

## ***Appendix***

***Appendix for Chapter 1***

### Appendix 1.6.1 Study Organization

#### JICA Advisory Committee

Name	Position	Institute
Mr. Masayuki WATANABE	Leader of Advisory Committee	Institute for International Cooperation
Mr. Shinya NAKAMURA	Member, Advisory Committee	Public Works Institute

#### Study Team

Name	Assignments
Mr. Hajime TANAKA	Team Leader
Mr. Kanao ITO	Urban Disaster Preparedness
Mr. Ichiro KOBAYASHI	Deputy Team Leader/Regional Disaster Preparedness
Mr. Yoshitaka YAMAZAKI	Earthquake Engineer
Mr. Tsunehisa TSUGAWA	Infrastructure (Building)
Mr. Itsuo NOZAWA	Infrastructure (Road, Bridge, Lifeline)
Mr. Ryo MATSUMARU	Flood Control
Mr. Kaoru SHIMA	Landslide Control
Mr. Hiroyuki SAGAMI	Chemical Disaster Prevention
Mr. Yoshinori TAKAHASHI	GIS Development/Disaster Information System 1
Mr. Bishwa Pandey	GIS Development/Disaster Information System 2
Mr. Noboru KAWASHIMA	Organization for Disaster Measures and Laws
Mr. Kazumi AKITA	Disaster Medical Treatment, Health and Sanitation
Dr. Nahoko NAKAZAWA	Enlightenment/Educational Training
Mr. Hideharu SUGAWARA	Translator
Ms. Kanako IUCHI	Coordinator/Urban Planning

**Appendix 1.6.2 List of Steering Committee Members**

No.	Entity	Name	
1	Ministry of Interior, National Direction of Prevention and Attention of Disasters	Eduardo José Gonzalez Angulo	Director
2	Ministry of Health	Sara Ordoñez Noriega	Minister
3	Ingeominas	Adolfo Alarcon Guzman	Director
4	Cámara de Comercio de Bogotá	Maria Carolina Barco de Botero	President
5	Administrative Department of District Planning (DAPD)	Maria Carolina Barco de Botero	Director
6	Administrative Department of Cundinamarca Planning	Luana Laverde Castañeda	Director
7	Company of Water Supply and Sewage Service of Bogotá	Astrid Alvarez Hernandez	Manager
8	Secretary of Health of Bogotá	José Cardona	Secretary
9	Secretary of Health of Cundinamarca	Alvaro Florez Bernal	Secretary
10	Fire fighting of Bogotá	Mayor Jorge Elias Salazar	Commander
11	Fire Fighting Department of Cundinamarca	Commander	
12	Red Cross of Bogotá and Cundinamarca Section	José Carlos Miranda Miranda	Director
13	Colombian Civil Defense, Bogotá Section	Coronel Gustavo Alfredo Cardozo	Director
14	Cundinamarca Civil Defense	Director	
15	University of Los Andes	Luis Eduardo Yamin	Director
16	Metropolitan Police of Bogotá	Brigadier General Jorge Enrique Linares	Director
17	Police Department of Cundinamarca	Commander	
18	Regional Autonomous Corporation	Dario Londoño Gomez	General Director
19	Administrative Department of the Environment	Julia Miranda	Director
20	Secretary of Environment Cundinamarca	Andres Barreto Pozo	Secretary
21	Direction of Prevention and Attention of Emergencies, Bogotá (DPAE)	Richard Vargas	Director
22	Office of Prevention and Attention of Disasters of Cundinamarca	Jaime Matiz Ovalle	Director
23	Regional Advisor and Competitively	Carmenza Saldías Barreneche	Advisor
24	Pan-American Organization of Health	Hernan Malaga	Director
25	Secretary of District Education	Cecilia Maria Velez	Secretary
26	Secretary of Education, Cundinamarca	Piedad Caballero Prieto	Secretary
27	Colombia National University	Victor Manuel Moncayo	Director



***Appendix for Chapter 2***

Table 1 List of Organization for National Level

NAME	RESPONSIBILITY
National Committee for the Attention and Prevention of Disasters	<ol style="list-style-type: none"> <li>1. Approval of the National Plan for the Prevention and Attention of Disasters</li> <li>2. The information integrated system, as apart of the National Plan for the Prevention and Attention of Disasters:</li> <li>3. Disaster situations:</li> <li>4. Indicate rules for preparing specific action plans by the National office for the Attention of Disasters and the Regional and Local Committees.</li> </ol>
National Operative Committee for Attention of Disasters	<ol style="list-style-type: none"> <li>1. Definition regarding temporary lodging</li> <li>2. Performance of census</li> <li>3. Initial diagnostic of damages</li> <li>4. Primary or basic attention of affected individuals</li> <li>5. Supply of basic emergency elements, such a food, medicines, wares and similar elements.</li> <li>6. Reestablishment of minimum or basic conditions for environmental sanitation</li> <li>7. Emergency transportation and communications and solution of way interruption points</li> <li>8. Definition, establishment and operation of alerts and alarms.</li> </ol>
National Office for Attention of Disasters	<ol style="list-style-type: none"> <li>1. Preparation of the National Plan for Prevention and Attention of Disasters</li> <li>2. Information Integrated System as a part of the National Plan for Prevention and Attention of Disasters</li> </ol> <p>In disaster situation:</p> <ol style="list-style-type: none"> <li>3. Prepare specific action plans for disasters situations of national character, with the cooperation of the respective Regional or Local Committees and technical entities, and in accordance with the guidelines provided by the National committee for Prevention and Attention of Disasters.</li> <li>4. Submit to the consideration of the National Plan for Prevention and Attention of Disasters, the National Operative Committee for the Attention and Prevention of Disasters and the Advisory Board of the National Fund of Calamities, studies and proposal related to the exercise of their respective duties.</li> <li>5. Direct and guide the activities of the National Technical Committee</li> </ol>
Regional and Local Committee for the Prevention and Attention of Disasters	<ol style="list-style-type: none"> <li>1. Guide and coordinate the activities of public entities and bodies to which support and assistance is requested for preparing, executing, following up and appraising the National Plan for Prevention and Attention of Disasters.</li> <li>2. The information Integrated System, as apart of the National Plan for Prevention and Attention of Disasters:</li> <li>3. disaster situations:</li> <li>4. specific action plans:</li> </ol>

**Table 2 List of Organization for Local Government**

Name	Responsibility
Local Governments	<ol style="list-style-type: none"> <li>1. Direct, coordinate and control, by means of the chief of the respective administration, all the administrative and operative activities needed to attend of disaster at regional or local level.</li> <li>2. Offer support to the National Committee for the Attention and Prevention of Disasters, the National Office for the Attention of Disasters, and the Regional and Local Committees, on the works necessary to prepare, execute, make, follow up and appraise the National Plan for the Prevention and Attention of Disasters.</li> <li>3. Appoint the officials and dependence responsible of attending the duties related to the National Plan for the Attention and Prevention of Disasters, contingency and immediate attention plans in conditions of disaster, preventive plans and specific action plans.</li> <li>4. Collaborate with upgrading and maintaining an Information Integrated System, in accordance with the guidelines provided by the Regional and Local Committees.</li> <li>5. Observe the regulations that start governing with occasion of a declaration of disaster situations or which shall continue governing during the rehabilitation, reconstruction and development phases.</li> <li>6. Provide special regulations in order to facilitate the activities related to repair and reconstruction of those buildings affected by a declared situation of disaster, and to reestablish a later fiscal control of the expense addressed to the performance of activities anticipated in a specific action plan for the attention of a situation of disaster.</li> <li>7. Appraise, by means of the health secretariats, the aspects related to health, the coordination of medical actions, the transportation of victims, the classification of injured (triage) individuals, the provision of medical supplies, as well epidemiological vigilance and control.</li> <li>8. Prepare the community, by means of the Education Secretariats, on the prevention, attention and recovery in situations of disaster.</li> <li>9. Develop, by means of public works secretariats, activities related to transportation services, infrastructure works, damage evaluation and demolition and cleaning works.</li> <li>10. Prepare by means of the Offices of Planning, the plans in harmony with the regulations and plan of prevention and attention of situation of disaster, and coordinate the respective institutions on program and budget matters in what relates to disasters.</li> </ol>



**Table 3 List of Organization for National Government**

Name	Responsibility
The Military Force	1. Isolating and maintain the security in the area of the disaster, air control and identification and attention of ports and heliports.
National Police	<ol style="list-style-type: none"> <li>1. Preventing and confronting disorders related to security, tranquility and public sanitation as well as collaborating in the protection of natural resources and the environment.</li> <li>2. Watch for the security of the affected area, guaranteeing the protection of the life, honor and property of the affected persons.</li> <li>3. Providing the collaboration and support required by public entities involved in attention and control jobs of the areas affected by the disaster.</li> <li>4. Watch for the observance of the provisions given by the National Government and the other public entities and bodies in relation to the prevention, management, rehabilitation and reconstruction.</li> <li>5. Collaborate with the evacuation of injured and affected people, who require an immediate assistance.</li> <li>6. Assist the technical Body of the Judicial Police in the jobs of identifying corpses and preparing corpse lifting minutes</li> <li>7. Determinate the strategic areas for the installation of services and aids required and offer the necessary vigilance.</li> </ol>
Ministry of Health	<p>In the disaster situation</p> <ol style="list-style-type: none"> <li>1. appraising health aspects,</li> <li>2. the coordination of medical actions,</li> <li>3. the transportation of victims,</li> <li>4. the classification of injured individuals (triage),</li> <li>5. the provision of medical supplies,</li> </ol> <p>In the basic sanitation,</p> <ol style="list-style-type: none"> <li>1. the medical attention in shelters,</li> <li>2. nutritional vigilance, and</li> <li>3. epidemiological vigilance and control.</li> </ol>
Ministry of Public Works and Transportation	<p>In the disaster situation</p> <ol style="list-style-type: none"> <li>1. Provide transportation services</li> <li>2. infrastructure works</li> <li>3. appraisal of damages</li> <li>4. demolition and cleaning works</li> </ol>
Ministry of Education	1. Preparing the community level educational material on the prevention, attention and recovery of disaster situations.
Ministry of Communications	<p>In disaster situations</p> <ol style="list-style-type: none"> <li>1. Provide special measures on control and management of information</li> <li>2. specific regulations on the use of communication frequencies, systems and means.</li> </ol>
The National Department of Planning	<p>In normal situation</p> <ol style="list-style-type: none"> <li>1. presenting for the approval of the National Council of Economic and social Policies Copes,</li> <li>2. the investment programs and projects derived from the National Plan for the Attention of Disasters,</li> <li>3. to public institutions on everything related to program and budget aspects on attention and prevention of disasters.</li> </ol>

Table 4 List of Organization for National Institution

Name	Responsibility
INGEOMINAS	<ol style="list-style-type: none"> <li>1. preparing maps on potential threats</li> <li>2. observing and studying the volcano in the country</li> </ol>
Civil Defense	<p>In disaster situation</p> <ol style="list-style-type: none"> <li>1. search and rescue of victim</li> <li>2. first aid jobs of victim</li> <li>3. establish an initial classification system of injured individuals</li> <li>4. the transportation of victims and</li> <li>5. support security actions.</li> </ol>
Institute of Hydrological, Meteorological and Environmental Study	<ol style="list-style-type: none"> <li>1. hydro-meteorological risks analysis</li> <li>2. prepare the risk map</li> </ol>
Institute of Agricultural marketing (IDEMA)	Supply of food
National Service of Learning (SENA)	<p>In the disaster situations</p> <ol style="list-style-type: none"> <li>1. prepare the community level educational material for the prevention, attention and recovery.</li> </ol>
Institute of Geography "Agustin Codazzi" (IGAC)	<ol style="list-style-type: none"> <li>1. Provide maps aerial photograph for the studies and decision making</li> </ol>
Institute of Territorial Credit (ICT) and the Mortgage Central Bank (Banco Central Hipotecario)	<ol style="list-style-type: none"> <li>1. special credit programs in order to promote preventive relocation processes of human settlements,</li> <li>2. define a housing policy in human settlements</li> <li>3. coordinate and participate in the attention of damages resulting at the houses, community facilities and basic networks.</li> </ol>
National Fund of Calamities	<p>In the disaster and calamity situations</p> <ol style="list-style-type: none"> <li>1. economic support needed for prevention, attention and recovery jobs</li> <li>2. manage the contributions in money,</li> <li>3. supervise the management and control of inventories at the centers of reserves for emergencies.</li> </ol>
National Institute of Renewable Resources and Environment (INDERNA) and Regional Autonomous Cooperation	<ol style="list-style-type: none"> <li>1. Environmental management</li> </ol>
National Fund of Vicinal Ways	<ol style="list-style-type: none"> <li>1. Provide the funds for the construction of works according the disaster prevention plan</li> </ol>
National Telecommunication Company	<p>In disaster situations</p> <ol style="list-style-type: none"> <li>1. Provide free telecommunication services</li> </ol>
Regional Autonomous Corporation	<ol style="list-style-type: none"> <li>1. Preparation of risk analysis and vulnerability study</li> </ol>
Civil Defense	<ol style="list-style-type: none"> <li>1. Prevent and control disaster and calamity situations in their primary stage of imminent prevention and immediate attention and, when such events have been declared, it performs in the terms defined in the administrative acts of such situation declaration.</li> <li>2. Cooperate in keeping internal security and maintaining national sovereignty.</li> <li>3. Promote, train and organize the community for the effects of the duties provided in this article.</li> </ol>
National Fund for Calamity	<ol style="list-style-type: none"> <li>1. Offering the economic support required for the attention of declared disasters and calamities, giving priority to the production, conservation and distribution of food, medicines and provisional shelters.</li> <li>2. Control the effect resulting form disasters and calamities, especially those related to the arising and spreading of epidemics.</li> <li>3. Maintaining during the rehabilitation, reconstruction and development phases, and the environmental sanitation of the affected community.</li> <li>4. Finance the installation and operation of information systems and equipment, suitable for the prevention, diagnosis and attention of disaster or calamity situations, especially of those included in the Seismographic National Network.</li> <li>5. Take the necessary steps in order to prevent disasters or to mitigate its effects, which could consist, among other things, in insurance policies acquired from companies legally established in the Colombian territory and seeking mechanisms to cover in total or partially the cost of the respective premiums.</li> </ol>
Consulting Broad	<ol style="list-style-type: none"> <li>1. Provide the general policies for management and investment of fund resources and watch for the security, suitable management and optimum yield.</li> <li>2. Watch the observance and implementation of Fund purposes</li> <li>3. Indicate in accordance with the provisions in article 3<sup>rd</sup> in this decree, the destination attended in respect to the financial availability thereof, existing in each case.</li> <li>4. Recommend suitable systems to attend situations of similar nature, qualified by the board itself, in accordance with the provisions in article 1<sup>st</sup> in this decree.</li> <li>5. Resolve the consultations on the matters related to fund purpose or purposes presented by the National Government or the Fiduciary Company administering the fund.</li> <li>6. Determinate, when the circumstances so require and taking into account the purpose or purposes of the fund, the cases in which the resources may be transferred under free and not recoverable title.</li> </ol>

**Appendix 2.5.2**

**Member List of the District Committee for Emergency Prevention and Attention**

**Table 1 Members of the National Committee**

No.	Organization
1	President of the Republic (or his Delegate) Director of the Committee
2	Minister of the Interior
3	Minister of Finance and Public Credit
4	Minister of National Defense
5	Minister of Health
6	Minister of Communications
7	Minister of Transportation
8	Minister of Environment
9	Director of the National Department of Planning
10	Director of the Colombian Civil Defense
11	Director of the Colombian Red Cross Society
12	Representative of the Colombian Chamber of Construction
13	Representative of the Colombian Society of Construction Engineers
14	Director of the General Directive Office for Prevention and Attention of Disasters

**Table 2 Members of the regional Committee of Cundinamarca**

No.	Organization
1	Prefectural Governor President of CREPAD - Regional Committee for Prevention and Attention of Disasters of Cundinamarca
2	Commander of Military Brigade or Corps
3	Commander of the National Police
4	Commander of Corps of Fire Services
5	Director of the Secretary of Health
6	Director of the Autonomous Regional Corporation of Cundinamarca
7	Director of the Colombian Civil Defense
8	Director of the Colombian Red Cross Society
9	Mayor of Santa Fe de Bogota Capital District
10	Two Representatives of Prefectural Governor of Cundinamarca
11	Secretary of the CREPAD - Regional Committee for Prevention and Attention of Disasters of Cundinamarca (Director of the Secretariat of Planning)

**Table 3 Members of the Local Committees**

No.	Organization
1	Municipal Mayor
2	Commander of Military Brigade or Corps
3	Commander of the National Police
4	Commander of Corps of Fire Services
5	Director of the Section of Health Service
6	One Representative of the Colombian Civil Defense
7	One Representative of Colombian Red Cross Society
8	Two Representatives of the Mayor of Bogotá C.D.
9	Secretary of the Local Committee for Prevention and Attention of Disasters (Director of the Local Secretariat of Planning)

**Table 4 Members of the District Committee**

No.	Organization
1	Mayor of Santa Fe de Bogota C.D.
2	Secretary of Government of Bogota C.D.
3	Secretary of Health of Bogota C.D.
4	Director of Administrative Department of Planning of Bogota C.D. (Secretary of CDPAE)
5	Secretary of Finance of Bogota C.D.
6	Director of Administrative Department of Environment of Bogota C.D.
7	Director of the Directive Office of Prevention and Attention of Emergencies of the Secretariat of Government of Bogota C.D.
8	Commander of Official Corps of Fire Services of Santa Fe de Bogota
9	Director of Civil Defense in the Section of Santa Fe de Bogota
10	President of the Cundinamarca and Bogota Branch Office of Colombian Red Cross Society
11	Commander of the Metropolitan Police of Santa Fe de Bogota
12	Commander of Military Corps Existed in the Capital District
13	Mayors of Ward in Affection of Disasters
14	Manager of the Enterprise of Water Supply and Sewage Service of Bogota
15	Manager of the Enterprise of Energy of Bogota
16	Manager of Codensa Company
17	Manager of Emgesa Company
18	Manager of the Enterprise of Telecommunications of Bogotá
19	Manager of Gas Natural Company

**Table 5 Members of the Local Emergencies Committee in Bogota D.C.**

No.	Organization
1	Mayor of Ward
2	Representative of the Administrative Assembly of Ward
3	Advisor of the Directive Office of Prevention and Attention of Emergencies of Bogota C.D.
4	Director of Local Office of Health
5	Local Coordinator of the Administrative Department of Social Welfare of Bogota C.D.
6	President of the Association of the Assemblies of Community Actions
7	Representative of the Administrative Department of Community Actions of Bogota C.D.
8	Coordinator of Local Office of Planning
9	Delegate of the Technical and Administrative Department of Environment of Bogota C.D.
10	Coordinator of the Administrative Center of Education of Ward
11	Gas Natural Company

Appendix 2.5.3

Objectives of both FOPAE and DPAAE

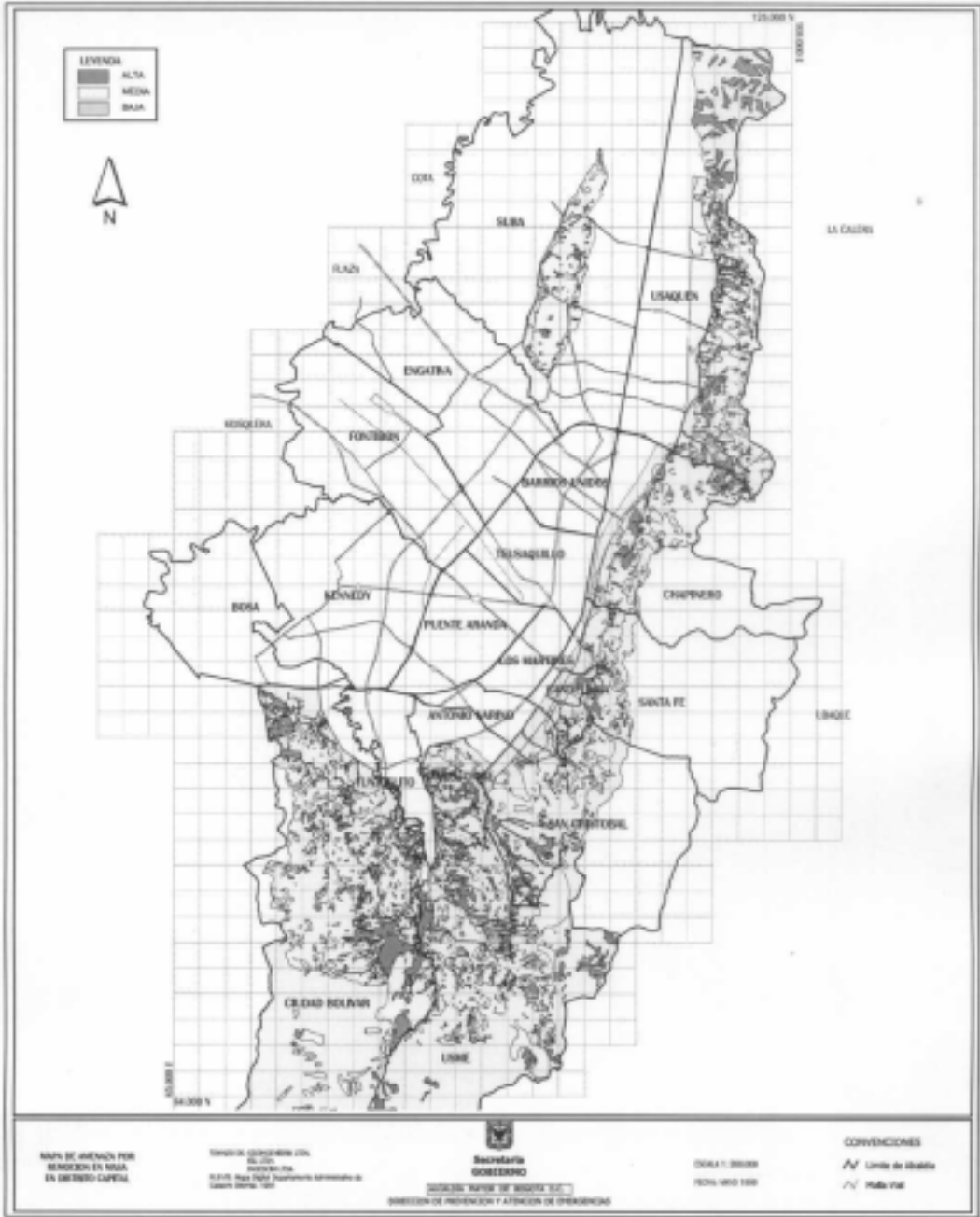
Organization	Objectives
FOPAE	<ul style="list-style-type: none"> <li>• Provide the economic funding that is required for the prevention and attention of emergencies and calamities</li> <li>• Fund a program of prevention of disasters for the District, based on studies and inventories of risks, with emphasis on campaigns of preventive education addressed to the most vulnerable population, publishing the didactic material that may be required</li> <li>• Fund the preparation of a map of threats and risks for the District</li> <li>• Fund the installation and operation of systems and equipment of information for the prevention, diagnosis, and attention of disasters</li> <li>• Acquire the equipment and elements required for the prevention and attention of emergencies and assist the victims on their basic needs</li> <li>• In general terms, adopt the necessary measures to prevent disasters or to mitigate their effects</li> </ul>
DPAAE	<ul style="list-style-type: none"> <li>• Coordinate all the actions of prevention and attention of emergencies in furtherance of the objectives of FOPAE</li> <li>• Promote the creation and coordinate the Local Committees of emergencies in each Location.</li> <li>• Develop the studies and designs for emergency attention, using new technologies and the experience in risk prevention.</li> <li>• Coordinate emergency prevention campaigns in the District schools, along with the Education's Secretary Office and the Community.</li> <li>• Promote the participation of the Community organizations in the tasks for the prevention and attention of emergencies Through the Administrative Department of Community Action and the Administrative Department of Social Welfare.</li> <li>• Design and establish an emergency plan of communication with the corresponding entities.</li> <li>• Motivate and call the private sector to participate in the programs of prevention and attention of emergencies.</li> </ul> <p>District Decree 657 as of 1994</p> <ul style="list-style-type: none"> <li>• Issue, as requested by district entities, technical concepts about the existence of geological, hydraulic or electrical in different areas of the city.</li> <li>• Inform of the areas of high risk to the local Mayors, so that urbanizing is not allowed or police measures are executed. Copy of the technical concepts issued shall also be provided.</li> <li>• The same decree states the prohibition of urbanizing of properties and the provision of public services in places located in areas defined by the Direction for the Prevention and Attention of Emergencies of high-risk areas.</li> </ul> <p>District Decree 723 as of 1999:</p> <ul style="list-style-type: none"> <li>• Promote the adoption and the execution of Law Decree 919 as of 1989, in the corresponding issues to the District, through the Committees forming the District System.</li> <li>• Prepare the element of prevention and attention of emergencies of the District Development Plans and of the plan of and classification, in coordination with the District Planning Administrative Department, as stated in the National Plan for the Prevention and Attention of Disasters.</li> <li>• Coordinate the preparation of the plans of action for the effective handling and attention of the situations of public calamity and disaster at a district level.</li> <li>• Design and start the procedures and systems and for the monitoring and timely alerting of the population and as well as advising the District Government on the determination of alert status and on the measures required in each case.</li> <li>• Guarantee the coordination of the decisions adopted by the District Inter-Entity Committees with those of the Local Committees of Emergency.</li> <li>• In general terms, are functions of the Direction for the Prevention and Attention of Emergencies of the Government's Secretary Office, those who are stated on the Decree 069 as of February / 1999.</li> </ul>

### Appendix 2.5.4 Background of the Personnel of the DPAAE

Professional Staff		Year of Experience					
		> 1	1 - 5	5 - 10	10 - 15	15 - 20	20 >
Anthropology	2		1	1			
		(1)	(1)				
Architect	2	(2)		2			
Biologist	1		(1)	1			
Cadastral Engineer	1			1			
				(1)			
Chemistry Engineer	1	(1)			1		
Civil Engineer	14	1	6	3	4		
		(3)	(11)				
Forest Engineer	1	(1)	1				
Geographer Engineer	3		(3)	3			
Geologist	1			1			
				(1)			
Geologist Engineer	1			1			
				(1)			
Chemistry	1		(1)			1	
Philology and Languages	2			1	1		
			(2)				
Industrial Engineer	3		1	1		1	
		(1)	(2)				
Kinder Garden Teacher	1		(1)	1			
Lawyer	6		2	1		2	1
		(2)	(3)	(1)			
Mechanic Engineer	1		1				
			(1)				
Human and Social Sciences	3		1		1	1	
			(3)				
Psychologist	2		(2)	1		1	
System Engineer	2		(2)	1		1	
Year of Experience	48	1	13	19	7	7	1
Year of Experience in DAPE	48	11	33	4			
<b>Administrative Staff</b>							
Administrator	5	1	2	1	1		
		(1)	(4)				
Assistant	1		1				
			(1)				
Finance	6	(1)	(5)	1	4	1	
Secretary	6		5	1			
			(5)	(1)			
Radio Operators	3		2				
			(3)	1			
Year of Experience	21	1	10	4	5	1	
Year of Experience in DAPE	21	2	18	1			

Note: () Year of experience in DPAAE

Source: DPAAE



Source: Homepage of DPAAE

**Appendix 2.6.1 Risk map of Landslide in Bogotá**



## Appendix 2.7.1. Characteristics of Water Supply and Sewage System in eight municipalities

Municipality	Area	Water Supply System			Sewage Service System	
		Supply Source	Supply Facility	Service Condition	Treatment Plant	Service Quality
La Calera	a. Total área: 32,875 ha b. Urban area: 68 ha c. Rural area: 32,807 ha	a. Supply from Rio EL Verjon stream (from Rio Teusaca) in Los Molinos area. Discharge: 17.1-28.5 LPS b. Another supply from Amarilla/Montanela stream (from El Verjon). Discharge: 6.6-11 LPS. c. 28% from EAAB in Veredas area and 82% of rivers.	a. There is 1 purification plants for superficial and underground water (capacity 20 LPS). b. Size of pipeline: 6-8"(main), 2-4"(other).	a. Coverage: 60% in Vereda, 82% in Los Molinos of people. b. Compensation: there is domiciliary compensation in Vereda, in Los Molinos, storage of the 25% of the mid-daily consumption (26 LPS) is required.	a. In Veredas, there is not any control of the final disposition. In Los Molinos, there are 4 principal collectors, these supply to the brooks.	a. Waste water system: In Veredas, there are individual solutions. In Los Molinos, the 80% of sewage system, 12% of the septic tank flows, 8% of superficial sewage system. b. Rainfall water system: In Veredas, in just a few sites, the CONALVIAS enterprise is carrying out the paving in the ring road. In Los Molinos, there is not a rain sewage system, neither sewers.
Cota	a. Total área: 5,344 ha b. Urban area: 143 ha. c. Rural area: 5,201 d. Water supply service: 3 aqueducts: one central, two rural "Veredas".	a. Supply from 4 wells. Discharge: 6-14 LPS - Power: 17.4-40 HP b. Productive capacity is 28.7 LPS. c. 100% of self-supporting in city.	a. There are 3 purification plants b. Total length of pipeline: 10-30"(main), 2-4"(other).	a. Coverage: 98%(urban), 40%(rural) of people. b. Compensation: storage volume of three combined system is enough.	a. CAR built treatment plant on riverbank of Rio Bogota in 1981. b. Produces 13.4 LPS of waste water (old sewer system). c. New sewer system transports are divided in two pipes at well (12" and 24").	a. Sewer system is separated type. b. There is a problem of floods sporadic during rainfall seasons. c. Assumed that new sewer system built recently.
Chia	a. Total area: 8,187 ha b. Urban area: 561 ha. c. Rural area: 7,626	a. Potable water supplies from via purification plant of Tibitoc belong to EAAB (takes water from source of Rio Bogota). b. 100% of potable water supply from EAAB for city.	a. Total length of pipeline: 10-30"(main) b. Size of pipeline: 2-8"(other)	a. Coverage: 95%of people. b. Compensation: Distribution system does not have an own storage system.	a. Total length: 31km (10-36") b. City has one treatment plant by CAR. c. Composed by a relief tank with pipeline of 24", and interceptor channels.	a. Sewer system is mixed rainfall and waters, is composed by two main systems. b. There are problems sediments and garbage of pipeline in rainfall seasons.
Funza	a. Total área: 6,599 ha b. Urban area: 369 ha. c. Rural area: 6,230	a. Supply from 1 well with purification plant and storage tank (90%). b. Potable water supplies from EAAB (10% of consumption).	a. There are 2 purification plants (max 120 LPS, usually, 50 LPS). b. Pumped station: 90HP c. Total length of pipeline: d. Size of pipeline: 6-10"of PVC (main), 2-4"of PVC (other).	a. Coverage: 96%of people. b. Compensation: storage volume system is enough comparatively.	a. Total length: 52km b. City has one treatment plant for waste water and complementary facilities by CAR. c. Treatment plant: ave. discharge of 160 LPS, max 197 LPS.	a. Sewer system is separated system except some area. b. Quali wet zone necessary to complement the main collector channels of rainfall water.
Facatativa	a. Total área: 16,149 ha b. Urban area: 379 ha. c. Rural area: 15,770	a. Superficial water from Rio Botello and Mancilla stream. b. Underground waters from 7 wells (60%). c. Superficial water collect by 4 separated small dams (40%).	a. There are 2 purification plants (capacity 280 LPS, 30 LPS). b. 2 Pumped Station: capacity 270 LPS and raw water of 310 LPS c. Total length of pipeline: d. Size of pipeline: 8-16" (main), 2-6"(other).	a. Coverage: 95%of people. b. Compensation: storage volume system is enough.	a. City has one treatment plant for waste water and complementary facilities by CAR. b. Treatment plant: ave. discharge of 187 LPS in dry time and design of 2,240 LPS. c. Complementary facilities: 3 pumping station (100 LPS), interceptor channels (16"), sand remover.	a. Sewer system is mixed rainfall and waters in old central area, which consist in rectangular channels made of bricks and covered with flagstones and brick vaults the widest. b. Because of mixed water sewer function, main conduction lines are pressurized causing inundations on the lowest areas of town.
Madrid	a. Total área: 12,036 ha b. Urban area: 438 ha. c. Rural area: 11,400	a. Superficial water from Rio Serrezuela in rainfall seasons (16%) . b. Underground waters from 2 wells (24%). c. Buying water from EAAB (60%).	a. There is 1 purification plants for superficial and underground water (capacity 120 LPS, filtration limitation to 60 LPS, which is overloaded to 75 LPS). b. 2 Pumped Station: well located at purification plant (60HP), Lucitania well (65HP). c. 1 storage tank (1,600m3). d. Total length of pipeline: 69.2km e. Size of pipeline: 6-14"of PVC (main), 2-4"of PVC (other).	a. Coverage: 98%of people. b. Compensation: storage capacity is not enough. c. During rainfall seasons when the amount of superficial water is enough, the service continuity is not increased by the following reasons: 1) damages on asbestos-cement pipes by increasing pressures, 2)most of users of interior pipes not good.	a. Because there are two different drainage basins, CAR designed and constructed two waste water treatment plants. They are Madrid I and Madrid II. b. Treatment plant: capacity Madrid I, 60LPS, Madrid II, 30 LPS.	a. Sewer system is separated and/or mixed types, which is discriminated by concrete pipes, PVC pipes and grass pipes. b. The system coverage is 95%. c. Because of the separated system, there are some bad connections that introduce rainfall waters into the waste water system, making some pipelines to have pressure and overflowing the system in the check-wells.
Mosquera	a. Total área: 12,698 ha b. Urban area: 438 ha. c. Rural area: 11,260	a. Superficial water from River by using La Ramada watering system (11%, 5.4 LPS) . b. Buying water from EAAB (89%, 5.4 LPS).	a. Total length of pipeline: 10km (main), 19km (other). b. 2 storage tanks of 22m3. c. Size of pipeline: 6-12"(main), 2-4"(other).	a. Coverage: 76% of people. b. Compensation: there is not compensation capacity for the main urban perimeter, and El Lucero sector is deficient.	a. For rainfall water system, there is 1 pumping station constructed by CAR at deliverance place (treatment plant or San Jose channel). b. Waste Water Treatment Plant: The plant consist in two facultative lagoons and one of maturation with their respective structures, and a pumping station (120 LPS).	a. 33.8km pipelines of separated and/or mixed sewer system. b. The system coverage is 97%. c. Some pipelines are pressurized and the water overflow at the check-wells. d. These deficiencies also obey to reductions in the pipelines diameters. e. There are not a main rainfall system and in some sectors there are not any rainfall system at all.
Soacha	a. Total área: 17,900 ha b. Urban area: 1,800 ha. c. Rural area: 16,100 ha	a. Supply from some wells (48%) b. Buying water from EAAB (52%, 380 LPS).	a. Total length of pipeline: 19.5km. b. 3 storage tanks (80-100,000m3). c. Size of pipeline: 20-40"(main), 3-16"(other).	a. Information is not available yet.	a. Information is not available yet.	a. Sewer system is mixed rainfall and water. b. The system coverage is 45%. c. There exists a type of mixed sewer system which is insufficient for the waste water system and much less for the main waters.

## Appendix 2.10.1

### Members of the Emergency Local Committees in Bogotá D.C.

District	Alcaldía Local		Planeación Local		Ejército	Policía	Defensa Civil	Bomberos	DPAE	DABS	DAPD	DAACD	DAMA	ICBF	Personería Local	Hospitales Slud	EAAB	GAS Natural	ASEO Juntas	ASO	JAC	JAL	CADEL	Others	Total	
	Local	Local	Local	Local																						Juntas
Usaquen	2	1	0	1	1	1	1	1	0	1	0	1	1	0	2	3	2	1	2	1	0	1	1	0	22	
Chapinero	3	1	0	1	4	2	1	2	2	2	2	2	1	0	2	0	1	1	0	1	2	1	1	1	32	
Santa Fe	2	1	0	1	1	1	1	1	1	1	1	1	1	0	1	2	3	1	1	1	0	1	1	1	26	
San Cristobal	3	1	4	15	6	2	1	2	2	2	2	1	1	1	1	7	4	1	2	1	0	1	1	1	76	
Usme	4	1	0	3	7	2	1	1	1	1	1	2	1	1	2	2	3	2	1	1	0	2	1	1	48	
Tunjuelito	1	1	3	4	4	1	1	1	2	0	1	1	1	1	1	6	6	1	1	1	0	1	1	1	43	
Bosa	1	1	1	6	8	1	1	1	1	1	1	2	1	1	1	6	1	0	1	1	0	2	1	1	45	
Kennedy	1	0	0	1	9	1	1	1	2	1	1	1	1	1	1	1	3	1	1	1	0	1	1	1	34	
Fontibon	2	1	1	1	4	2	1	2	1	2	1	2	1	1	1	3	1	1	0	1	0	1	1	2	35	
Engativá	2	1	1	6	14	3	1	2	1	2	1	2	1	1	2	16	1	3	1	1	0	1	1	1	73	
Suba	3	1	0	5	5	5	1	2	0	1	1	0	1	1	1	3	3	1	0	1	1	1	1	1	40	
Barrios Unidos	2	1	0	1	2	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	3	0	4	25	
Teusaquillo	2	0	0	1	0	0	1	0	1	1	1	1	1	1	1	0	1	1	1	0	0	2	1	5	20	
Martires	1	0	1	3	4	3	1	1	2	1	1	1	1	0	2	2	1	1	1	0	4	6	2	8	45	
Antonio Narino	1	0	0	2	4	3	1	3	0	1	3	0	1	0	1	1	1	2	0	2	1	1	1	7	33	
Puente Aranda	1	1	0	0	3	1	1	1	2	1	1	1	1	1	0	2	0	1	1	1	0	0	1	8	27	
Candelaria	2	1	0	4	1	2	1	1	1	1	1	1	1	1	0	2	2	1	1	1	0	1	1	2	27	
Rafael Uribe U	1	1	0	4	0	3	1	2	2	2	2	2	1	1	3	3	2	0	1	2	0	4	1	7	41	
Ciudad Bolívar	4	1	1	5	5	2	1	2	3	3	3	3	1	1	1	1	2	0	1	1	0	1	1	9	47	
Sunapaz	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	2	0	0	0	0	1	3	2	1	8	25
Total	39	16	12	63	82	36	20	29	22	26	19	17	17	17	25	63	38	20	17	20	12	33	21	134	764	

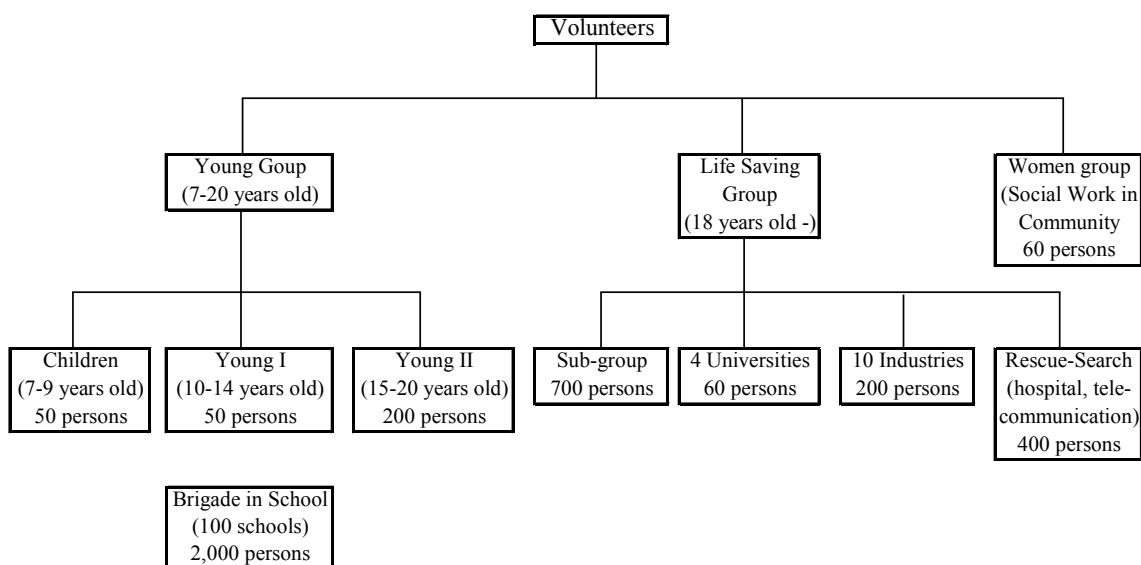
Source: DPAAE

**Appendix 2.10.2**  
**Conditions of CLE**

District	Commission	Office	Vehicle	Reserve Center	Contingency Plan	Risk Administration Plan	Action Plan 2000	No. of Projects	Theme of Training	Budget (Peso)	Socialization Plan with DPAAE
Usaquen	x	x	x		x	x	x	2	Adaptation of risk zones and risk prevention	127,296,328	x
Chapinero	x		x	x		x	x	1	Prevention of risks and attention of emergency	41,900,000	x
Santa Fe	x	x	x	x	x	x	x	1	Adaptation of risk zones and risk prevention	250,000,000	x
San Cristobal	x	x		x	x	x	x	2	Adaptation of risk zones and risk prevention	502,890,273	x
Usme	x	x	x				x	2	Adaptation of risk zones and risk prevention	160,000,000	x
Tunjuerito	x		x		x		x	2	Adaptation of risk zones and risk prevention	173,177,511	x
Boas	x		x	x	x	x	x	1	Prevention of risks and attention of emergency	40,000,000	x
Kennedy			x	x	x	x	x	1	Adaptation of risk zones/attention of affected families	45,416,414	x
Fontibon			x			x	x	1	Prevention of risks and attention of emergency	40,000,000	x
Engativa	x					x	x	2	- Prevention of risks and attention of emergency - Qualification and strengthening of institution for urban security	243,000,000	x
Suba		x		x	x		x	2	- Prevention of risks and attention of emergency - Strengthening of decentralization	293,000,000	x
Barrios Unidos	x		x	x			x	1	Prevention of risks and attention of emergency	25,000,000	x
Teusaquillo			x				x	1	- Strengthening of physical infrastructure and human resources of CLE	70,000,000	
Martires			x		x		x	1	Prevention of risks and attention of emergency	30,000,000	x
Antonio Narino	x		x		x		x	1	Prevention of risks and attention of emergency	24,000,000	
Puente Aranda	x		x		x		x	1	Prevention of risks and attention of emergency	20,000,000	x
Candelaria	x		x		x		x	1	Prevention of risks and attention of emergency	20,000,000	x
Rafael Uribe Uri	x		x		x		x	2	Adaptation of risk zones, attention of affected families, prevention of risks and attention of emergency	383,337,000	x
Ciudad Bolivar	x	x	x		x		x	1	Prevention of risks and attention of emergency	95,000,000	x
Sunapaz			x		x		x	1	Prevention of risks and attention of emergency	75,000,000	

Source: DPAAE

### Appendix 2.10.3 Composition of Volunteers of Red Cross



Source: Cruz Roja

### Appendix 2.10.4 Workshops Organized by DPAE in Year 2000

District	No. of Participated Barrio	Theme	No. of Participants
Usaquen	5	Landslide, Earthquake	1,046
Chapinero	4	Landslide	500
Santa Fe	5	Landslide	500
San Cristobal	8	Landslide	2,650
Usme	6	Landslide, Earthquake	2,600
Tunjuelito	4	Inundation	700
Bosa	3	Inundation	1,400
Kennedy	2	Inundation	2,200
Fontibon	1	Inundation	610
Engativa	4	Inundation	1,800
Suba	6	Landslide, Earthquake, Inundation	3,400
Barrios Unidos	All	Earthquake	530
Teusaquillo	All	Earthquake	400
Los Martires	All	Earthquake	600
Antonio Narino	All	Earthquake	300
Puente Aranda	All	Technological (Industrial) Risks	900
La Candelaria	All	Earthquake	180
Rafael Uribe U	10	Landslide	1,200
Ciudad Bolivar	11	Landslide, Earthquake	1,300
Sumapaz	All	Earthquake	500
Total			23,316

Source: DPAE

### Appendix 2.10.5 School Plan for the Risk Management

Ward / Cour	Methodology	Curriculum
Usaquen	153	12
Chapinero	35	19
Santa Fe	11	10
San Cristobal	38	29
Usme	13	46
Tunjuelito	62	14
Bosa	249	60
Kennedy	91	70
Fontibon	108	22
Engativa	119	46
Suba	213	53
Barrios Unidos	36	37
Teusaquillo	6	12
Maritres	8	8
Antonio Narino	48	12
Candelaria	3	10
Puente Aranda	24	30
Rafael Uribe	38	73
Ciudad Bolivar	34	41
Sumapaz	32	10
20 Wards at the same time	134	0
Total No. of Participants	1,455	614
Total No. of Training	72	28

Source: DPAE

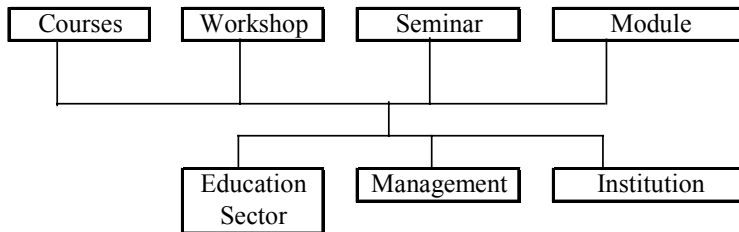
### Appendix 2.10.6 Students (7-12 Years Old) Trained by DPAE on Vacation Program in November 1998

Ward	No. of Students
Usaquen	2,674
Chapinero	0
Santa Fe	900
San Cristobal	1,027
Usme	530
Tunjuelito	1,264
Bosa	1,645
Kennedy	947
Fontibon	0
Engativa	400
Suba	0
Barrios Unidos	0
Teusaquillo	0
Maritres	0
Antonio Narino	0
Candelaria	0
Puente Aranda	0
Rafael Uribe	550
Ciudad Bolivar	1,764
Sumapazs	0
Total	11,701

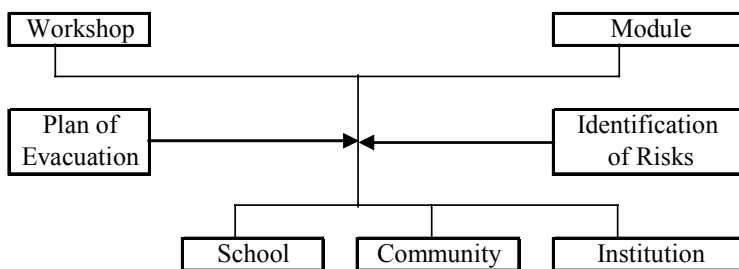
Source: DPAE

**Appendix 2.10.7 Structure of Training by Centro Academico of Fire Department**

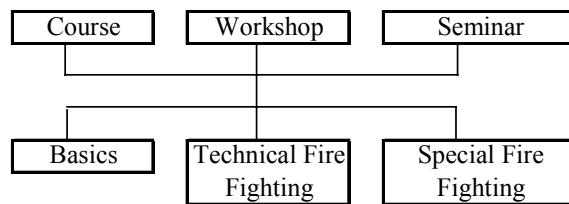
**(1) External Training (Outside of Academy)**



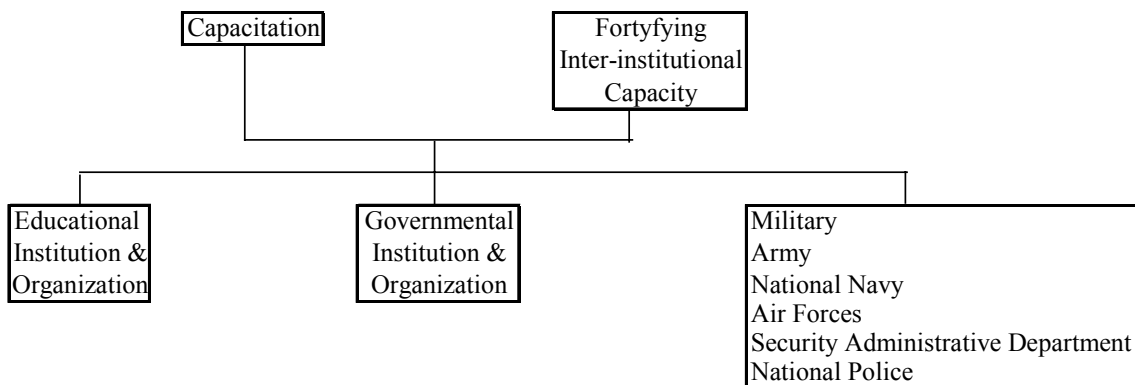
**(2) External Training (through Fore Stations)**



**(3) Internal Training (Inside the Academy)**



**(4) Inter-Institutional Training**



Source: Centro Academico de Bomberos

### Appendix 2.10.8 Participation of the Modular by Type in 2000

Module No.	Name of Course	Total No. of Courses	Hours per Course	Total Hours for All Courses	Total No. of Participants
I	Formation of Brigades	28	3	84	531
II	Theory of Fire and Extinction	133	3	396	2,559
III	Plans of Emergency and Evacuation	28	3	84	481
IV	Use of Fire Proof Cabinet	36	3	108	569
V	Use of Portable Stairs/Ladder	13	3	39	187
VI	Prevention and Identification of Risks	24	3	72	391
VII	Basic Rescue in Fire	22	3	66	422
VIII	Trail of Claustrophobia	74	3	244	832
IX	Basic First Aid	3	3	9	59
X	Handling of Rods	1	3	3	6
XI	Rescue with Ropes	0	3	0	0
XII	Rescue of Men to Men	0	3	0	0
XIII	Rescue on Vertical Walls	0	3	0	0
Total		362		1,105	6,037

Source: Cuerpo Oficial de Bomberos, Centro Academico

### Appendix 2.10.9 Training Provided by Red Cross

<b>Internal Training</b>		No. of Participants
No.	Topics	
1	Workshop for Monitoring Educative Brigades	60 volunteers
2	Education for Emergencie Plan	142 Civil Servants
3	Basic Module for Helping	57 volunteers
4	Basic Course in Telecommunication	18 volunteers
5	Education about SNDAD	15 Civil Servants
6	Talk about Network for Helping	22 Civil Servants
7	Workshop about Massive Events	25 volunteers
8	Workshop about Logistic in Operation	15 volunteers
9	Course for Instructors	40 volunteers
Sub-total		215 volunteers 179 Civil Servants
<b>External Training</b>		No. of Participants
No.	Topics	
1	Workshop on Prevention and Attention of Disaster	137
2	Definition and Organization of the Execution Plans	730
3	What to do in case of Emergency at Schools	337
4	Education of Local Committees of Emergencies	60
5	Conference of Health Sector in Tnjo	25
Sub-total		1,289 persons
Total		1,683 Persons

Source: "Un Horizonte Muy Prometedor; Balance Social 1999" Cruz Roja Colombiana

## Appendix 2.10.10 Major Materials for Education, Training and Information for Prevention and Attention of Disaster

No.	Organization	Materials	Others
1	DPAE	<ol style="list-style-type: none"> <li>1. Guidebook on Landslide (4,000 copies)</li> <li>2. Guidebook on Inundation (6,000 copies)</li> <li>3. Guidebook on Earthquake (8,000 copies)</li> <li>4. Pamphlet on Mass Events (3,000 copies)</li> <li>5. Pamphlet on DPAE (3,000 copies)</li> <li>6. Material for "Primer Encountour of CLE"</li> <li>7. Video on Earthquake (70 copies)</li> <li>8. Video on Mass Events (50 copies)</li> <li>9. Video on Landslide (50 copies)</li> <li>10. Video on Inundation (30 copies)</li> <li>11. Publication "Prevention &amp; Attention of Emergency in Bogota, D.C./1998-2000</li> <li>12. Guidebook I of Education Methodology on Prevention of Disaster After Class: Pre-school to 3rd Grade</li> <li>13. Guidebook II of Education Methodology: Grade 4 to Grade 6</li> <li>14. Guidebook III of Education Methodology: Grade 7 to Grade 11</li> <li>15. School Plan for Risk Management: Teachers Guide I; Concept (5,000 copies)</li> <li>16. School Plan for Risk Management: Teachers Guide I; Instruments and Tools for Methodology (5,000 copies)</li> <li>17. School Plan for Risk Management: Students Guide</li> <li>18. 3 kinds of Posters (3,000 copies)</li> <li>19. TV news program on "Disaster Preparedness</li> <li>20. Adversemment in radio on "Forest Fire Prevention"</li> <li>21. Guidebook of Prevention: Unstable Zones in Hillside in Santa Fe de Bogota"</li> </ol>	Year 2000
2	DNPAD	<ol style="list-style-type: none"> <li>1. My Friend, Wind: Prevention against Hurricanes</li> <li>2. My Friend, Earth: Preparedness for Earthquake</li> <li>3. My Friend, Forest: Prevention of Forest Fire</li> <li>4. My Friend, Water: Prevention before Flood</li> <li>5. How to Collaborate Scholl Plan into Disaster Prevention</li> <li>6. Armor 11 Years: Protection of Life</li> <li>7. Cantarin El Arroyo Feliz</li> <li>8. Prevengamos Coloreando</li> <li>9. Singing Mountain</li> <li>10. Tsunami</li> <li>11. Proetction of Life</li> <li>12. Emergency Plan for Families</li> <li>13. Prevention and Attention of Hurricanes</li> </ol>	Year 1994
3	OPAD	<ol style="list-style-type: none"> <li>1. Manual of Living Together in Temporary Dwellings</li> <li>2. Guide for Design and Application of Municipal Plans of Contingency against Emergency and Disasters</li> <li>3. How to live here: Manual of Consulting School Program of Disaster Prevention (2000)</li> <li>4. Cortilla de la Pollogia (Book of Chicken)</li> <li>5. School Plan of Emergency</li> <li>6. Practical Guide for Elaboration of Municipal Plan of Cundinamarca</li> <li>7. Catalogue of Environmental Disaster of Cundinamarca</li> </ol>	
4	Fire Department	<ol style="list-style-type: none"> <li>1. Manual Course of Firemen</li> <li>2. Proposed Program for School Plan</li> <li>3. Guide for Elaboration of School Plan of Emergency</li> <li>4. Course of Re-training in 2001</li> <li>5. Action Plan 2001 of Centro Academico</li> <li>6. Secutity against Fire</li> </ol>	
5	Red Cross	<ol style="list-style-type: none"> <li>1. Manual of Disaster Prevention: Pollogia de los Disasters</li> <li>2. Program of Community Educational for Disaster Prevention</li> <li>3. Program of School Preparation for Diminishing Risks and Bringing Emergencies in Educational Plans</li> <li>4. Plan for Family on Emergency</li> <li>5. Prevention and Attention of Disaster-Inundation</li> <li>6. Prevention and Attention of Disaster-Earthquake</li> <li>7. Prevention and Attention of Disaster-Basic Guide</li> <li>8. A Promising Horizon</li> </ol>	- Training Center in Tabio (Cundinamarca)
6	Civil Defense	<ol style="list-style-type: none"> <li>1. Conference of Desaster Prevention (1996)</li> <li>2. Manual for First Aid (1985)</li> <li>3. Who is and What has in Civil Defense Colombia? (2000)</li> <li>4. Guide for Security Plan and Evacuation from School Establishment in case of Disaster (1985)</li> <li>5. What to do in case of Disaster (1985)</li> <li>6. Local Committee of Emergency</li> <li>7. Civil Defense Colombia: Quarterly Magazine (1985)</li> </ol>	- Training School in Funza (Cundinamarca)
7	Health Department	<ol style="list-style-type: none"> <li>1. Management and Administration of Emergency and Disaster (with University of Bosque)</li> <li>2. Capacitation of Emergency and Disaster in Bogota</li> </ol>	
8	CAR	<ol style="list-style-type: none"> <li>1. Prevention of Forest Fires: Guide for Preservation and Conservation Our Environment</li> </ol>	



### Appendix 2.10.11 Information of Community in Bogotá

No.	District	Major Organizations by Communities	Type of Disaster	Level of officials' interest in disaster prevention	Workshop, Training and Education by DPAAE (Topic and Groups)	Possibilities for Organizations of Disaster Prevention
1	Usaquen		Landslide Inundation	Middle	JAC Mother's Community Group of Youth	Neighbourhood Brigage for emergency
2	Chapinero		Landslide	Middle	JAC	
3	Santa Fe		Landslide	High	Barrio groups	Neighbourhood Brigage for emergency
4	San Cristobal	Single mother group Elders group Youth group Cultural group	Landslide, Inundation	High	JAC	Neighbourhood Brigage for Emergency : 31 barrios have this group since 2.5 years ago. Members are still small. They were trained with district budget.
5	Usme		Landslide	Middle	Mother's Community (through ICBF) Rincon del ZEA (Through Junta de Defensa Civil) Security group JAC Teacher's and Father's Group (Through CADEL)	The Defensa Civil group has a contract with DPAAE and local government for atention of emergency in the Rafael Uribe District.
6	Tunjuelito		Inundation	High	Mother's Community (through ICBF) Funta de Defensa Civil Security Group Health Group Brigade of Hospital Emergency JAC	none
7	Bosa		Inundation	High	JAC (Through DAACD) Funda de Civil Defense Mother's Community (through DABS, ICBF) Students (through CADEL)	Workshops for inhabitants and experts in the community begun. 2 month-project of 4 hours per course, contract with private company.
8	Kennedy		Inundation	Low	Mother's Community Committee of Users of Hospital of Kennedy	Neighbourhood Brigage for emergency
9	Fontibon		Inundation	Middle	Mother's Community	none
10	Engativa		Inundation		Mother's Community Volunteers of Civil Defense	none
11	Suba	Youth group Environment group Security group	Inundation Landslide	Middle	JAC Security Group Teachers Mother's Community	Neighbourhood Brigage for emergency
12	Barrios Unidos		none	Low	JAC	Neighbourhood Brigage for emergency
13	Teusaquillo		none	Low	JAC	none
14	Martires		none	Low		none
15	Antonio Narino	Single mother group Elders group Youth group Cultural group	none	Low		none
16	Puente Aranda		none	Low	Funta de Civil Defense	The industrial group has a brigage for technological risks
17	Candelaria		Inundation	Low	Security Group	none
18	Rafael Uribe		Landslide	Middle	JAC	none
19	Ciudad Bolivar		Landslide Inundation	Middle	Youth Group Mother's Group	none
20	Sumapaz		none	Middle		none

Source: DPAAE

## Appendix 2.10.12 10 Major Opinions of the Stakeholder Workshop Participants

Date	Past Participation to Workshops	Matters learned from the Past Workshops	Matters learned from This Workshop	Preferable Topics of Future Workshop
<b>May 24</b>	Yes: 11 persons No: 4 persons	<ul style="list-style-type: none"> <li>- It is important to prevent and react before emergency.</li> <li>- Awareness of threat, vulnerability and risks</li> <li>- Training and information for reaction to disaster</li> </ul>	<ul style="list-style-type: none"> <li>- Responsibilities of district entities for formation of inter-sector team</li> <li>- Difficult situations at every level for preparation for the disaster</li> <li>- Experiences of disaster which can help increase prevention and attention of disaster</li> <li>- Awareness of lack of coordination and necessity of institutional coordination</li> </ul>	<ul style="list-style-type: none"> <li>- Action Plan</li> <li>- Strategy Plan</li> <li>- Training of an immediate reaction</li> <li>- International experience of disaster prevention</li> <li>- Institutional and operative coordination</li> <li>- Simulation</li> <li>- Contingency Plan</li> </ul>
<b>May 29</b>	Yes: 13 persons No: 4 persons	<ul style="list-style-type: none"> <li>- Primary information of prevention and attention of disaster</li> <li>- Basic theoretical information of disaster management</li> <li>- Coordination of entities are necessary</li> <li>- People should be aware of the need of prevention</li> <li>- Education is needed</li> <li>- Monitoring of threat needs technology, but politicians think that technology is too expensive</li> </ul>	<ul style="list-style-type: none"> <li>- Deficiency of inter-institutional coordination</li> <li>- Awareness of other risks caused naturally</li> <li>- It is important for concerned entities to make decision in case of disaster</li> <li>- The existence of DPAAE</li> <li>- Sensitiveness towards the community problems</li> <li>- Lack of inter-institutional information exchange and ignorance of the operation and administration of the system</li> <li>- Need to work together in disaster prevention</li> <li>- Still far away from achieving optimum results for disaster prevention</li> <li>- A vision of DPAAE</li> <li>- Sharing experiences with other entities</li> <li>- The project of the City</li> <li>- Vulnerability and threat level to which community are exposed.</li> </ul>	<ul style="list-style-type: none"> <li>- Training and Workshop on emergency attention</li> <li>- Experience of disaster at community level</li> <li>- Inter-institutional coordination for risk proceeding</li> <li>- Community organization and local network to reduce vulnerabilities.</li> <li>- All related system of emergency prevention</li> <li>- Technical knowledge of Japanese institution</li> <li>- Industrial disaster</li> <li>- Communication by media in case of disaster</li> <li>- Planning of disaster prevention</li> <li>- Detailed presentation of educational materials</li> <li>- Current regulations addressing disaster prevention, e.g. POT</li> <li>- Meeting of the district technical committee</li> </ul>

**Appendix 2.10.13 Issues, Constraints, Potentials and Countermeasures**

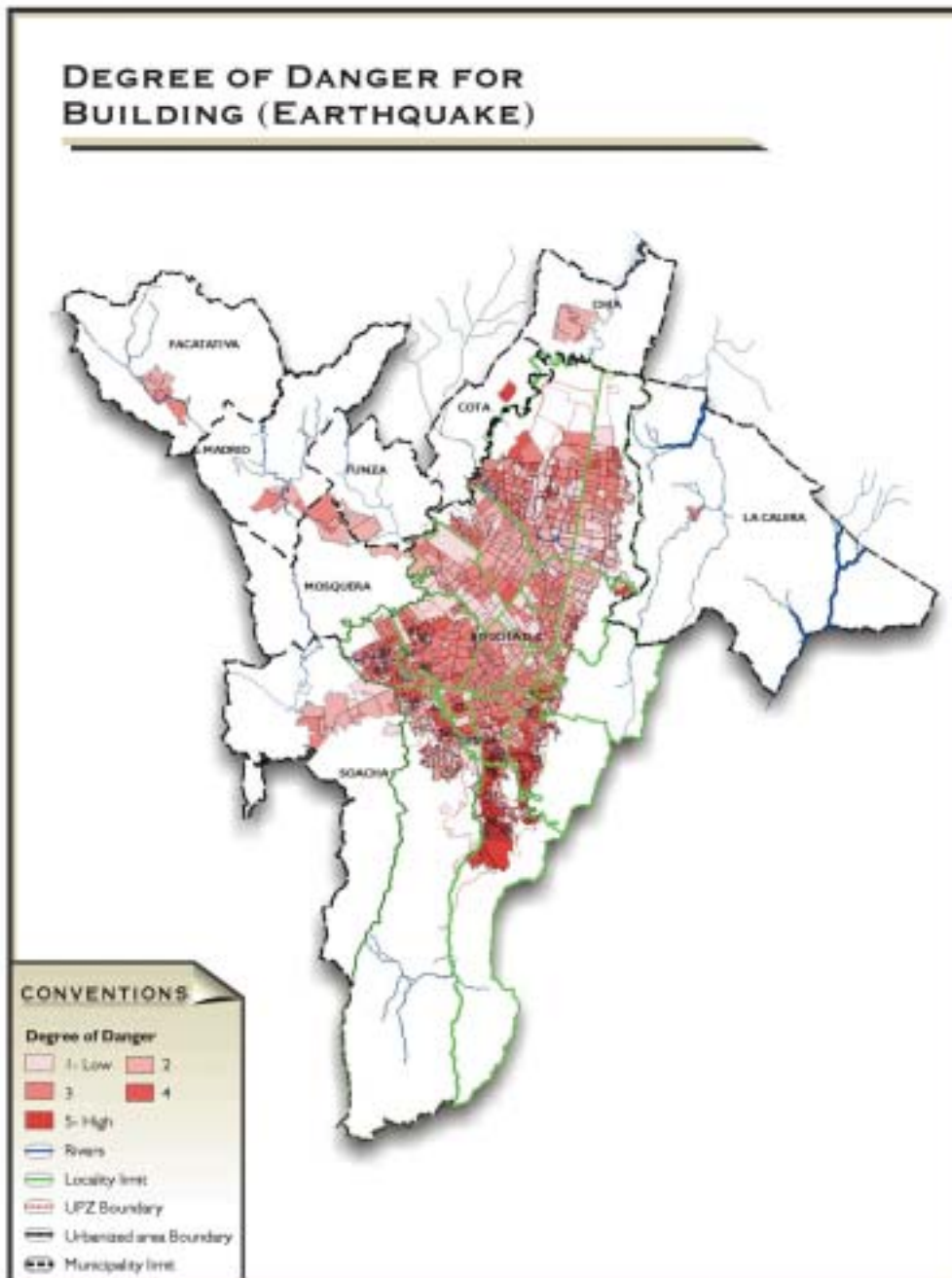
Item	Issues	Constraints	Potential	Countermeasures
A. Organization	<ol style="list-style-type: none"> <li>1. Coordination of activities among concerned Agencies</li> <li>2. Organizations are formed based on the regulations but no operation</li> <li>3. Role of each organization as a member of committee is not clear</li> <li>4. Major activities are dependent on outside agencies.</li> <li>5. Evaluation structure (system) for disaster prevention measures (regular evaluation of disaster preparedness, and activity evaluation) is missing.</li> <li>6. Disaster prevention policy is approved by all concerned entities or not.</li> </ol>	<ol style="list-style-type: none"> <li>1. Budget is not enough.</li> <li>2. Parallel administration</li> <li>3. Lack of regular full-time experts (frequent personnel changes)</li> </ol>	<ol style="list-style-type: none"> <li>1. Many organizations have already been established.</li> </ol>	<ol style="list-style-type: none"> <li>1. Regular consultation and discussion among government, private and community</li> <li>2. Establishment of system of evaluation/reconsideration of disaster prevention measures</li> <li>3. Establishment of permanent disaster prevention committees</li> </ol>
B. Information	<ol style="list-style-type: none"> <li>1. Distribution of the information of activities of concerned agencies is not well organized.</li> <li>2. Distribution of materials produced by each agencies is not systematic.</li> <li>3. Information among the organization is not well compiled.</li> <li>4. Access to the information of disaster prevention by inhabitants is not easy.</li> </ol>	<ol style="list-style-type: none"> <li>1. Experience and lessons from sufferes are not utilized for the future planning.</li> <li>2. Disaster history in detail cannot be handed down after ages.</li> </ol>	<ol style="list-style-type: none"> <li>1. Many materials (guidebook, video, pamphlet, manual, etc.) have been produced.</li> <li>2. Colombia has experienced various disasters and received international support including Japan which has disaster experience</li> </ol>	<ol style="list-style-type: none"> <li>1. Decision of the survey items and establishment of structure to leave the detail lessons to the future</li> <li>2. Establishment of system of information distribution by mass media, workshop, seminar</li> <li>3. Establishment of disaster prevention center/corner where anyone can access</li> <li>4. Evaluation and improvement of the materials produced by DPAAE and OPAD</li> <li>5. Set up a day or a week of disaster prevention and organize campaign</li> </ol>
C. Human Resources	<ol style="list-style-type: none"> <li>1. Awareness of the official staff in the concerned agencies is low.</li> <li>2. Lack of leaders</li> <li>3. Lack of experts</li> <li>4. Lack of education of disaster prevention for schools and local community</li> <li>5. After the training, the follow-up activities and evaluation are not enough.</li> </ol>	<ol style="list-style-type: none"> <li>1. The number of staff is not enough.</li> </ol>	<ol style="list-style-type: none"> <li>1. Some agencies (DPAAE, Red Cross, Civil Defense, etc.) have strong willingness to do their roles.</li> <li>2. Some agencies have already worked with local communities.</li> <li>3. Some agencies have got involved some private sector.</li> <li>4. There are international supports.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase of training, seminar, education among the related entities</li> <li>2. Establishment of courses in schools</li> <li>3. Training of experts with disaster prevention technique (fire distinguish, rescue, first-aid, etc.) at community level</li> </ol>
D. Facilities and Equipment	<ol style="list-style-type: none"> <li>1. Lack of facilities such as disaster prevention center, training center.</li> <li>2. Lack of equipment and reserves</li> </ol>	<ol style="list-style-type: none"> <li>1. Lack of budget</li> </ol>		

***Appendix for Chapter 3***

### Appendix 3.3.1 Indicator for the Degree of Risk

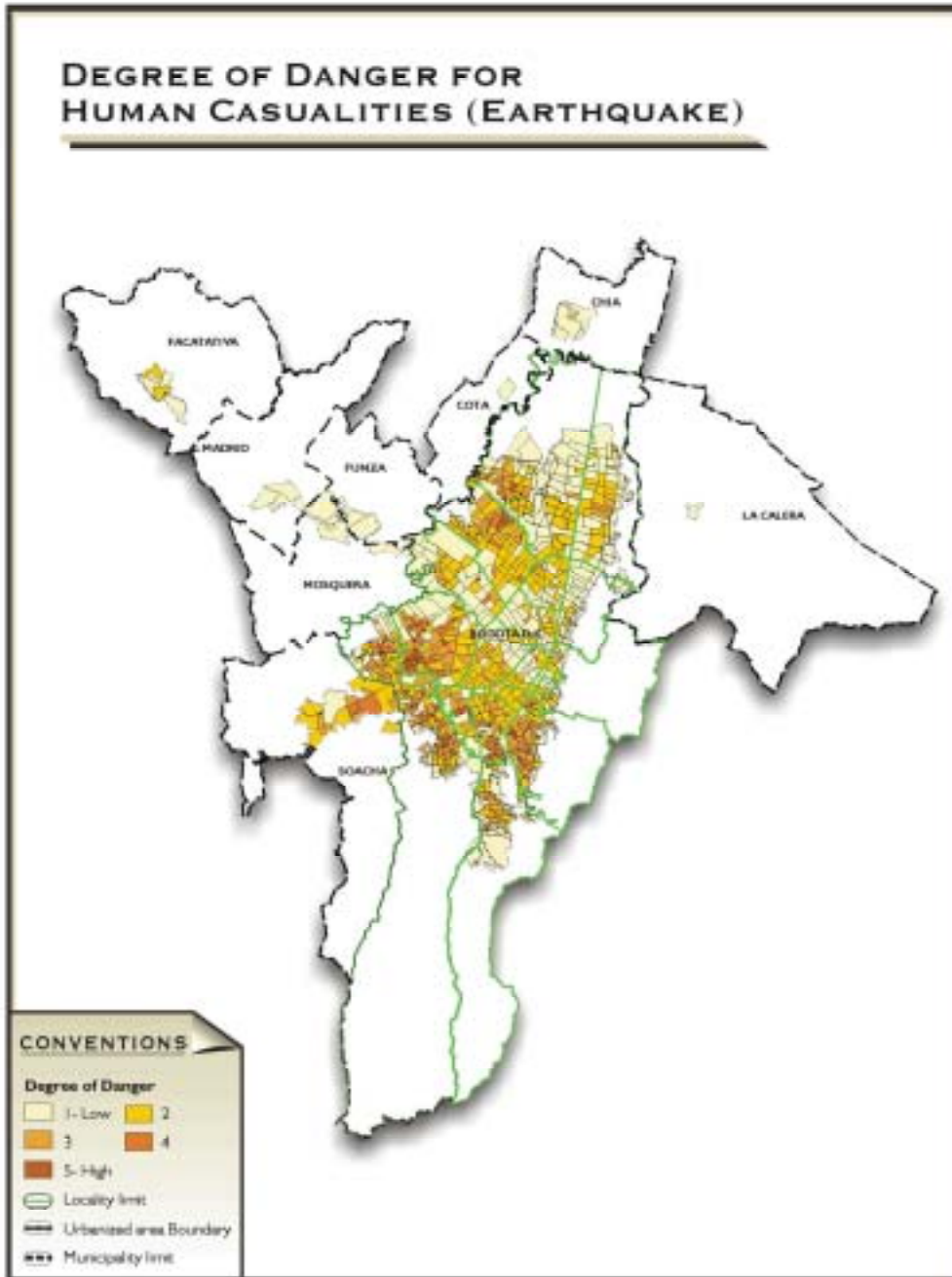
<b>Earthquake</b>	
Point 5	<ul style="list-style-type: none"> <li>- Ratio of estimated building damage is more than 60 percent</li> <li>- Population density in the area is more than 450 people</li> <li>- Preparation ratio of open spaces (parks and roads) are less than 40% of the total area</li> </ul>
Point 4	<ul style="list-style-type: none"> <li>- Ratio of estimated building damage and population density in the area are within medium-high level (building damage: more than 40 to 60 percent, population density: more than 300 to 450 person per ha), and preparation ratio of open spaces are less than medium-low level (less than 20 to 60 percent) , or</li> <li>- Either one of the index is with high level and others with medium levels</li> </ul>
Point 3	<ul style="list-style-type: none"> <li>- Ratio of estimated building damage and population density in the area are within medium level (building damage: 20 to 60 percent, population density: 150 to 450 person per ha), and preparation ratio of open spaces are within medium level (40 to 80 percent) , or</li> <li>- Either one of the index is with medium-high level and others with low levels.</li> </ul>
Point 2	<ul style="list-style-type: none"> <li>- Ratio of estimated building damage and population density in the area are within medium-low level (building damage: 0 to 40 percent, population density: 0 to 300 person per ha), and preparation ratio of open spaces are within medium-high level (60 to 100 percent) , or</li> <li>- Either one of the index is with medium level and others with low levels.</li> </ul>
Point 1	<ul style="list-style-type: none"> <li>- Ratio of estimated building damage is less than 20 percent.</li> <li>- Population density in the area is less than 150 people per ha.</li> <li>- Preparation ratio of open spaces (parks and roads) are more than 80% of the total area</li> </ul>
<b>Landslide</b>	
Point 5	<ul style="list-style-type: none"> <li>- High occupancy rate of risk proved area 80 to 100 % of total area</li> </ul>
Point 4	<ul style="list-style-type: none"> <li>- Medium- high occupancy rate of risk proved area 60 to 80 % of total area</li> </ul>
Point 3	<ul style="list-style-type: none"> <li>- Medium occupancy rate of risk proved area 40 to 60 % of total area</li> </ul>
Point 2	<ul style="list-style-type: none"> <li>- Medium-low occupancy rate of risk proved area 20 to 40 % of total area</li> </ul>
Point 1	<ul style="list-style-type: none"> <li>- Low occupancy rate of risk proved area 0 to 20 % of total area</li> </ul>
<b>Flood</b>	
Point 5	<ul style="list-style-type: none"> <li>- High number of affected building probability and affected population probability</li> </ul>
Point 4	<ul style="list-style-type: none"> <li>- Medium-high number of affected building probability and affected population, or</li> <li>- Either one of the index is low and the other is high</li> </ul>
Point 3	<ul style="list-style-type: none"> <li>- Medium number of affected building probability and affected population, or</li> <li>- Either one of the index is low and the other is medium-high, or</li> <li>- Either one of the index is medium-low and other is high</li> </ul>
Point 2	<ul style="list-style-type: none"> <li>- Medium-low number of affected building probability and affected population, or</li> <li>- Either one of the index is low and the other is medium</li> </ul>
Point 1	<ul style="list-style-type: none"> <li>- Low number of affected building probability</li> <li>- Low number of affected population probability</li> </ul>
<b>Industrial Disaster</b>	
Point 5	<ul style="list-style-type: none"> <li>- High rate of fire breakout rate</li> </ul>
Point 4	<ul style="list-style-type: none"> <li>- Medium-high rate of fire breakout rate</li> </ul>
Point 3	<ul style="list-style-type: none"> <li>- Medium rate of fire breakout rate</li> </ul>
Point 2	<ul style="list-style-type: none"> <li>- Medium-low rate of fire breakout rate</li> </ul>
Point 1	<ul style="list-style-type: none"> <li>- Low rate of fire breakout rate</li> </ul>

## DEGREE OF DANGER FOR BUILDING (EARTHQUAKE)

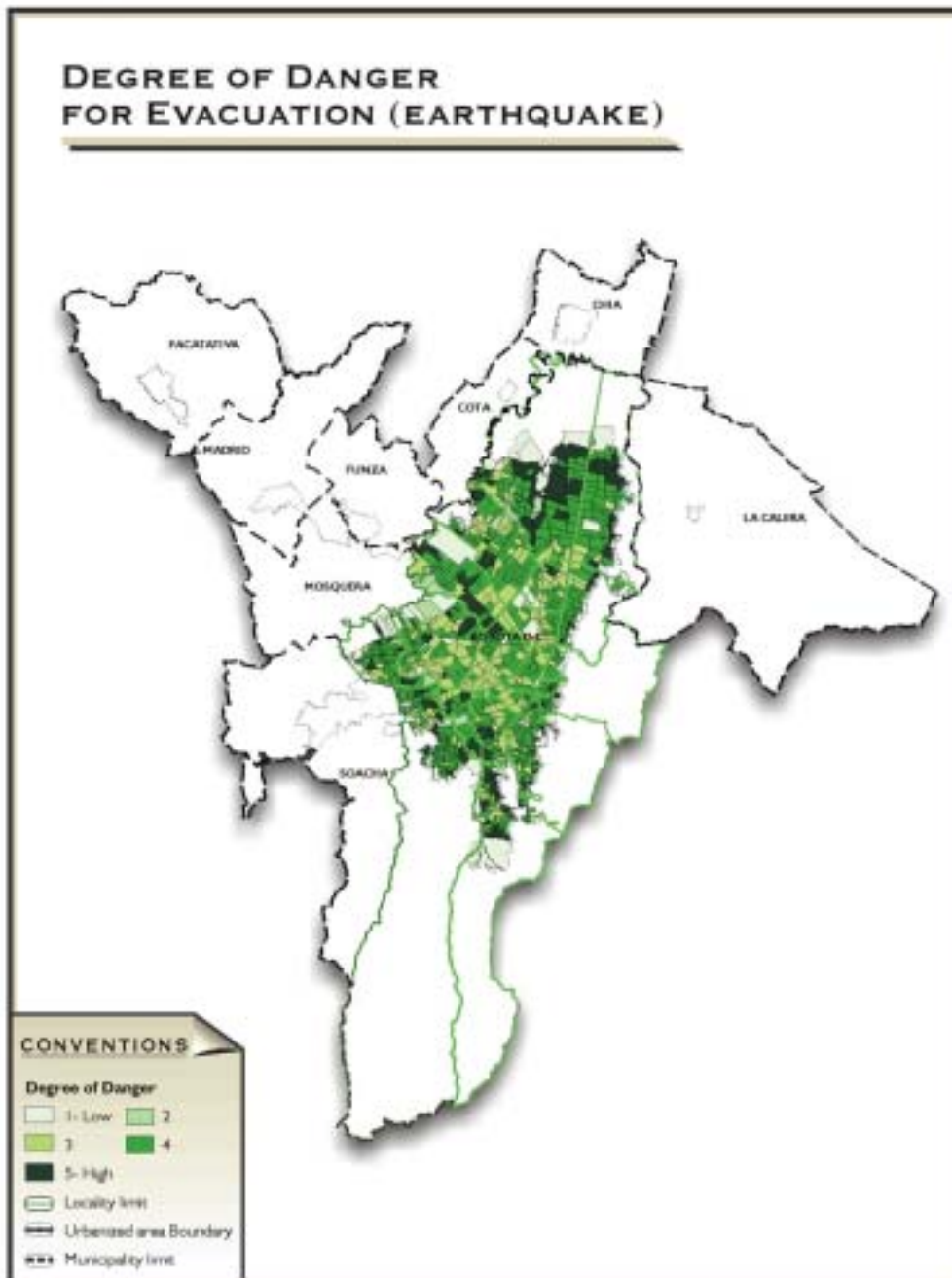


Appendix 3.3.2 Degree of Danger for Building

### DEGREE OF DANGER FOR HUMAN CASUALITIES (EARTHQUAKE)



Appendix 3.3.3 Degree of Danger for Human Casualty



Appendix 3.3.4 Degree of Danger for Evacuation