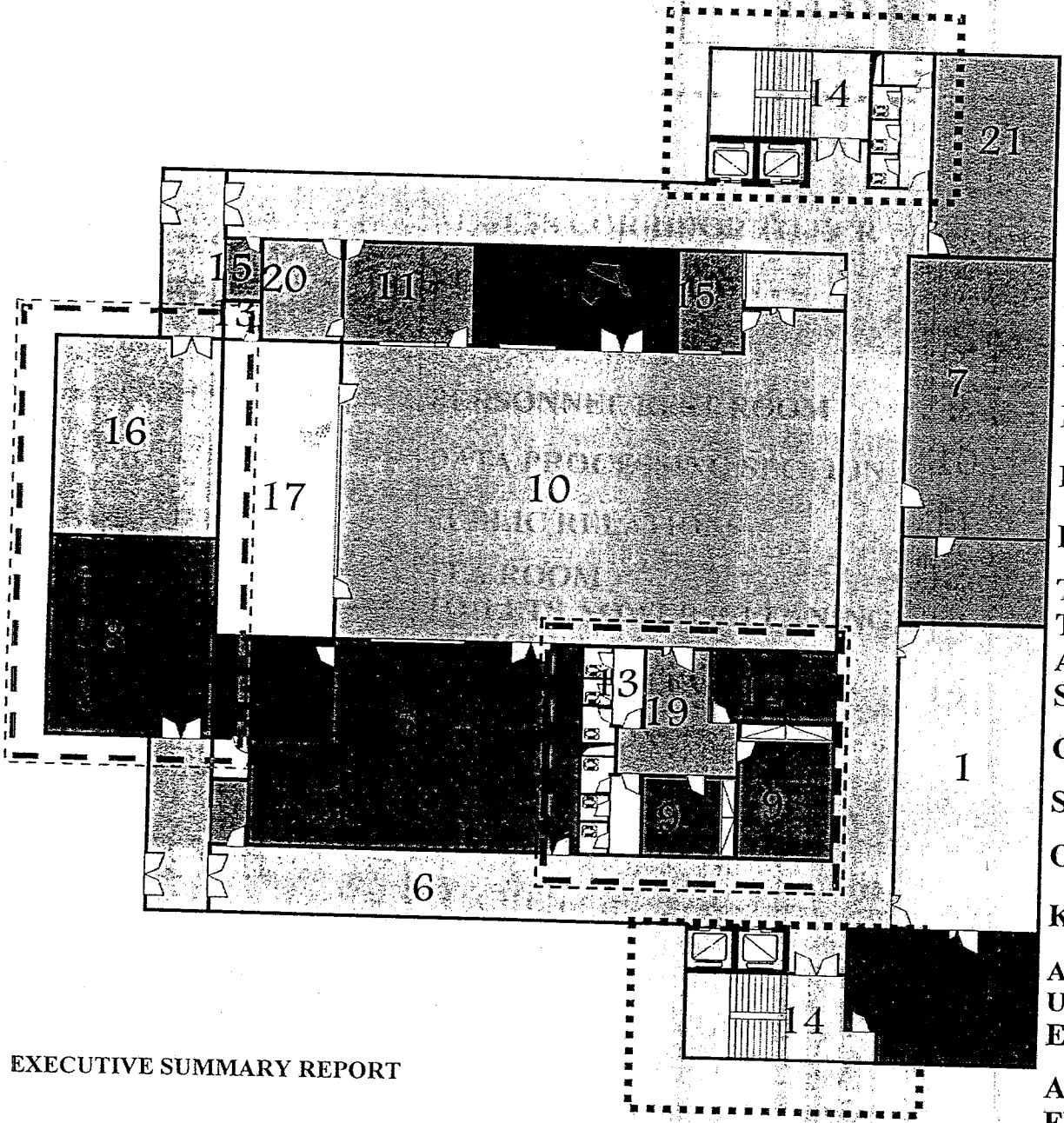
PICTURES SHOWING INFORMATION ACQUISITION AND PROCESSING ROOM OF ECR

CHARACTERISTICS:

1. LOCALIZATION OF ECR UNDERGROUND (IN 3 FLOORS)
2. INCORPORATION OF ALL NECESSARY SPACES AT THE SITE OF EOC
3. DESIGN OF TWO SEPARATE MOTOR VEHICLE ACCESS TO SITE
4. DESIGN OF UNDERGROUND EMERGENCY ACCESS WAY TO SITE
5. DESIGN OF ACCESS TO ECR INSIDE NEOC
6. DESIGN OF SERVICE SPACES FOR ECR
7. DESIGN OF CONTROL UNIT FOR ENTRY – EXIT TO BUILDING
8. LOCATION OF ADMINISTRATION AT FIRST OVER GROUND FLOOR
9. DESIGN OF SEVERAL PEDESTRIAN ACCESS WAYS TO ECR
10. DESIGN OF SEPARATE INSTALLATIONS FOR ECR
11. LOCATION OF NEOC DIRECTOR OFFICE ADJACENT TO ECR

Figure 5-6- Pattern 1: command center of Provincial Emergency Operations Center

Typical Plan



LEGEND

RESTAURANT	1
OFFICE OF THE DIRECTOR	2
MANAGERS REST ROOM	3
MAP ROOM	4
CONFERENCE ROOM	5
ACCESS CORRIDOR TO ECR	6
LOGISTICS SECTION	7
INSTALLATIONS	8
PERSONNEL REST ROOM	9
DATA PROCESSING SECTION	10
PUBLIC RELATIONS	11
TEA ROOM	12
TOILETS, SHOWER, CLEANING ARTICLES	13
STAIRS AND ELEVATORS	14
CONTROL BOX	15
STORAGE	16
OPERATIONS SECTION	17
KITCHEN	18
ACCESS CORRIDOR TO UNOFFICIAL SECTIONS	19
EDUCATION OFFICE	20
ADMINISTRATION AND FINANCE	21

SUPPORT UNITS OF ECR (FOR PERSONNEL)

EMERGENCY EXIT OF ECR

ECR SPACES

5-4- Location of the NEOC building

The studied area covers the Great Tehran Metropolitan Area, which consists of 22 districts (see Figure 5-7).

This section presents studies executed for selection of the location of the NEOC. The subjects studied are as follows:

5-4-1-Characteristics of the City of Tehran

As Tehran will be the seat of the NEOC, Tehran's characteristics have been studied. The covered subjects include general characteristics of the Greater Tehran Metropolitan, geographical and social characteristics of the Greater Tehran Metropolitan, topography, climate, seismicity, surface water drainage, ground water elevation, land-use, population, public services and facilities, lifelines, freeways, highways, main streets, hazardous facilities, and other important city elements.

The major factors causing the cities high vulnerability to natural disasters are the three active faults (namely, north Tehran fault, north Rey fault and south Rey fault), and the high population and building density in the southern districts. Moreover, lifelines especially the utility gas network having a high vulnerability to natural disasters, are studied.

Topography

The greater Tehran Metropolitan area is located at the foot of the southern slope of Alborz Mountains, which is a part of the Alp-Himalayan Orogenic zone. The urban area of Tehran has been developed on alluvial layers accumulated on hard rocks of complex geological formations.

The area can be classified into five topographic zones: (1) Mountains, (2) Hills, (3) Old alluvial fans, (4) Young alluvial fans and (5) Alluvial plains. The distribution of the topographic zones is shown in Figure 5-8.

Geology

The geological map, which focuses on Cenozoic Sediments in the Tehran region, is prepared by the Geological Survey of Iran (GSI). This geological map basically presents the distribution of the Pliocene and Quaternary alluvial and glacial deposits in the Tehran plain between 51°00□-51°44□E and 35°28□-35°22□N. the classification of alluvial deposits according to Rieben (1996) is used as a basis for mapping different lithologic units of the studied area. The geological map of the studied area is shown in Figure 5-8.

Fault

The distribution of the active faults in Iran have been investigated by Berberian (1976). Distribution of active faults in and around the city of Tehran was originally and systematically compiled by Berberian et.al.(1983). Almost all reports and research papers refer to this early report. Figure 32 shows the distribution of faults in and around the city of Tehran. The main active faults in and around Teheran city are Mosha fault, North Tehran fault (NTF), and South and North Ray faults.

Ground water

CEST (1998) compiled a contour map of ground water levels for Tehran. Water

levels for over 1,000 wells were used in the compilation map. There are clear seasonal changes in the ground water levels. The highest level is observed in February and the lowest one is observed from August to September.

The depth of the ground water varies from place to place and the typical ground water level depends on topography and geology. The typical ground water level varies from 5 meter in alluvial plains to more than 100 meter in old alluvial fans. Figure 5-9 shows the ground water level map.

Population

According to the 1996 population census, the total population of Tehran divided in 22 districts is calculated at 6,742,165. District 4 has the largest population, counted at (663000) and district 22 has the smallest one (56000), districts 9, 12 and 21 have also relatively smaller populations.

Population density is also calculated by census zone and based on 1996 population census data. The average population density of the entire city of Tehran is 110 persons per hectare. The two districts with the highest population density district 10 and dustrict17 have respectively 349and 347 persons/ha., followed by district 14 and district 8 with respectively 269 and 250 persons/ha. On the contrary the district with the lowest population density (district 22) has only 9 persons/ha (Figure 5-10).

Buildings

Based on the 1996 census data, the total number of residential buildings in Tehran was 1,484,138 units. Buildings are classified into four categories according their structure type. 1) steel, 2) RC, 3) others and 4) unknown. The number of steel structure buildings is counted to 604,363 units (41%), that of RC 169,960 (11%), that of others 678,273 (46%) and that of unknown is 31,542 (2%). Steel and RC structure buildings are relatively new and large building in Tehran. Others are older and more traditional types of buildings. The distribution pattern of these buildings shows the characteristics of Tehrans urban growth. Districts having more than 60% of either steel structure or RC structure are the district 1,2,3,4,5,6 and 22 which all with the exception of district 22, are located in northern Tehran. In districts 5 and in district 2, 83% respectively 81% belong to these structural types. On the other hand, districts 10, 16 and 17, which are located in southern Tehran have less percentage of steel and RC structure. Districts 9,11,12,13,18 and 19 have also a low percentage of steel and RC structures.

Urban facilities

Wide ranges of data for urban facilities have been studied. The following urban facilities have been studied:

- Fire fighting stations
- Police stations
- Traffics police stations
- Hospitals
- Governmental facilities
- Educational facilities including:

- Elementary schools,
- Integrated schools,
- High schools,
- Higher education centers (universities),

– Parks and public open spaces

Lifelines

A wide-range of data that has been studied, has been obtained from those agencies and companies involved with water, electricity, gas and telecommunication lifeline agencies and companies including water, electricity, gas and telecommunication.

In the case of an earthquake it must be considered that damages to lifelines facilities or networks could harm the NEOC and the city itself in two ways. Firstly, damaged lifeline facilities or networks may hinder the ordinary, daily access to drinking water, electricity, gas and telecommunications; secondly damaged lifeline facilities or networks may cause secondary disasters (e.g. fire, electric shock, explosion etc.). For these reasons lifeline management agencies have to establish a disaster management system for minimizing the damages in the event of an earthquake and the NEOC has to provide plans for emergency water, electricity and telecommunication networks.

5-4-2 -Localization

For localization of the NEOC the following proposed locations are studied:

- Proposed location by Municipality District 15
- Proposed location by Municipality District 14
- Proposed location by Municipality District 13
- Proposed location by Municipality District 1 and 6
- Proposed location by Municipality District 2, 4, 5 and 11
- Other proposed locations

Other suitable locations have also been investigated by a special city planning expert assigned to the localization task. Then using the specified selection criteria, the preferred alternatives were selected.

General localization viewpoints

For the Localization of the NEOC, two viewpoints were considered:

1- Activities of NEOC will be carried out in a section of a suitable existing governmental building.

2- An independent separate building for NEOC will be constructed.

The second alternative was chosen due to the following advantages:

- Location of a separate building for NEOC would be selected according to proper localization criteria for NEOC and therefore would be more functional than any existing building.
- An independent separate building could be specially designed and constructed to fulfill the special functions of the National Disaster Task Force.

5-4-3-Criteria for site selection of NEOC

The criteria that were considered in searching for the location of NEOC were as follows:

1- The required land area: minimum 5000 m^2

2- The NEOC building should be accessible, easy and fast from all points of Tehran

3- High safety, low risk against incidents and natural disasters including:
   - Earthquakes
   - Floods
   - Wind storms
   - Land slides
   - Wild fires
   - Chemical and radioactive material leakages
   - War and air attacks (Normal, Chemical, Atomic)
   - Building collapses

4- The followings are the main Criteria that have been considered for the site selection of NEOC in order to ensure its safe function twenty four hours a day, seven days a week:
   - Located as far as possible from active faults of Tehran
   - Not located inside the Design Flood Elevation (flood risk boundary) of any river
   - Not located in the neighborhood of buildings and stores containing hazardous materials and facilities
   - Not located at places with soil liquefaction properties
   - Not located on loose grounds with low strength
   - Not located in places with high level of ground water
   - Far from high-rise buildings
   - Located near main roads with good access
   - Not located in districts with high population and building density
   - Not located in the central business district due to its high traffic congestion
   - Near urban facilities and services

5-4-4-Research methodologies

The research method for investigating and selecting alternative locations for NEOC has been as follows:

1. Specification of Standard Criteria for Localization of NEOC
2. Search and selection of land based on the specified criteria

The following procedures have been used for building site search:

1- A Letter has been sent by the MOI to the twenty-one district mayors of Tehran to request proposals of suitable pieces of lands for NEOC.

2- A letter has been sent by the NPD to Managing Director of Abbas abad Renewal Company, Municipality of Tehran requesting introduction of suitable pieces of land for NEOC.

3- Letters have been sent by NPD to the General Director of Housing and City Planning of Tehran Province requesting introduction of suitable pieces of land for NEOC.

4- A special consultant has been assigned to localize NEOC. Data have been acquired from General Directorate of Real Estate, Municipality of Tehran. Furthermore, recommendations have been obtained from experts and authorities.

5- Some districts of the city were omitted due to their vicinity to active faults (as Municipality District 1) or bad access to roads or other facilities.

6- A technician in Architecture and Surveying has been assigned to contact appropriate experts at 21 Municipality Districts in order to obtain relevant maps and plans for the proposed pieces of land. She has visited the sites too.

7- An advisory coordination committee for localization and evaluation of NEOC sites has been established.

8- A shortlist of thirty proposed and studied sites based on the localization criteria and selection of the best five alternatives is presented.

5-4-5-Selected sites

The studied sites for NEOC are classified into two class of priority:

- First priority sites
- Second priority sites

The first priority and second priority sites are shown in Figures 5-8 to 5-10.

The selected sites in the first priority are approved by the NPD. The best two sites selected for land acquisition action by NPD are:

1- Pardisan Natural Park area (municipality district 2)

2- A part of Abbas abad area (municipality district 3)

The MOI has sent a letter to the DOE to inquire about land acquisition for the NEOC at Pardisan Natural Park and another one to Abbas abad Reconstruction Organization inquiring about land acquisition in Abbas abad for NEOC.

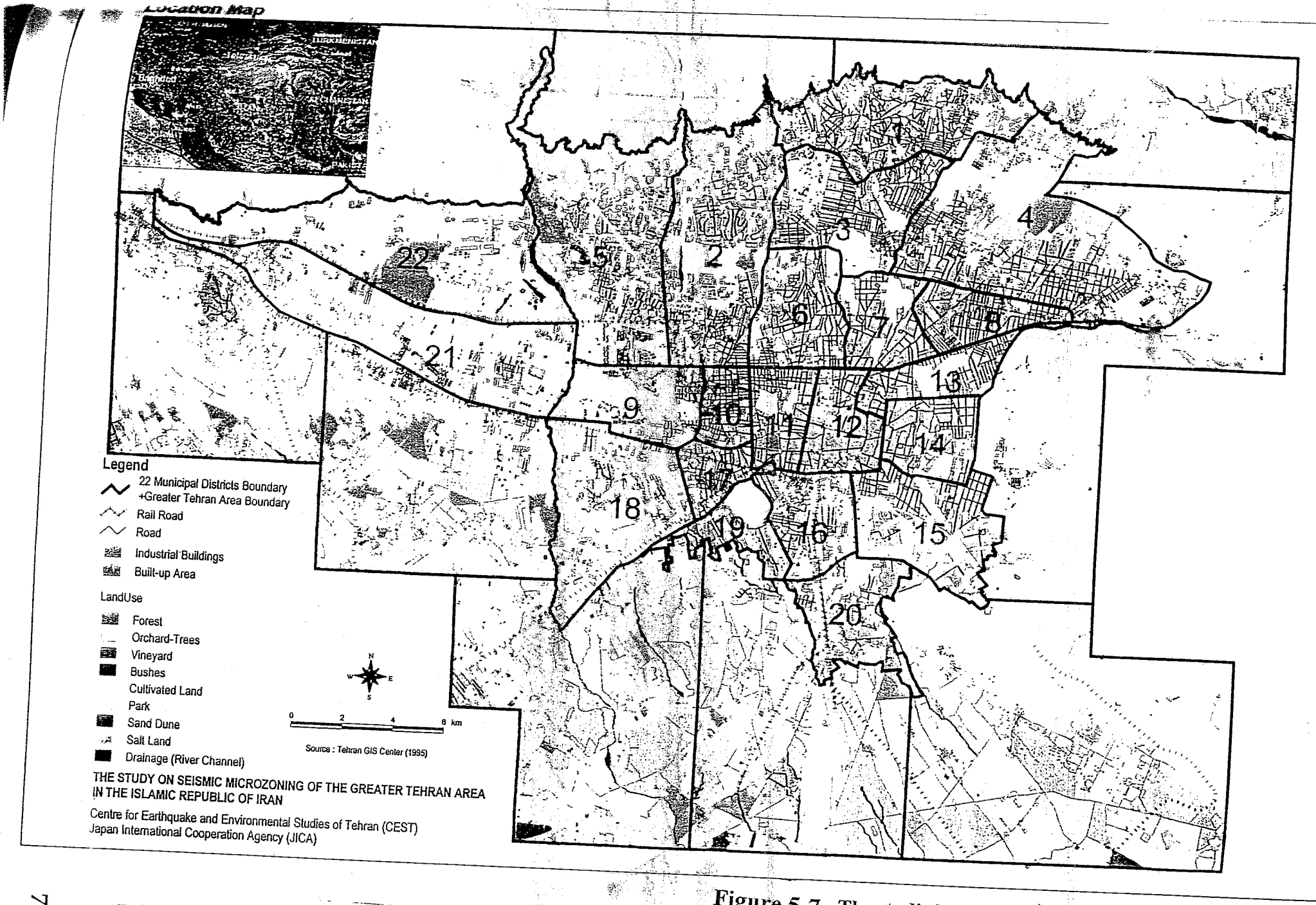


Figure 5-7- The studied area including 22 districts of Tehran

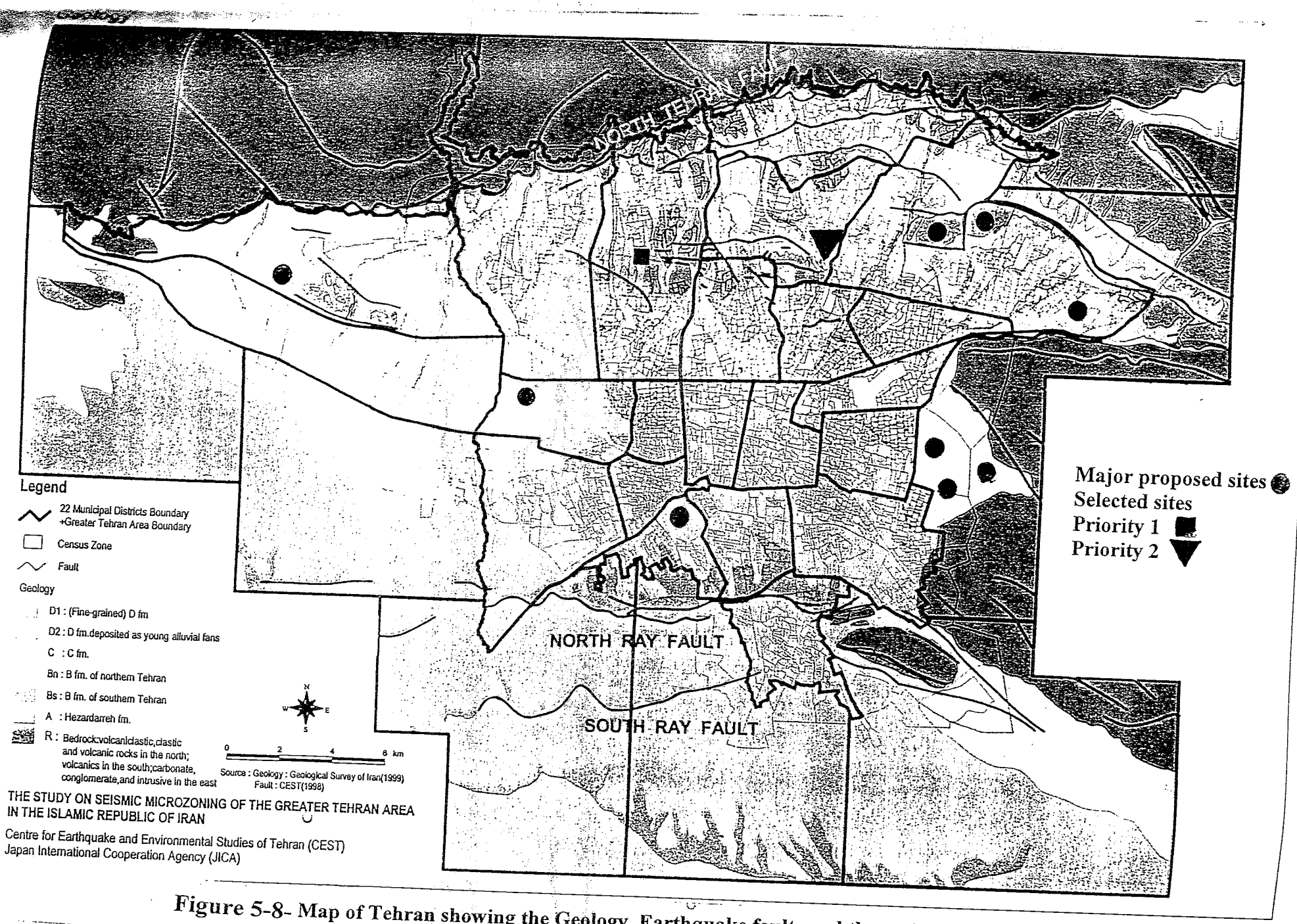


Figure 5-8- Map of Tehran showing the Geology, Earthquake faults and the major proposed locations

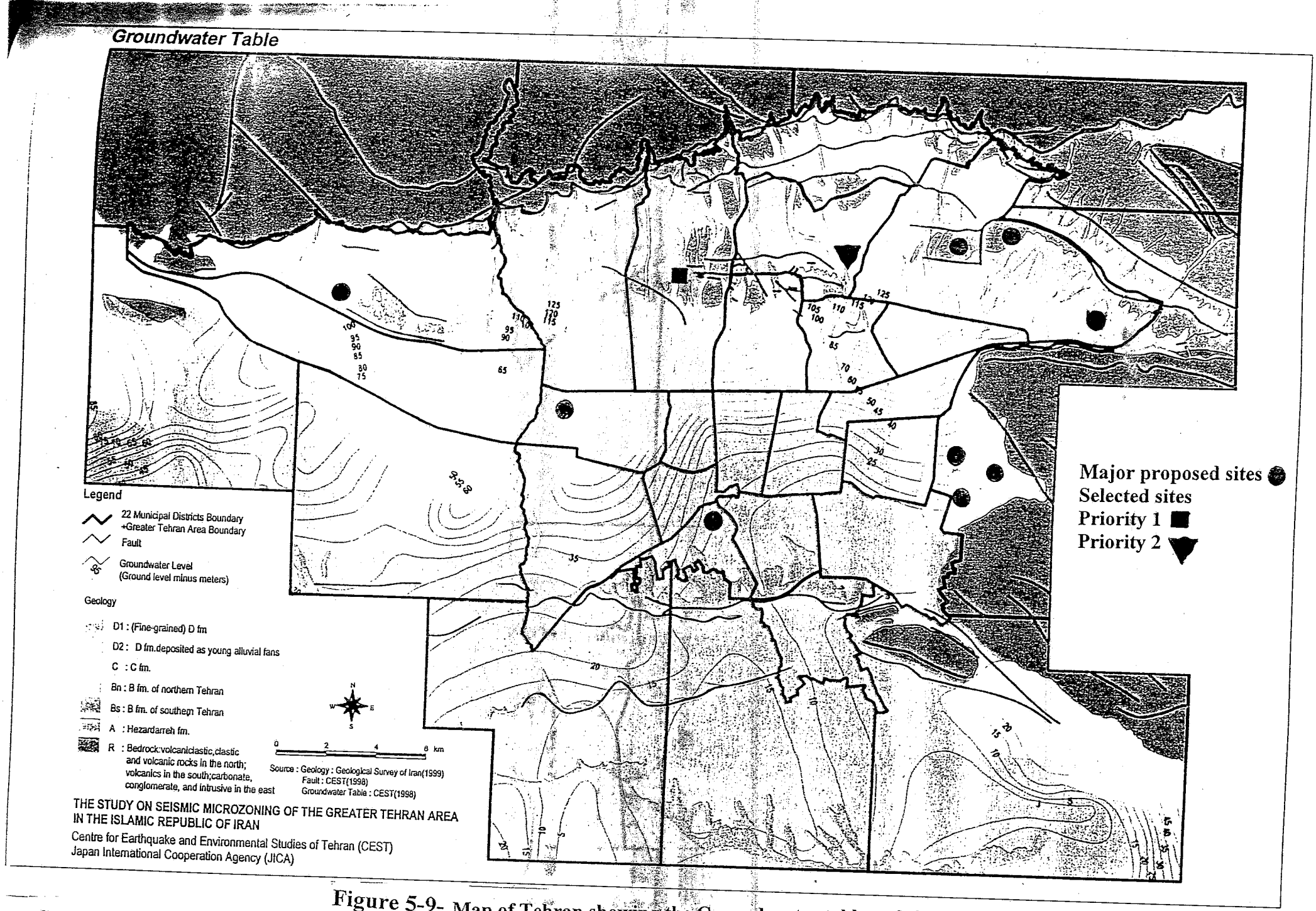


Figure 5-9- Map of Tehran showing the Ground water table and the major proposed locations

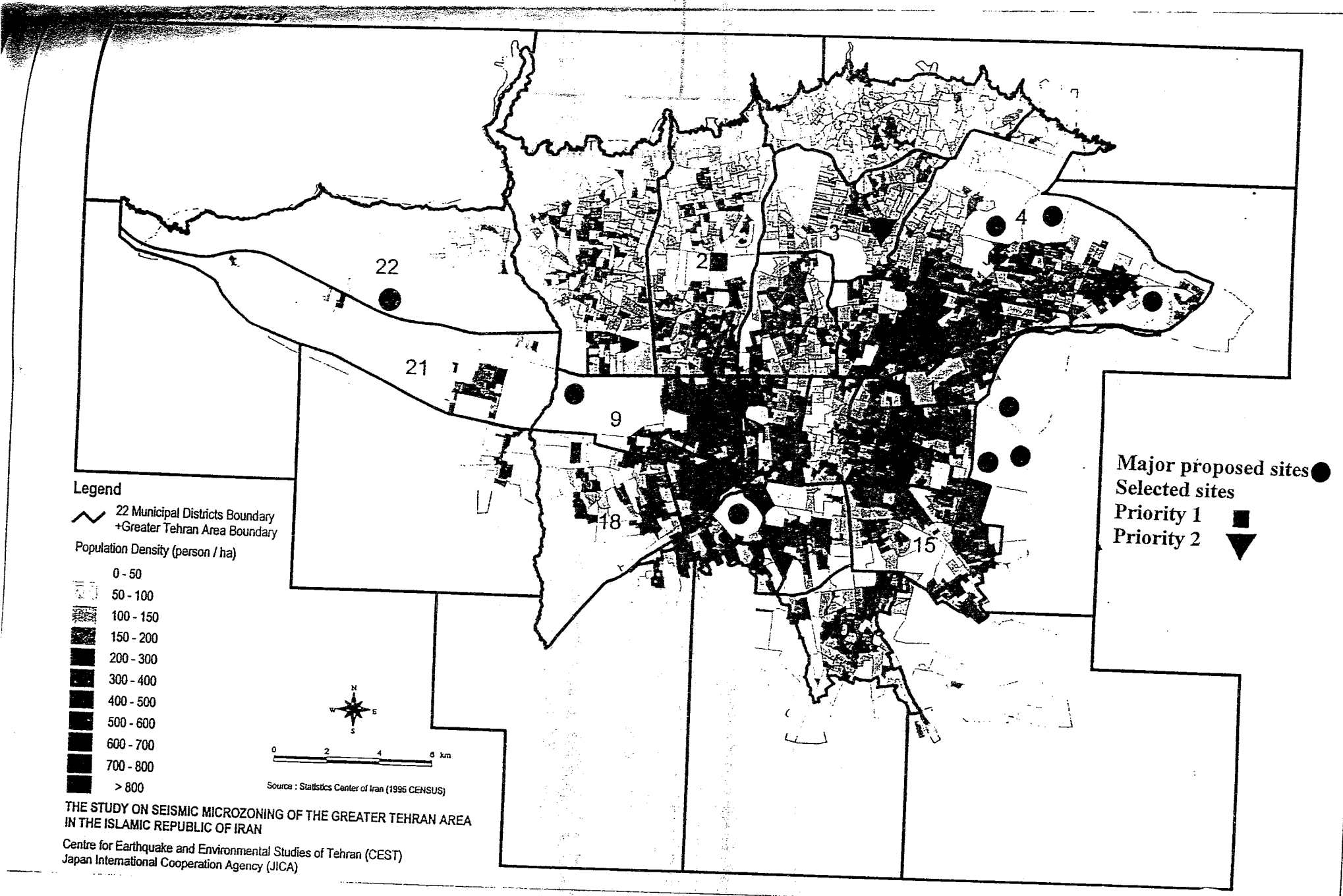
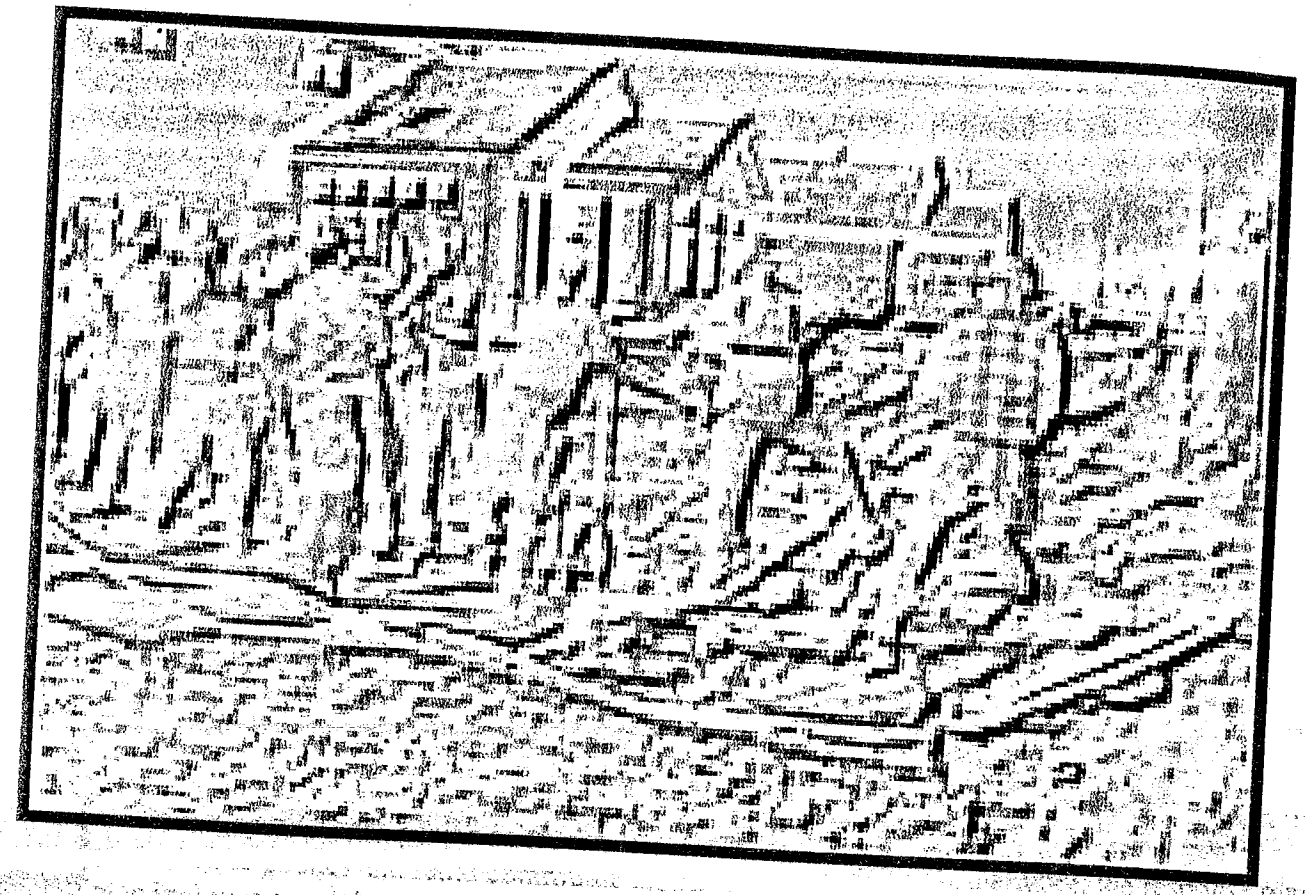


Figure 5-10- Map of Tehran showing the population densities in districts and the major proposed locations



Chapter VI

RESULTS AND RECOMMENDATIONS

6- Results and recommendations

This executive report presents a brief summary of the activities performed to fulfill the requirements of the project formulation of an Integrated National Disasters Management Plan.
This executive report is one of the eighteen volumes of reports submitted to the NPD.
At the end of the main reports, necessary legal articles have been prepared for the approval of the National Committee for Preparedness against Natural Disasters and that of the Cabinet of Ministers.
The main results and recommendations achieved by this project are as follows:

1. A proposed structure for INDMP and its justification are presented.
2. The proposed INDMP structure formulated in legal articles will be presented for approval first to the national committee for preparedness against natural disasters and then to the cabinet of ministers.
3. The four stages of disaster management (mitigation, preparedness, response and recovery) as well as standard operations procedures in the response phase and recovery plans for all fourteen responsible organizations in the provinces have been specified. Moreover it is recommended that all disaster management responsible personnel should have access to a list of all responsible authorities with information about the person in charge, his deputies, addresses, telephones, mobile phones and radio communications. Furthermore, the response plan includes general procedures for responding to earthquake disasters.
4. A flood management plan including the four phases of disaster management is presented. Specific recommendations for establishing early warning systems for flood control have been formulated. Furthermore, it is recommended that the National Meteorological Organization and the Ministry of Interior (National Disaster Task Force Secretariat) should together execute a one_year project in which the procedures and means for further increasing the capacities of the proposed early warning system will be specified.
5. In the case of flooding, specific recommendations are presented for emergency health care and necessary environmental sanitation actions.
6. Sets of safety checklists for national and local major projects covering risks of floods, earthquakes, fire, drought and cold weather stresses have been prepared. Moreover, administration procedures for incorporation of these safety checklists in the process of approving major project budgets (in different phases of design, construction or operation) by the Management and Planning Organization have been formulated resulting in the incorporation of disaster prevention and mitigation measures in major development activities.

7. Specific recommendations are presented for collecting, processing and analyzing necessary data in a countrywide GIS – system, linked to major national and international data banks.

8. An improved communication system linked to those of major national, United Nations and international disaster management organizations has been formulated and necessary software and equipment have been specified. Necessary procedures including draft legal articles for approval of the implementation phase of the disaster communication and information systems have been stated.

9. Procedures for the participation of the public and for relevant training courses in earthquake response have been formulated. For every relevant government organization its duties and responsibilities in enhancing public awareness to earthquakes have been specified.

10. Design, structure and technical requirements of National and Provincial Emergency Operations Centers have been formulated and the criteria of site selection for NEOC and PEOC have been specified. About thirty different proposed sites for NEOC have been studied and a shortlist of the first five priority sites is presented. For the first two selected sites, namely Pardisan park and Abbasabad site NPD has taken specific actions for land acquisition.

11. A Validation workshop was held to describe, discuss and get the views of different relevant authorities and organizations concerning various parts of the INDMP. The result of the discussions and the opinions expressed by the participants and experts have been considered in the revision of the plan and in the preparation of the final reports.

After the approval of INDMP and after its implementation, it is expected that the INDMP will provide a basis for an improved sustainable and secure development in the Islamic Republic of Iran.

Furthermore in order to facilitate the implementation of the INDMP, it is proposed to carry out a complementary project defined and financed by the UNDP starting 2002. ■

ANNEX I
FLOOD MANAGEMENT PLAN

I- Flood management plan

The proposed structure of flood management plan includes mitigation, preparedness, response and recovery programs.

The flood management plan is a part of INDMP and includes the following subjects:

- Review of the flood characteristics of Iranian rivers
- Causes of flood incidences in Iran
- Review of flood management in Iran at present
- Review of some present systems of flood management in some of the worlds countries
- The IDNDR recommendations for flood early warning system
- Flood characteristics
- Flood prediction
- Vulnerability to flood
- Damages following flood

I-1- Problem of flooding in Iran

Flooding has been intensified in the past decade in Iran due to the following factors:

- Climatic factors including high rate of precipitation and low frequency of precipitation.
- Topographic factors including steep mountain slopes which encourages flooding
- Human factors including:
  - High rate of urbanization
  - Deficiencies in flood management
  - Increased deforestation
  - Violations of river flood boundaries and land-use regulations

Table 1 shows that during the last 49 years, 3114 floods have occurred in Iran. During the 10 years (1991-2000) the number of floods has been 1351 corresponding to 43.4% of the total flood incidents in this period.

Table 1- Frequency of flood occurrence in Iran according to the last 45 years data

Data period	No. of flood incidents	% With respect to total
1952-1960	195	6.3
1961-1970	233	7.5
1971-1980	431	13.8
1981-1990	904	29.0
1991-2000	1351	43.4
Total	3114	100

Source: Environment and Water Research Center, Sharif Industrial University, Tehran , 2001

I-2-Preparedness program

The preparedness program includes: research, planning, early warning system structuring organizational management, training, exercises and resource management. Moreover, expert committee of flood of the NCRND that is chaired by the Ministry of Energy and the Planning Deputy of the General Directorate for Coordination of the National Disaster Management performs the daily activities concerning the preparedness phase of Flood Disaster Management.

I-3-Mitigation program

The mitigation program includes:

- Surveying districts in danger of flood.
- Application of safety checklists against flood in areas prone to flood disasters.
- Control of Land use and zoning in river plains.
- Construction of flood delaying dams, reservoirs and canals.
- Flood proofing of equipment, machineries and private belongings.
- Installations of early warning systems for storms and floods.
- Provision of soil protection activities in water basins.
- Clearance of river-beds and surface water canals, to allow free flow of surface water.

I-4-Response program

The responsible organizations are recommended to use the Incident Command System in the response organization structure. This structure is shown in Figure 1.

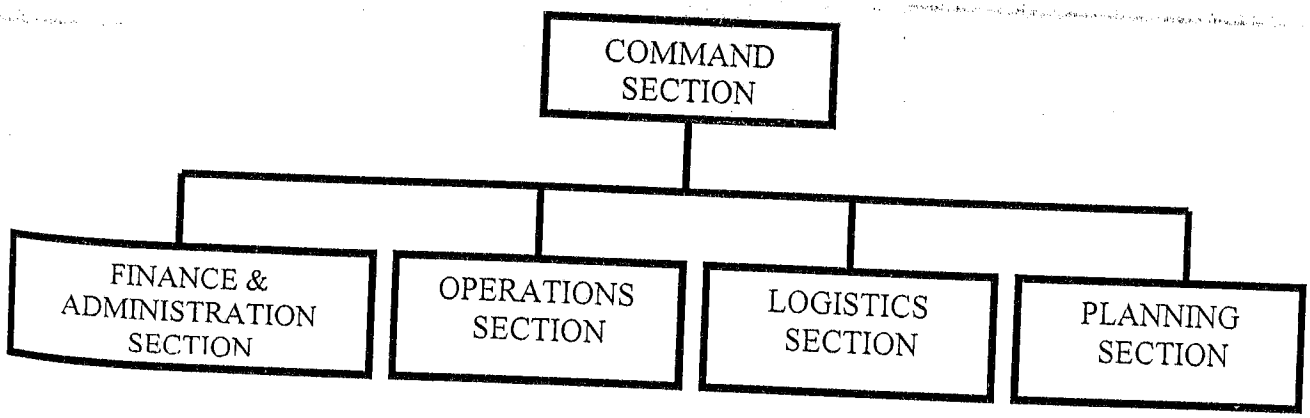


Figure 1- Incident Command System

The response program includes the following proposals:

- Use of the flood warning systems such as public sirens, water depth measuring instruments.
- Use of sand bags and similar materials for obstructing floods and protecting important structures.
- A general warning and operations procedure to respond to floods.

The proposed responsibilities of the main participating organizations in flood management are shown in Table 2.

Table 2- Proposed responsibilities of main participating organizations in charge of flood management

RESPONSIBLE ORGANIZATION	RESPONSIBILITIES	COOPERATING AND SUPPORTING ORGANIZATIONS
National disaster Task Force	Flood management at National level	
Provincial disaster Task Forces	Flood management at Provincial level	
City disaster Task Forces	Flood management at City level	
Directorate for National Disaster Management Coordination	Performing daily current disaster management activities at National level	
Directorate for Provincial Disaster Management Coordination	Performing daily current disaster management activities at Provincial level	
Directorate for City Disaster Management Coordination	Performing daily current disaster management activities at City level	
Water and Sewage organizations, Ministry of Energy	Performing all specified activities and actions regarding operations of water management and flood response management	Ministry of Interior, Ministry of Agriculture Jihad, Ministry of Communication, Ministry of Health and Medical Education
General Directorate for National Disaster Coordination	Performing all actions regarding public information and warning	IRI Broadcast, Ministry of Culture and Islamic Guidance, Geo-physics Institute, University of Tehran, Ministry of Communication, Ministry of Health and Medical Education, National Meteorological Organization, Environment Protection Organization, IRI Red Crescent Society,

I-5-Recovery program

The recovery principles presented in the recovery section of the INDMP are also applicable in flood management. Moreover implementation of mitigation measures in the reconstruction of flood-damaged regions is emphasized e.g. rebuilding affected housing units in new locations out of the flood risk zone.

1-6- Specific recommendations for emergency health care in case of flooding

The main factors causing diseases after a flood incident are as follows:

- Pollution of well water and underground water resources.
- Pollution of food stuff caused by influx of polluted water.
- Lack of access to clean drinking water.
- High pollution density in disaster stricken areas.
- Sudden displacement of population.
- Destruction of sanitary service installations.
- Discontinuation of public health programs.

In response to contagious diseases after flooding, the following actions should be taken by the Ministry of Health and Medical Education:

- Formation of health care teams.
- Reporting infectious diseases.
- Recommending what kind of food to consume.
- Rationing of food tuff if necessary.
- Specification of basic medicines and estimates of required amount.

1-7-Environmental sanitation recommendations

The principal recommendations regarding environmental sanitation actions are as follows:

- Temporary settlement areas for evacuated people should have a safe distance from garbage disposal centers and sewage treatment plants.
- Proper places should be equipped for sanitary garbage disposal, toilets, washing rooms, bathroom and drinking water.

These actions should be taken by the Ministry of Health and Medical Education in cooperation with the IRI Red Crescent Society and the municipal governments.

1-8- Proposed articles for approval of National Committee for Preparedness against Natural Disasters (NCPND)

The following articles are proposed for approval by the NCPND with respect to this technical report.

Article 1- The organizations mentioned below are responsible to enhance their capacities with respect to early flood warning and prepare and execute programs in order to increase the effectiveness of flood early warning systems. The consequences of implementation of these actions should be reported to NCPND.

1. National Meteorological Organization
2. Ministry of Energy
3. Ministry of Interior
4. National Disaster Task Force
5. Ministry of Agriculture Jihad
6. IRI Red Crescent Society
7. Tehran Disaster Management Task Force

Article 2- Within the sixth months after the INDMP has been approved, the Ministry of Interior in coordination with the National Meteorological Organization have to prepare the operational procedures for a National Flood Early Warning System including all the appropriate duty specifications for all the relevant participating organizations and have these procedures and specifications approved by NCPND.

Article 3-In accordance with the national flood early warning system, the provincial task force has to establish a flood early warning system and specify procedures for early flood warning.

Article 4- The organizations named in article 1 together with the provincial, township and city taskforces have to direct yearly short training courses for the people and report the results of these courses to the national task force.

Article 5- After approval of duties, responsibilities and operations of organizations related to flood management in response phase, the specified organizations are responsible to execute these duties and operations.

ANNEX II
LIST AND FORMS OF NATURAL DISASTER MAJOR DEVELOPMENT PROJECTS

List of forms of Checklist for safety increasing of major development projects

Form 1	General characteristic of project
Form 2	General aspects of disaster management
Form 3	Special considerations for Flood
Form 4	Special considerations for Earthquake
Form 5	Special considerations for Fire
Form 6	Special considerations for Cold Weather Stress
Form 7	Special considerations for Drought
Form 8	Enclosing project documents
Form 9	Final evaluation of project

Safety checklist for development projects
Form 1- General characteristic of project

National Disaster Task Force

Name of project			Project code
Location of project	Province	Township	City/Town
	Address		
Agency (Ministry)			
Executor/contractor			
Supervisor			
Operator			
Date	Start of project	Operation	Completion of forms
Budget allocation	National (Million rails)	Province (Million rails)	Others (Million rails)
Name of different Structural parts of Project	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
Indication of structural parts of project at site	N ⬆		

Safety checklist for development projects
Form 2- General characteristic of disaster management

National Disaster Task Force

Project code				
Incident Command system before operation is available			No☐ Yes ☐	Incident Command System
Responsible person for disaster management before operation				
Incident Command system after operation is available			No ☐ Yes ☐	
Incident Command system will function from start of project operation			No ☐ Yes ☐	
Emergency Command Room:			Suitable☐ Not suitable☐	
Chart of Incident Command System after operation				
Strategic disaster management program:		Complete ☐	Incomplete☐ Not prepared☐	General preparedness
Internal risk identification report:		Complete ☐	Incomplete☐ Not prepared☐	
External risk identification report:		Complete ☐	Incomplete☐ Not prepared☐	
Preparedness committee:	Yes☐	No ☐	Will be activated after operation☐	
Prevention methods and programs in design and construction of project			Considered☐ Not considered☐	Preparedness for prevention
Prevention plan, response and recovery			Yes☐ No ☐	
Incident Command System incorporated	Yes☐	No ☐	Will be activated after operation☐	Preparedness for response (Readiness)
Response plan for external risk	Yes☐	No ☐	Will be activated after operation☐	
Response plan for internal risk	Yes☐	No ☐	Will be activated after operation☐	
Emergency Communication ☐	Emergency Fuel ☐	Emergency Electricity☐	Emergency Water ☐	
Insurance Company:	Type of Insurance:	Insurance:	Yes☐ No ☐	Preparedness for recovery
Cooperation program in recovery	Yes☐	No ☐	Will be activated after operation☐	
Continuing customer service program	Yes☐	No ☐	Will be activated after operation☐	

Safety checklist for development projects
Form 3-Flood checklist

National Disaster Task Force

	Project code:	
Report of studies of flood risk management	Not available ☐	Includes surface water studies ☐
	Includes secondary risk studies☐	Includes ground water studies ☐
	Includes soil studies ☐	Includes financial damages studies☐
Flood Micro zoning map in project site	Flood Micro zoning map in project site: Available ☐ Not available ☐	
	Office/organization/company producer of Flood Micro zoning map in project site	
	Major parts of site are at .....years flood zone.	
	Showing the situation of the site in Flood Micro zoning map	
Mitigation strategy	Location mitigation☐ Structural mitigation☐ Non-Structural mitigation☐	
Structural mitigation	Use of appropriate water proof materials ☐ Use of dam/ flood barrier☐	
	Installing ground floor in appropriate height☐ Use of perforated walls ☐	
	Use of appropriate network for surface water collection	
Nonstructural mitigation	Electrical equipments are positioned higher than...years flood level.	
	Nonresistant equipment to water are positioned higher than ...years flood level.	
	Nonresistant equipment to water are positioned lower than .....years flood level and are protected from water penetration and flood attacks.	
Readiness	Are there Specific programs against flood? Yes☐ No ☐ Will be activated after operation☐	
	Appropriate flood warning system Yes☐ No ☐	
	Mutual agreements between organizations against flood Yes☐ No ☐	

Safety checklist for development projects
Form 4-Earthquake checklist

National Disaster Task Force

	Project code:	
Report of studies of Earthquake Risk management	Not available ☐	Includes life lines studies ☐
	Includes secondary risk studies☐	Includes local resources studies ☐
	Includes soil studies☐	Includes financial damages studies☐
Earthquake micro zoning map in the project site	Earthquake Micro zoning map in the project site: Available ☐ Not available ☐	
	Office/organization/company producer of earthquake Micro zoning map in the project site	
	Period of earthquake with intensity of higher than 7 Richter .....year(s)	
	Showing the situation of the site in earthquake Micro zoning map	
Mitigation strategy	Site selection mitigation☐ Structural mitigation☐ Non structural mitigation ☐	
Structural mitigation	Building code no.2800 Considered☐ Not considered ☐	
	Using seismologic companies services Considered☐ Not considered ☐	
	Fire protection building code Considered☐ Not considered ☐	
Nonstructural mitigation	Connection of fixed non structural parts to structural parts Considered☐ Not considered ☐	
	Management of non-structural, non- fixed elements to prevent their dislocation: Will be completed after operation☐ Considered☐ Not considered ☐	
	Appropriate hazardous material storage Applied ☐ Not applied☐	
	Automatic fire indicator and fire fighting systems Yes ☐ No☐	
Readiness	Specific earthquake response programs Yes ☐ No ☐ Will be activated after operation☐	
	Mutual agreements between help organizations against earthquake Yes ☐ No☐	

Safety checklist for development projects
Form 5-Fire checklist

National Disaster Task Force

	Project code:
Report of studies of Fire Risk management	Not available ☐ Includes fire history studies ☐ Includes hazard zones studies☐ Includes emergency escape routes studies☐ Includes flammable materials studies and specialized approaches against them☐ Showing the situation of the site including emergency escape routes, access routes and hazard zones
Structural mitigation	Not considered ☐ Using fire resistant structure ☐ Using fire resistant roof ☐ Using fire resistant facade☐ Consideration of building electrical codes ☐ Using fire resistant walls ☐ Using space division modules for prevention of fire spreading ☐
Distance from hazard zone	Not considered ☐ Appropriate distance between gas tanks and buildings is considered ☐ Standard distance between flammable materials is considered☐
Fire indicator and Fire fighting systems	Not available ☐ Automatic fire indicator system☐ Automatic fire fighting systems☐ Type A, B, C and D firefighting equipment are available Transportation of fire fighting materials by appropriate pipes or portable reservoirs is possible☐ Emergency water tank for fire fighting Available☐ Not available☐ Positive or negative air pressure systems designed Available☐ Not available☐
Emergency escape routes	Not available ☐ More than one emergency escape routes are available ☐ Lighting and signs of escape routes are provided ☐
Other readiness considerations	Specific fire response programs Yes☐ No ☐ Will be activated after operation☐ Mutual agreements between help organizations against fire Yes ☐ No☐

Safety checklist for development projects
Form 6-Cold weather stress checklist

National Disaster Task Force

Importance of cold weather stress	The project outdoor vegetation form major parts of the project	Project code Yes ☐ No ☐
Report of studies Of Cold weather stress Risk management	Not available ☐	Includes cold weather resistant vegetations☐
	Includes history of cold weather stress studies☐	Includes climate studies☐
	Includes potential financial damages studies☐	Includes soil studies☐
Site selection	Avoidance from cold air entrances in site selection ☐ Phyllode trees are planted in slopes facing to north ☐ Semi tropical trees are planted in slopes facing to south ☐ Obstacles (building, fence, canopy) to divert cold air are installed ☐ Weeding farms and gardens is down ☐ Plastic tunnels are used ☐	
Micro climate changes	Operation of which of the following is considered in the project? Wind machines transfer heat from air to vegetation☐ Heaters are installed evenly among vegetations on side of cold wind entrance direction☐ Installing fog producing pipes and special sprinkler or jet motors near entrance of cold air to garden or farm ☐ Helicopter flight over upper slopes of farms and gardens ☐ Sprinkler irrigation ☐ Surface irrigation☐ Cold frames ☐ Hot beds☐ Winter mulch protection☐ Temporary plant covering foams☐ Green house ☐	
Readiness	Specific cold weather stress response programs Yes☐ No☐ Will be activated after operation☐	
	Mutual agreements between help organizations against cold weather stress Yes ☐ No ☐	

Safety checklist for development projects
Form 7-Drought checklist

National Disaster Task Force

		Project code
Report of studies of Drought Risk management	Not available ☐	Includes regional water resources studies ☐
	Includes history of drought studies☐	Includes regional eco-system studies☐
	Includes probable financial losses studies☐	Includes soil studies☐
Prevention of desertification	In utilization of forests, environmental considerations are observed to prevent desertification	Yes ☐ No ☐
	In utilization of grasslands, environmental considerations are observed in order to prevent deforestation	Yes ☐ No ☐
	In consumption of water, environmental considerations are observed in order to prevent desertification	Yes ☐ No ☐
	Utilization of plants and vegetations which consume less water and plant diversification is considered in the project	Yes ☐ No ☐
	Recycling and composting garbage is incorporated in the project	Yes ☐ No ☐
Water saving	Recycling of consumed water, including sewage recycling is incorporated in the project	Yes ☐ No ☐
	Employees training is incorporated in the project in order to apply methods of water saving	Yes ☐ No ☐
	In constructing buildings and technical installations for water provision and distribution, water saving equipment and valves are used	Yes ☐ No ☐
	New under pressure irrigation (rain, drip) methods are used in the project	Yes ☐ No ☐
Readiness	Deep well	Yes ☐ No ☐ Will be activated after operation☐
	Emergency water sources	Yes ☐ No ☐ Will be activated after operation☐
	Water rationing program	Yes ☐ No ☐ Will be activated after operation☐
	Special response plan for drought	Yes ☐ No ☐ Will be activated after operation☐
	Cooperation agreements with help and rescue organizations in response to drought	Yes ☐ No ☐

Safety checklist for development projects
Form 8- List of enclosed documents

National Disaster Task Force

		Project code
List of documents for project general description of disaster management	1	
	2	
	3	
	4	
	5	
List of documents for project general characteristics of disaster management	1	
	2	
	3	
	4	
List of documents for special flood considerations	1	
	2	
	3	
	4	
List of documents for special earthquake considerations	1	
	2	
	3	
	4	
List of documents for special fire considerations	1	
	2	
	3	
	4	
List of documents for special cold weather stress considerations	1	
	2	
	3	
	4	
List of documents for special drought considerations	1	
	2	
	3	
	4	

Safety checklist for development projects
Form 9- Final evaluation

National Disaster Task Force

Project code:		Date of investigation started:	Date of investigation ended:
General characteristics of disaster management	Acceptable ☐ Not acceptable ☐ Conditionally Acceptable ☐		
	Approval conditions:		
	Date investigation ended:	Name of investigator: Job title of investigator:	Signature:
Flood	Acceptable ☐ Not acceptable ☐ Conditionally Acceptable ☐		
	Approval conditions:		
	Date investigation ended:	Name of investigator: Job title of investigator:	Signature
Earthquake	Acceptable ☐ Not acceptable ☐ Conditionally Acceptable ☐		
	Approval conditions:		
	Date investigation ended:	Name of investigator: Job title of investigator:	Signature:
Fire	Acceptable ☐ Not acceptable ☐ Conditionally Acceptable ☐		
	Approval conditions:		
	Date investigation ended:	Name of investigator: Job title of investigator:	Signature:
Cold weather stress	Acceptable ☐ Not acceptable ☐ Conditionally Acceptable ☐		
	Approval conditions:		
	Date investigation ended:	Name of investigator: Job title of investigator:	Signature:
Drought	Acceptable ☐ Not acceptable ☐ Conditionally Acceptable ☐		
	Approval conditions:		
	Date investigation ended:	Name of investigator: Job title of investigator:	Signature:
Final decision	Safety and disaster management of project is acceptable☐		Safety and disaster management of project is not acceptable☐
	Date final decision made:	Name of general directorate for national disaster coordination:	Signature:

List of Experts and Advisers Cooperating with the Project

National Project Director:
Seyed Abbas Jazayeri, General Director, Bureau for Studies and Coordination of Safety and Reconstruction Affairs

Ministry of Foreign Affairs Project Representatives:
Mohammad Taghi Darzi

UNDP Representatives:
Haoliang Xu
Hossein Jafari

Supervisors of the Project – Ministry of Interior, Bureau for Studies and Coordination of Safety Affairs:

Hassan Azade
Hossein Radmanesh
Ali Mohammad Shojaie
Abo Taleb Ghadami
Mohammad Hossein Shiri
Mohammad Hossein Yazdani

Principal Experts:

- **Mohsen Ebrahimi –Mojarad (Project Leader)**
  PH.D.,Doctor of Technology, City Planning, Civil Engineering, Disaster Management
- **Bahram Abdi –Farkoosh**
  Doctor of Medicine, Medical Emergency Management
- **Fariborz Goorouhi**
  Doctor of Medicine, Medical Emergency Management
- **Maryam Kamyab**
  Master of Architecture, Architectural Design, Disaster Management
- **Gholam Hossein Mojtahed-Zade**
  PH.D., Architecture and City Planning, Flood Disaster Management
- **Seyed Mahmood Borghei**
  PH. D., Hydraulics Engineering, Flood Management, Environment and Water Research Center – Sharif Industrial University

Experts:

Ahmad Hossein-Zade
Master of Industrial Engineering, Systems Analysis, Planning

Ahmad Reza Jalali
Doctor of Medicine, Medical Emergency Management

Fateme Mehreghan- Nia
Master of City Planning, Surface Water and Flood Management

Mohsen Bazargan
Master of Architecture, Architecture, ٣D Design

Lena Silverberg
Master of Economics, Economics, Business Management, Languages, English French, German

Galia Javidi
B.A. Graphics, Graphics Design

Bahare Ameli
Graphics Technician, Graphics

Vahid Hosseini-Jenab
Doctor of Medicine, Medical Emergency Management, Disaster Management Training

Babak Garai –Moghadam
Doctor of Medicine, Medical Emergency Management

Farzan Shirvan –Beygi
Master of Architecture, City Planning

Mehrdad Novin
Master of Communications, Communication Systems

Susan Bergsten
Master of Civil Engineering, Building Structure Safety

Firooze Ramezan- Begi
Architecture and Surveying Technician, Architecture

Advisers:

- **Seyed Mahmood Fatemi Aghda**
  PH.D., Civil Engineering, Seismology
- **Marten Bergsten**
  Computer Software Engineering, Computer Programs, Management Systems
- **Ramin Radnia**
  Master of Public Relations, Public Relations
- **Naghme Bolbol**
  B.A. Arts, Languages : French, English
- **Masood Motamedi**
  Master of Architecture, Architecture, Housing and City Planning
- **Jabbar Vatan Fada**
  Master of Civil Engineering, Water Engineering, Flood Disaster Management
- **Uno Dellgar**
  Master of Civil Engineering, Safety and Security, Safety of Buildings and Installations, Risk Management