

Figure 4.2.1.5 Risk Map for Debris Flow

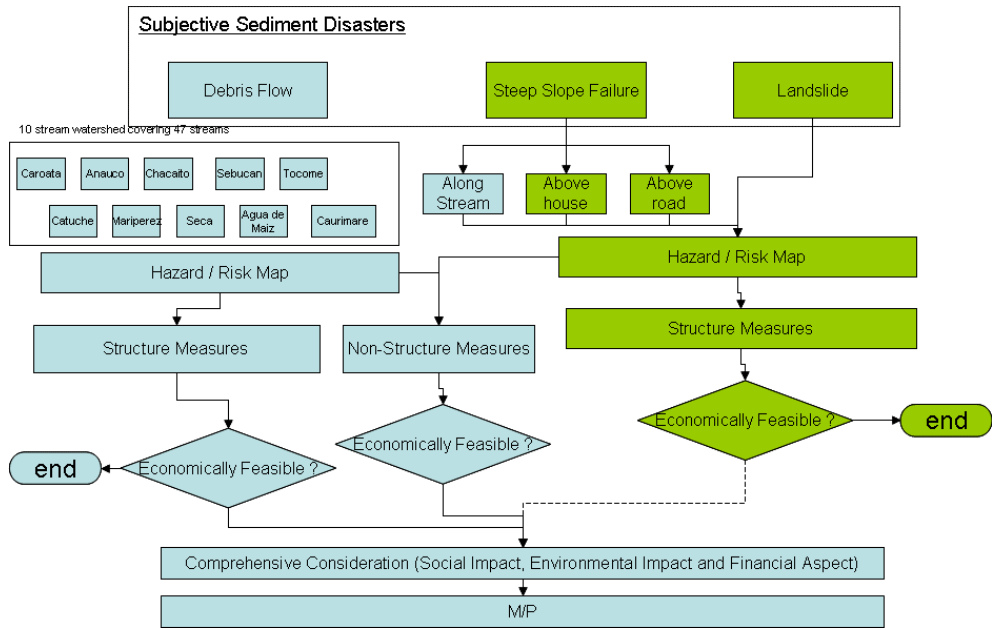


Figure 4.3.2.1 Principal Work Flow Diagram for Master Plan Formulation

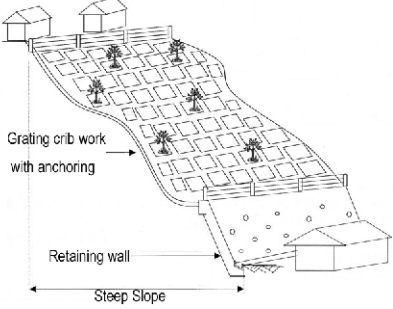
| Schematic Image of Protection Works | Outline of Works | Unit Cost |
|---|--|---------------------------|
|  | Relocation of Houses on Steep Slope | US\$10,000 per house |
| | Grating crib work | US\$80 per m ² |
| | Soil-nailing (1 piece per 2 m ²) | US\$200 per 1 piece |
| | Retaining wall | US\$80 per m ³ |

Figure 4.3.3.1 Standard Protection Works for Cost estimation

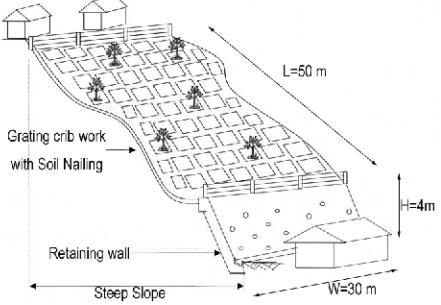
| Schematic Image of Protection Works | Outline of Works | Cost |
|--|---|--------------------|
|  | Relocation of Houses on Steep Slope= 15 houses * US\$10,000 per house | US\$150,000 |
| | Grating crib work = 50m*30m* US\$80 | US\$120,000 |
| | Soil-nailing (1 piece per 2 m ²)= 50m*30m*0.5 piece* US\$200 | US\$150,000 |
| | Retaining wall= 4m*30m*1m* US\$80 | US\$9,600 |
| | TOTAL | US\$429,600 |

Figure 4.3.3.2 Cost Estimation for Typical Protection Works

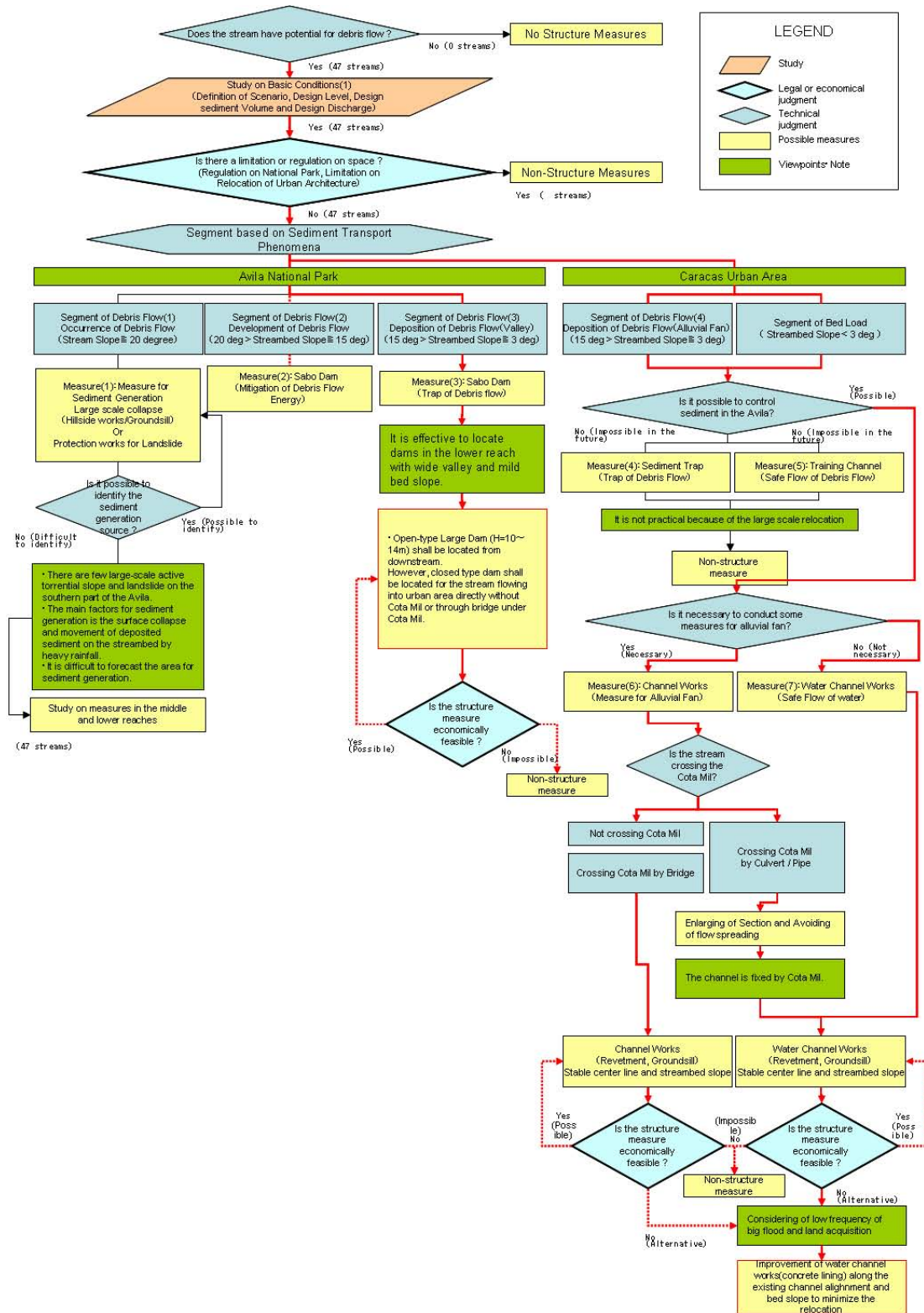


Figure 4.3.4.1 Work Flow Diagram for Structure Measures

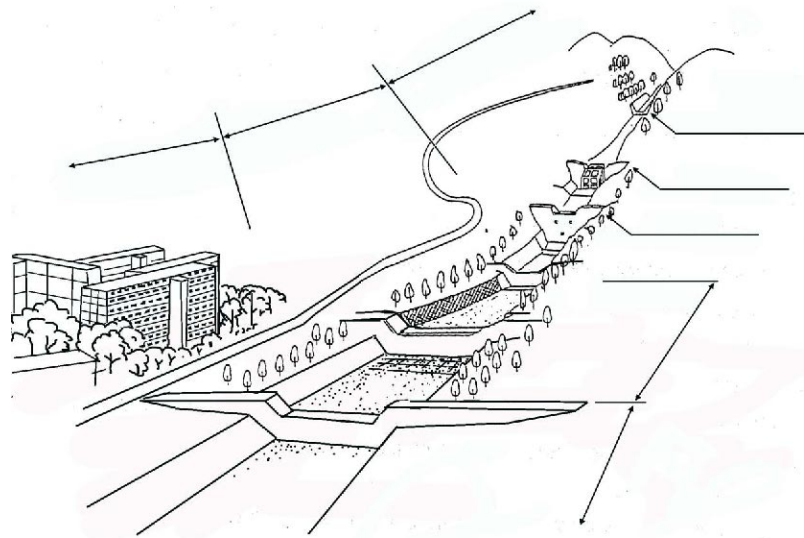
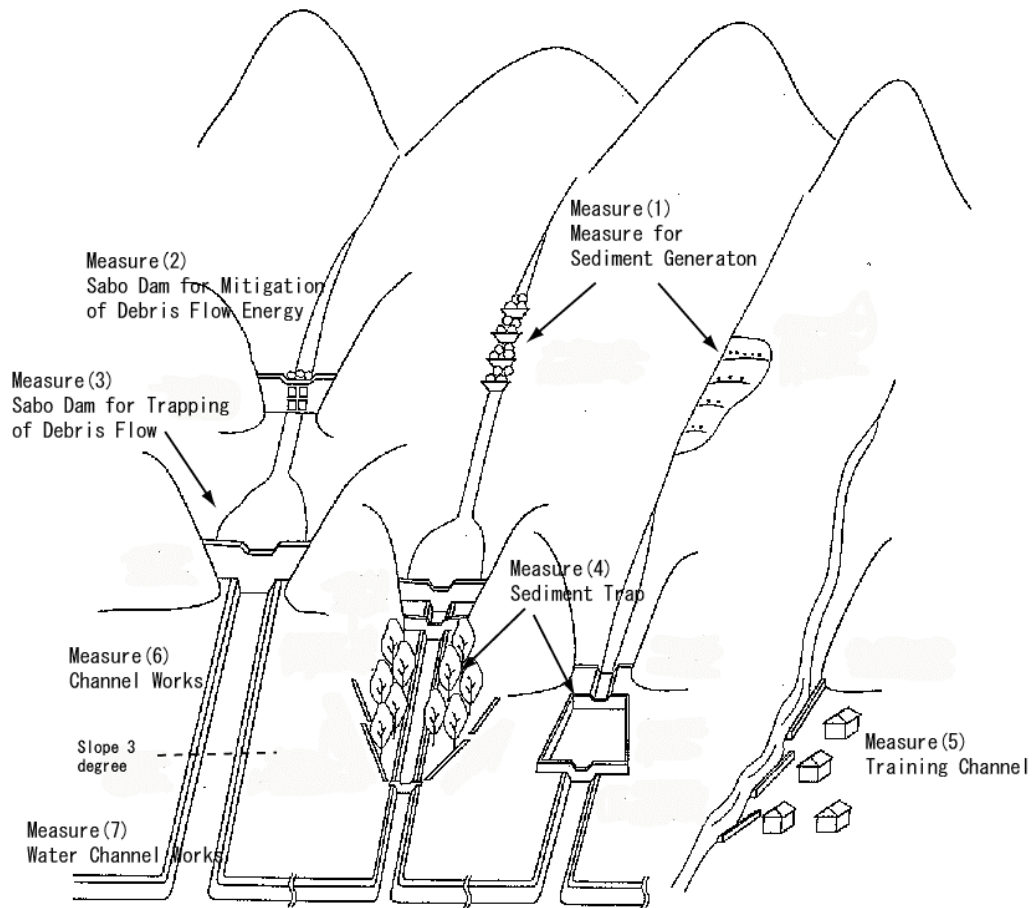


Figure 4.3.4.2 Schematic Image of Sediment Control Structures

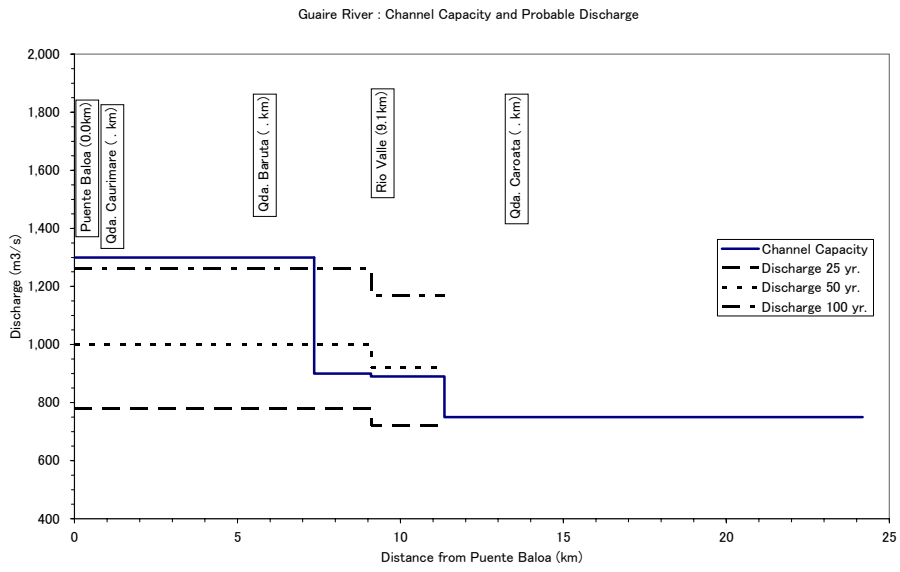
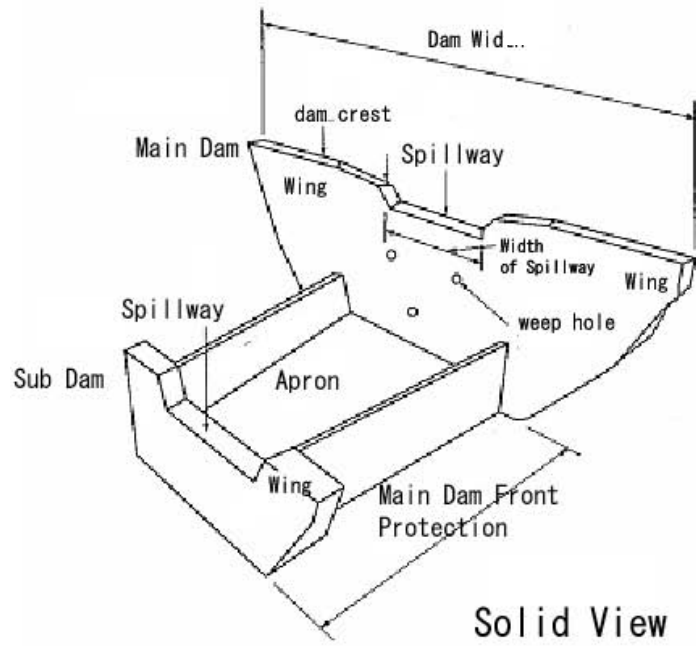
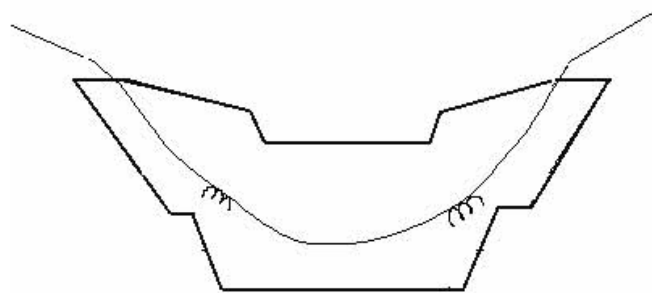


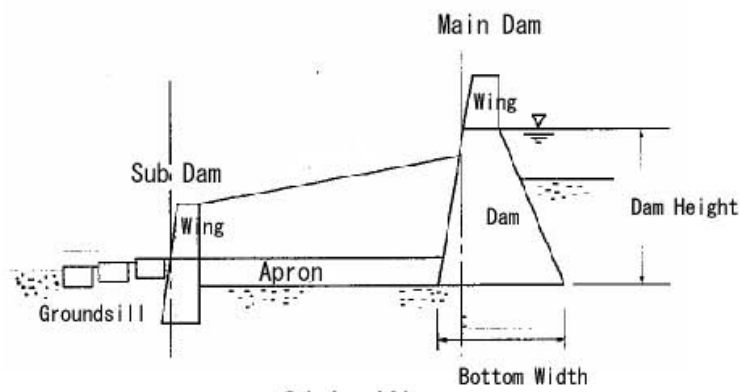
Figure 4.3.4.3 Channel Capacity and Probable Discharge in the Guaire River



Solid View

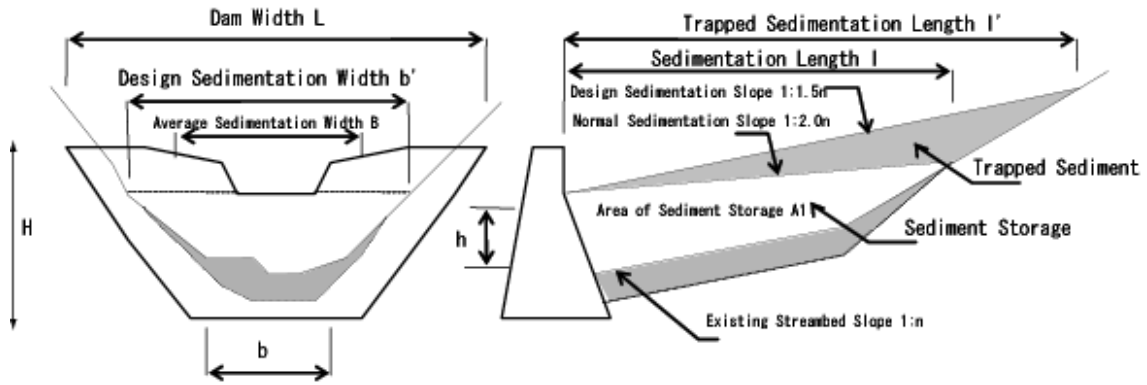


Section View



Side View

Figure 4.3.4.4 Explanation of Dimension of Sabo Dam



B : Average Sedimentation Width (m) $B=(b+b')/2$
 b : Average Width of Existing Streambed (m)
 b' : Design Sedimentation Width (m)
 h : Effective Height of Sabo Dam(m)
 Normal Sedimentation Slope : 1/2 of the existing streambed slope “n”
 Design Sedimentation Slope: 2/3 of the existing streambed slope “n” (up to $i=1/6$)

| | Normal Sedimentation Slope : 1/2 of the existing streambed slope “n” | Design Sedimentation Slope: 2/3 of the existing streambed slope “n” |
|--------------------------|--|---|
| Sedimentation Length | $l = \frac{2n \times n}{2n - n} \times h = 2nh$ | $l' = \frac{1.5n \times n}{1.5n - n} \times h = 3nh$ |
| Area of Sediment Storage | $A1 = \frac{1}{2} \times h \times l = nh^2$ | $A1' = \frac{1}{2} \times h \times l = 1.5nh^2$ |
| Sediment Storage | $Vs = A1 \times B = nBh^2$ | $Vs' = A1' \times B = 1.5nBh^2$ |

[Trapped Sediment Volume]

The trapped sediment volume is calculated assuming that open type sabo dam is constructed and the maintenance excavation is conducted, as follows, to add the storage volume

$$Vs' = 1.5n \times B \times h^2$$

Figure 4.3.4.5 Concept of Trapped Sediment Volume of Sabo Dam

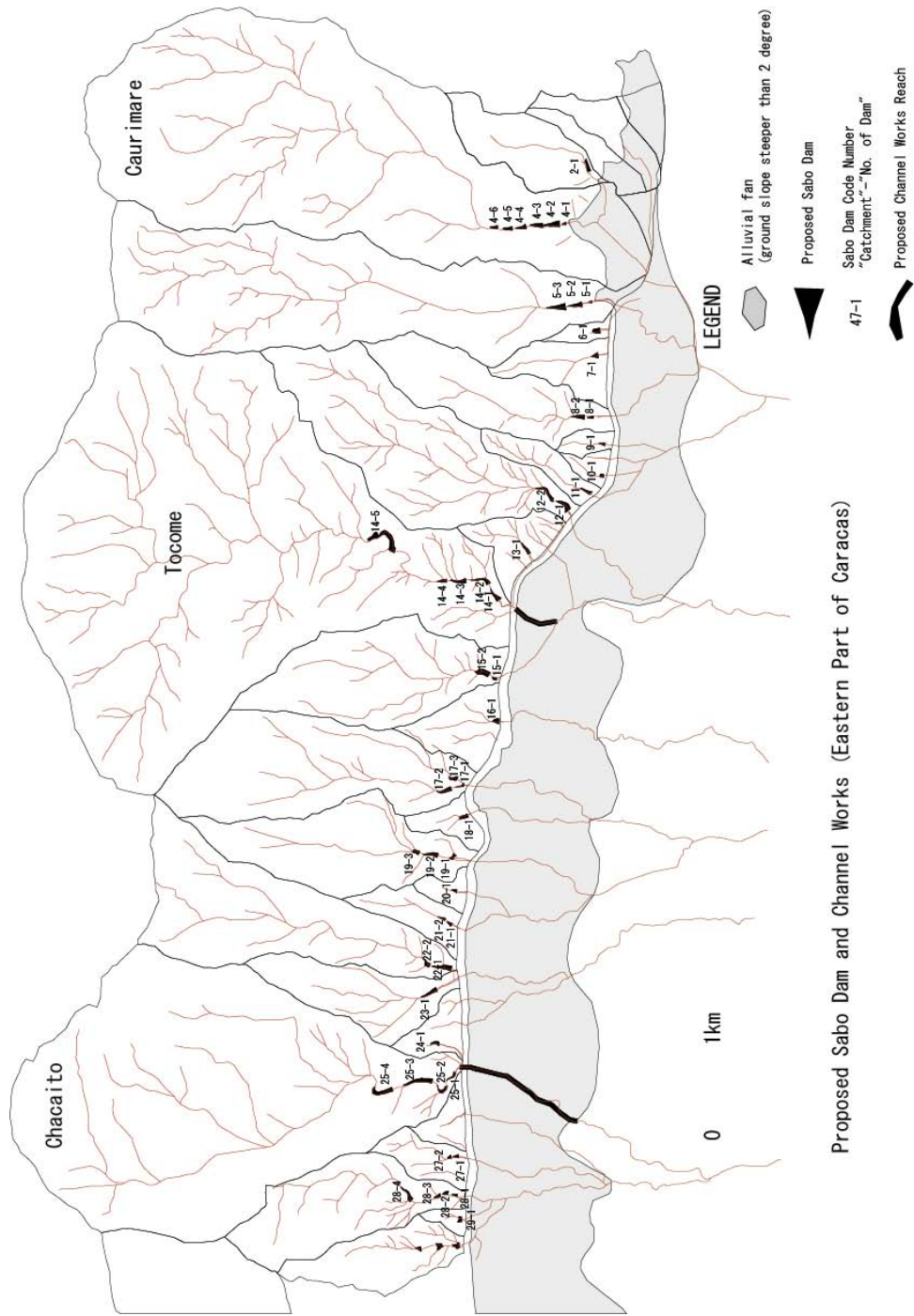


Figure 4.3.4.6(1/2) Location of Sabo Dam

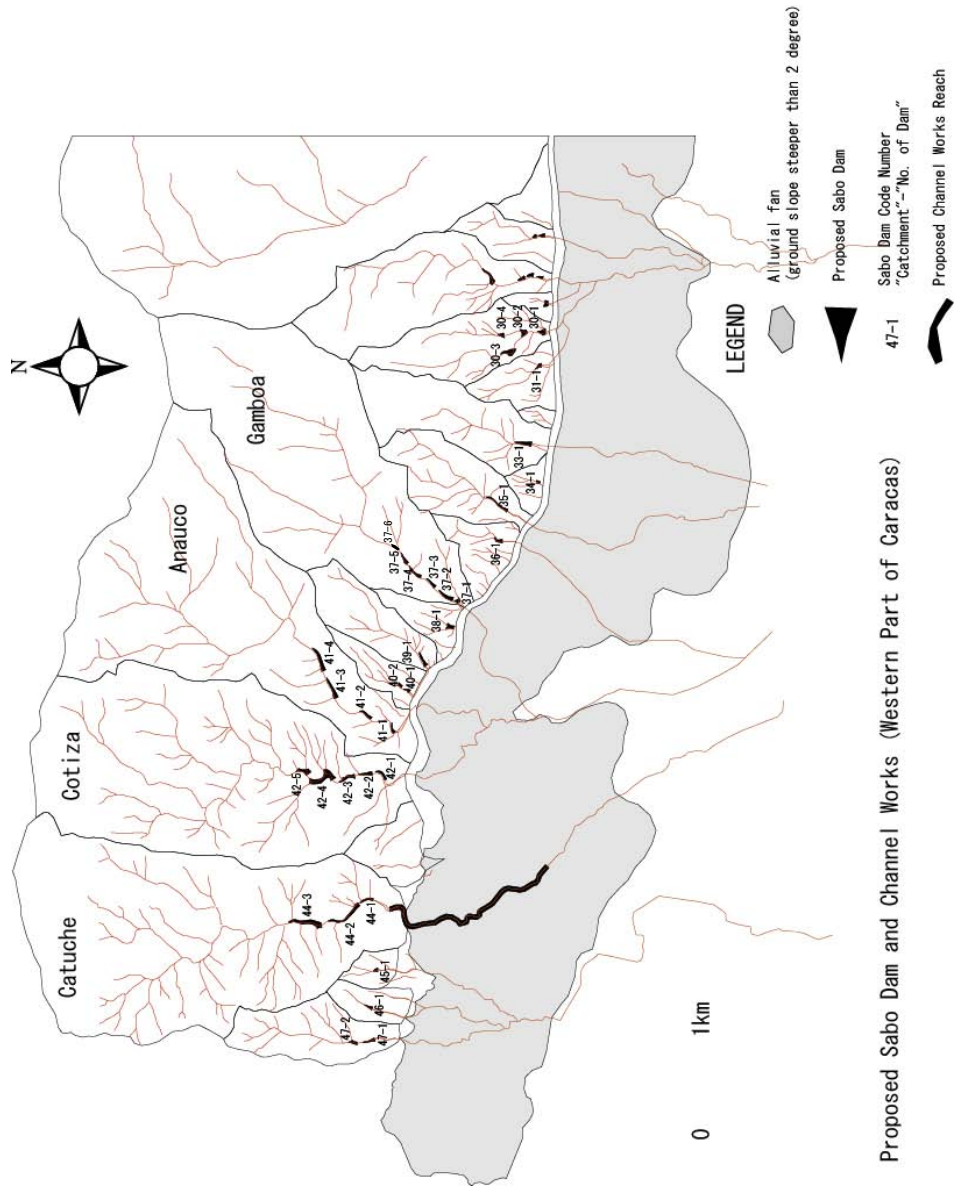
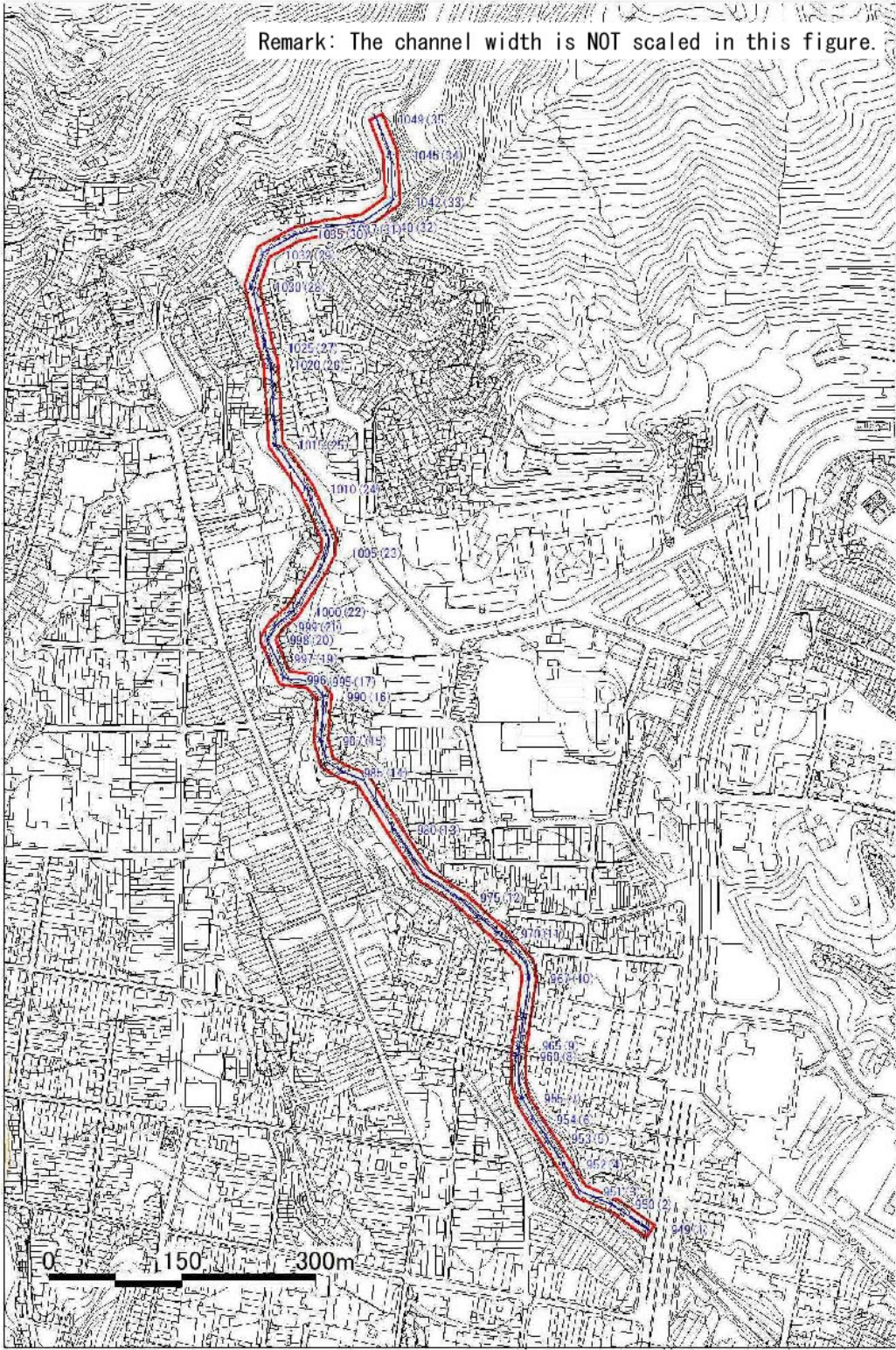


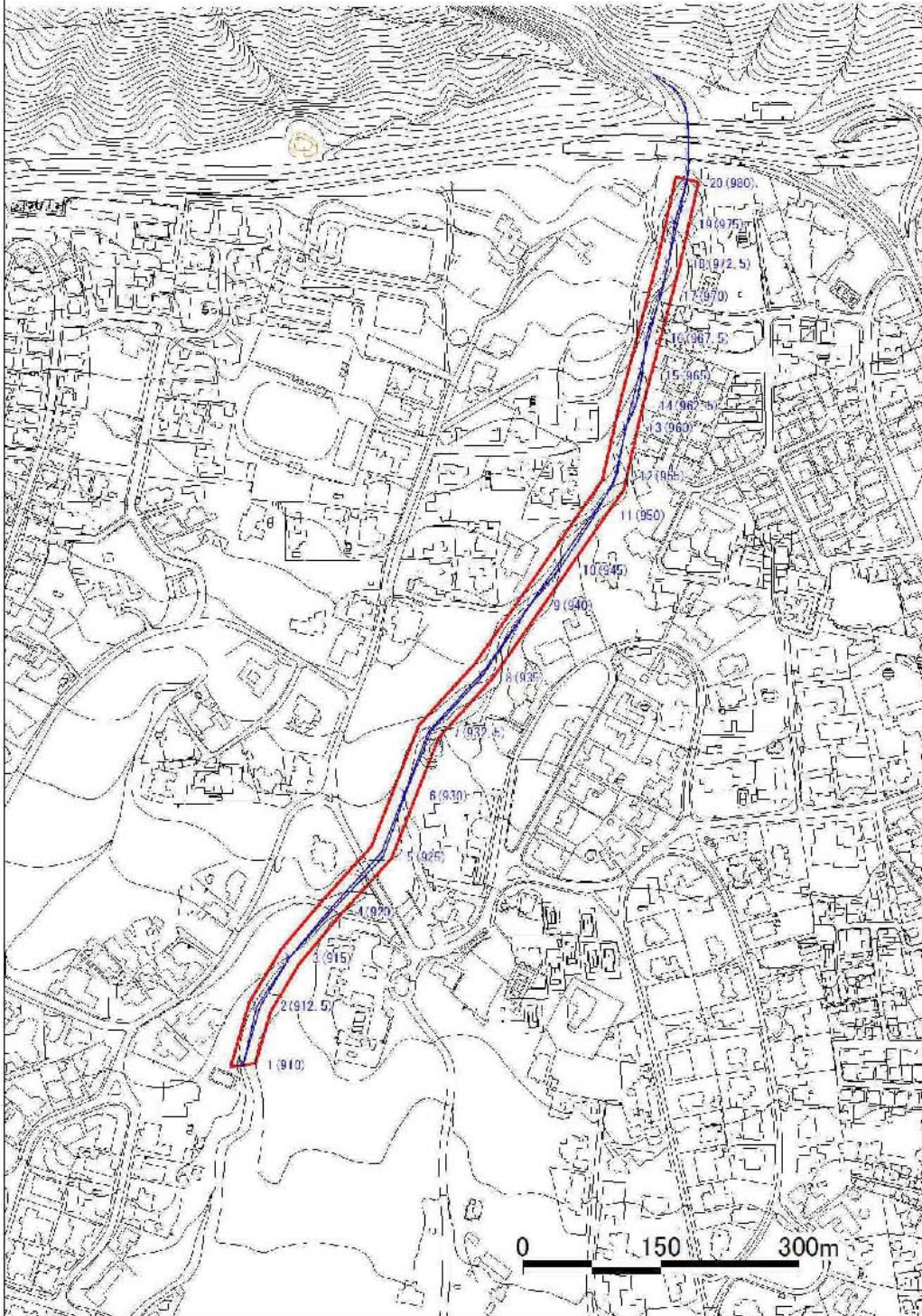
Figure 4.3.4.6(2/2) Location of Sabo Dam



Catuche

Figure 4.3.4.7(1/3) Location of Channel Works (Catuche)

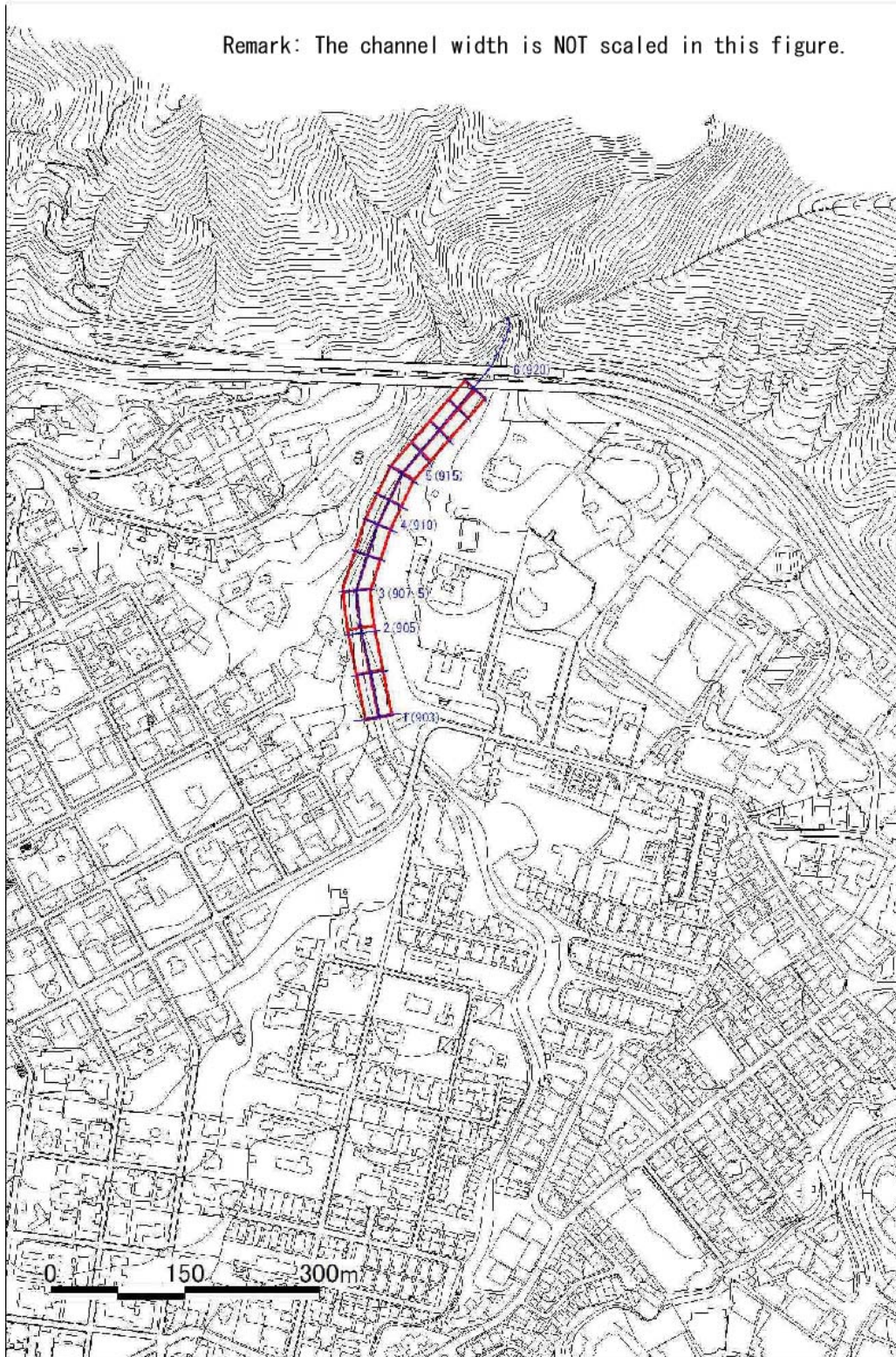
Remark: The channel width is NOT scaled in this figure.



Chacaito

Figure 4.3.4.7(2/3) Location of Channel Works (Chacaito)

Remark: The channel width is NOT scaled in this figure.



Tocome

Figure 4.3.4.7(3/3) Location of Channel Works (Tocome)

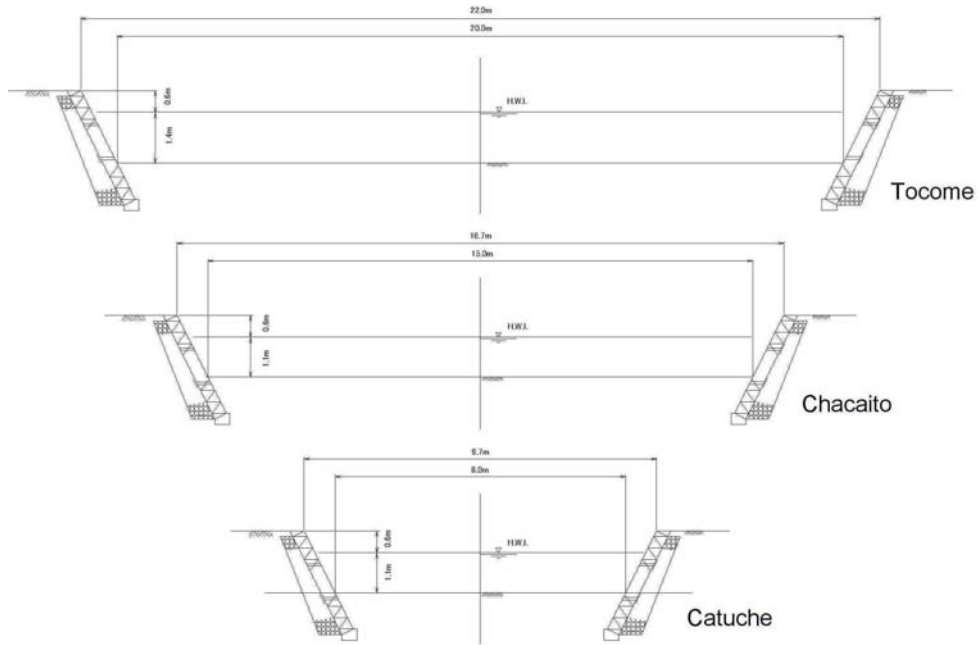


Figure 4.3.4.8 Cross section of Channel works

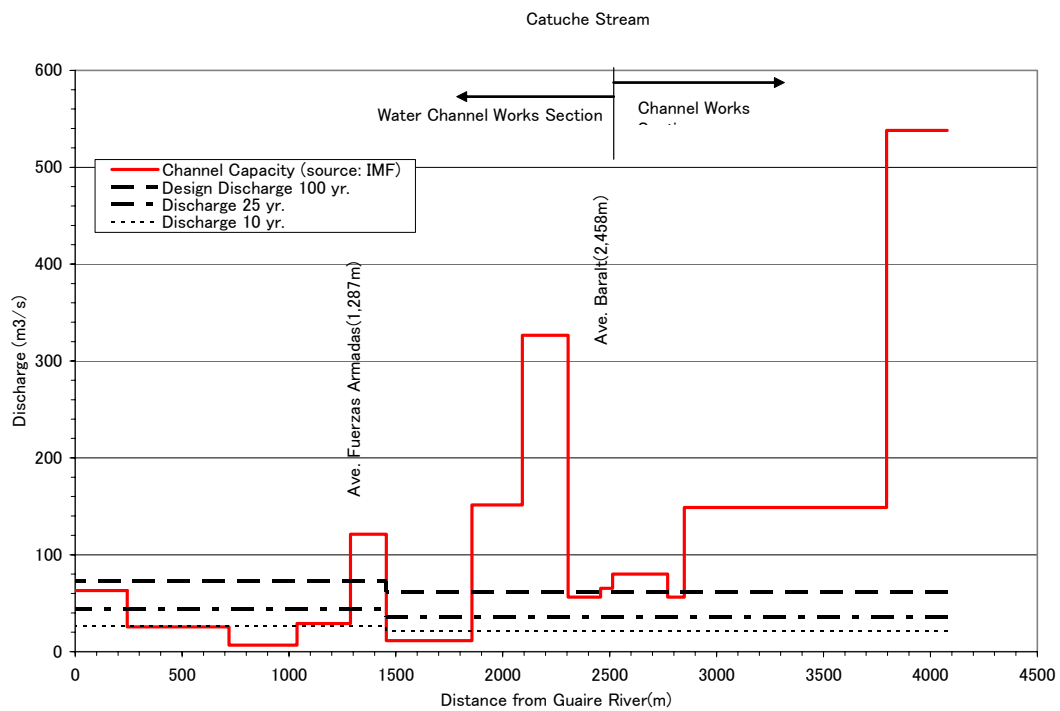


Figure 4.3.4.9 Channel Flow Capacity in the Catuche Stream (source: IMF)

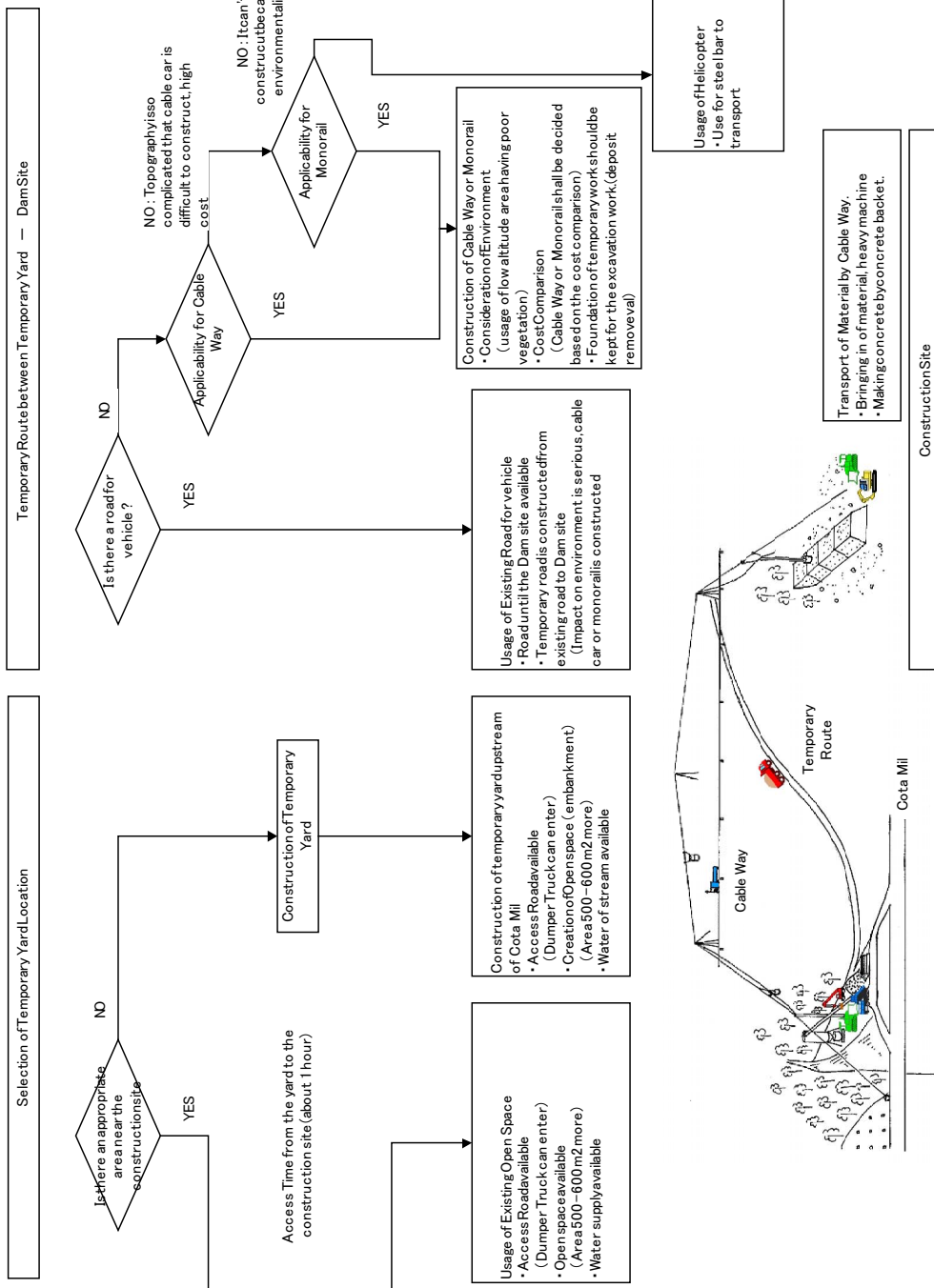


Figure 4.3.4.10 Procedures to select Temporary Yard and Temporary Route

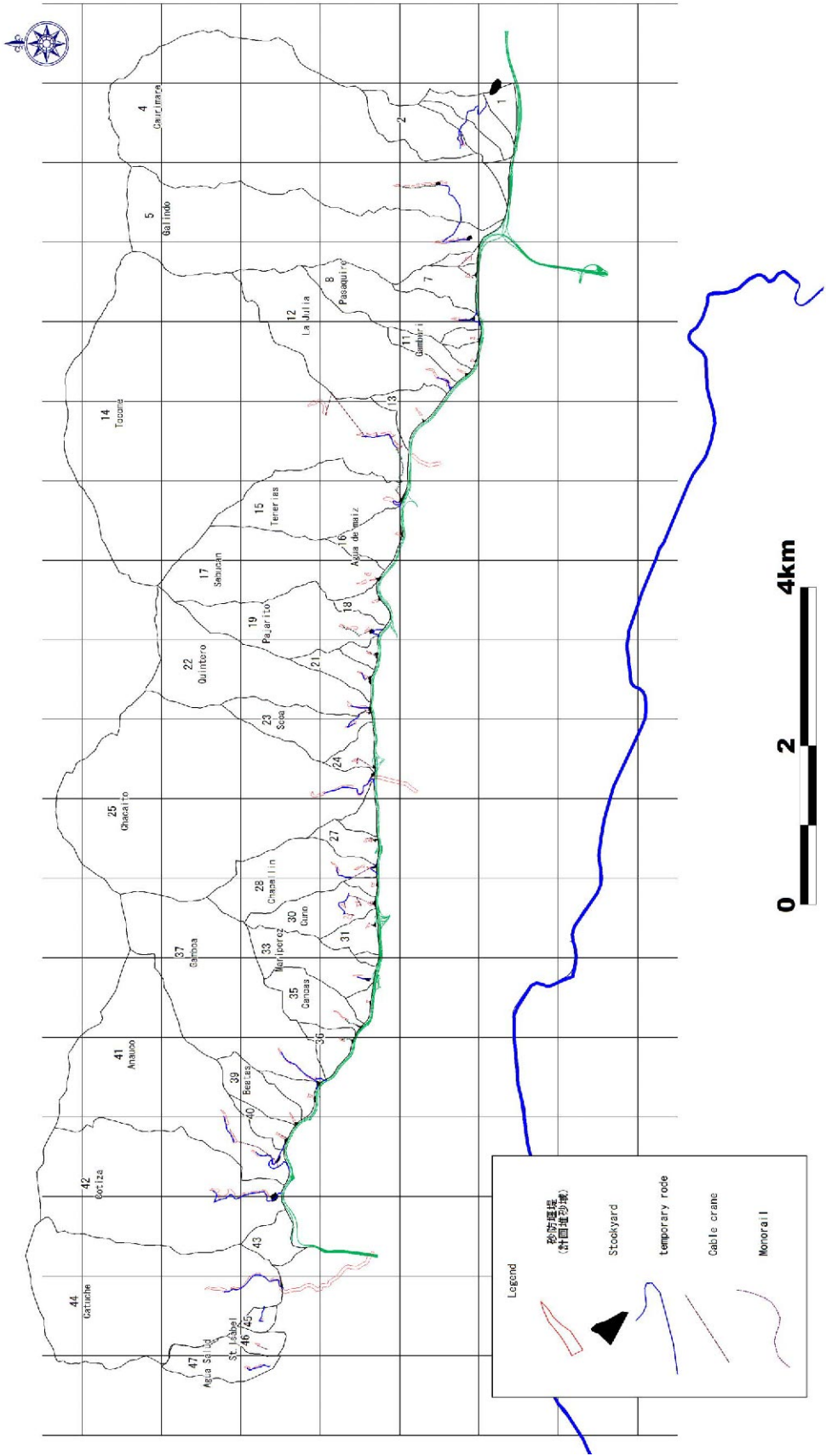


Figure 4.3.4.11 Proposed Temporary Works

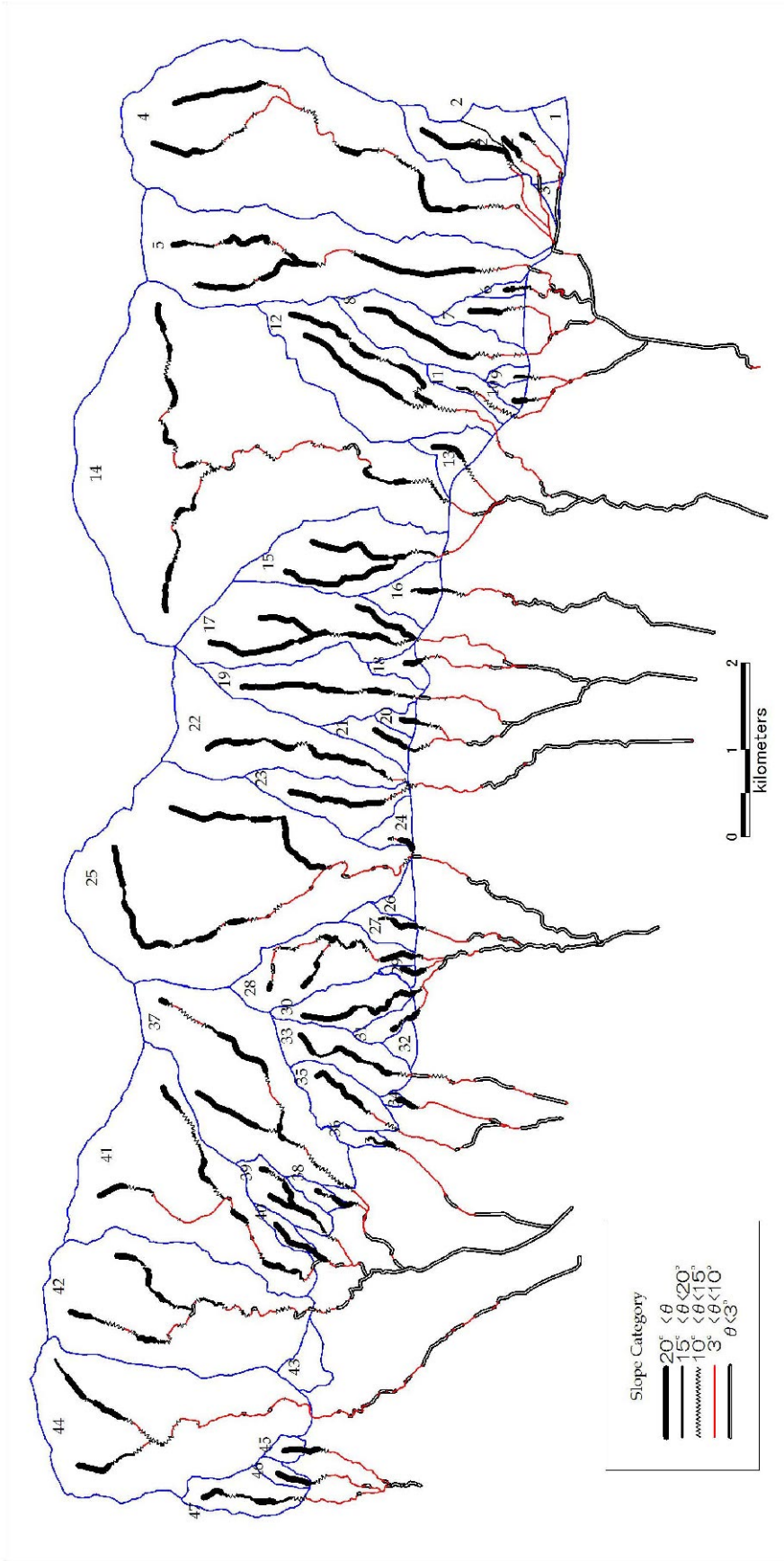


Figure 4.3.4.12 Segment categorized by Stream Bed Slope

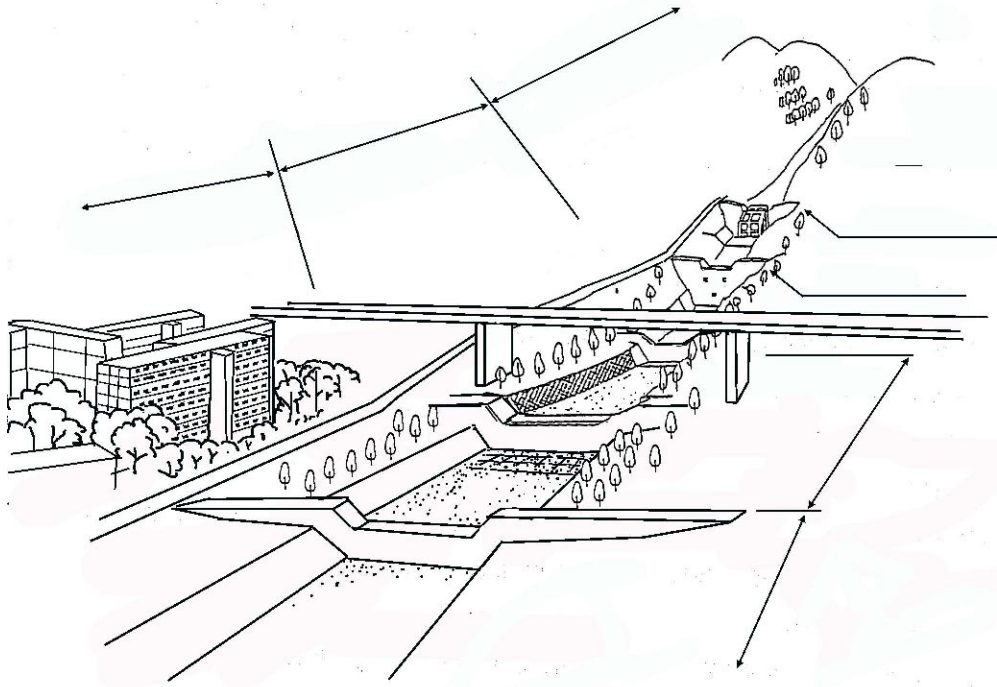
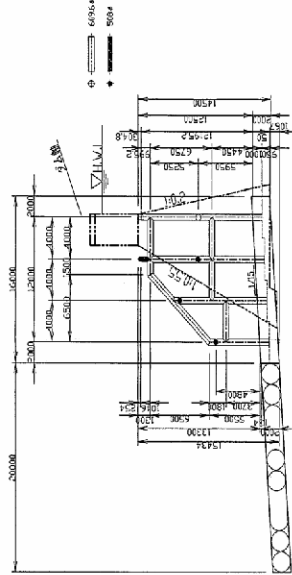
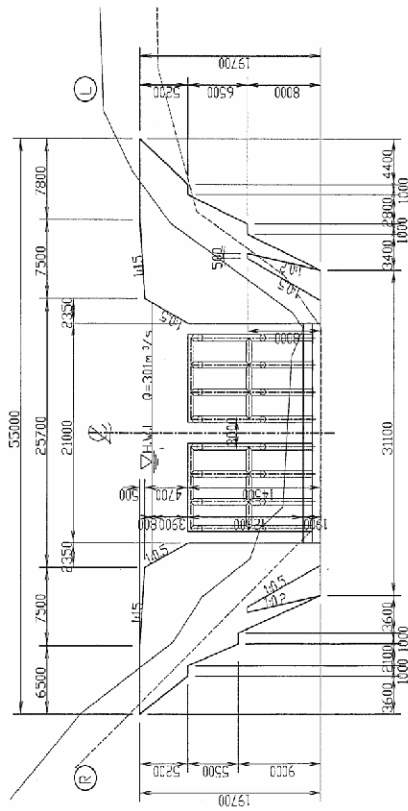


Figure 4.3.4.13 Illustration of Typical Sabo Dam Layout



| Work Quantity | |
|----------------------|-------------------------------|
| Concrete | Main Dam 3,300 m ³ |
| | Sub Dam m ³ |
| | Apron 420 m ³ |
| | Side Wall 810 m ³ |
| Steel | Main Dam 212 t |
| | |
| 4,530 m ³ | |

Figure 4.3.4.14(2/2) General Structure of Steel Frame Sabo Dam

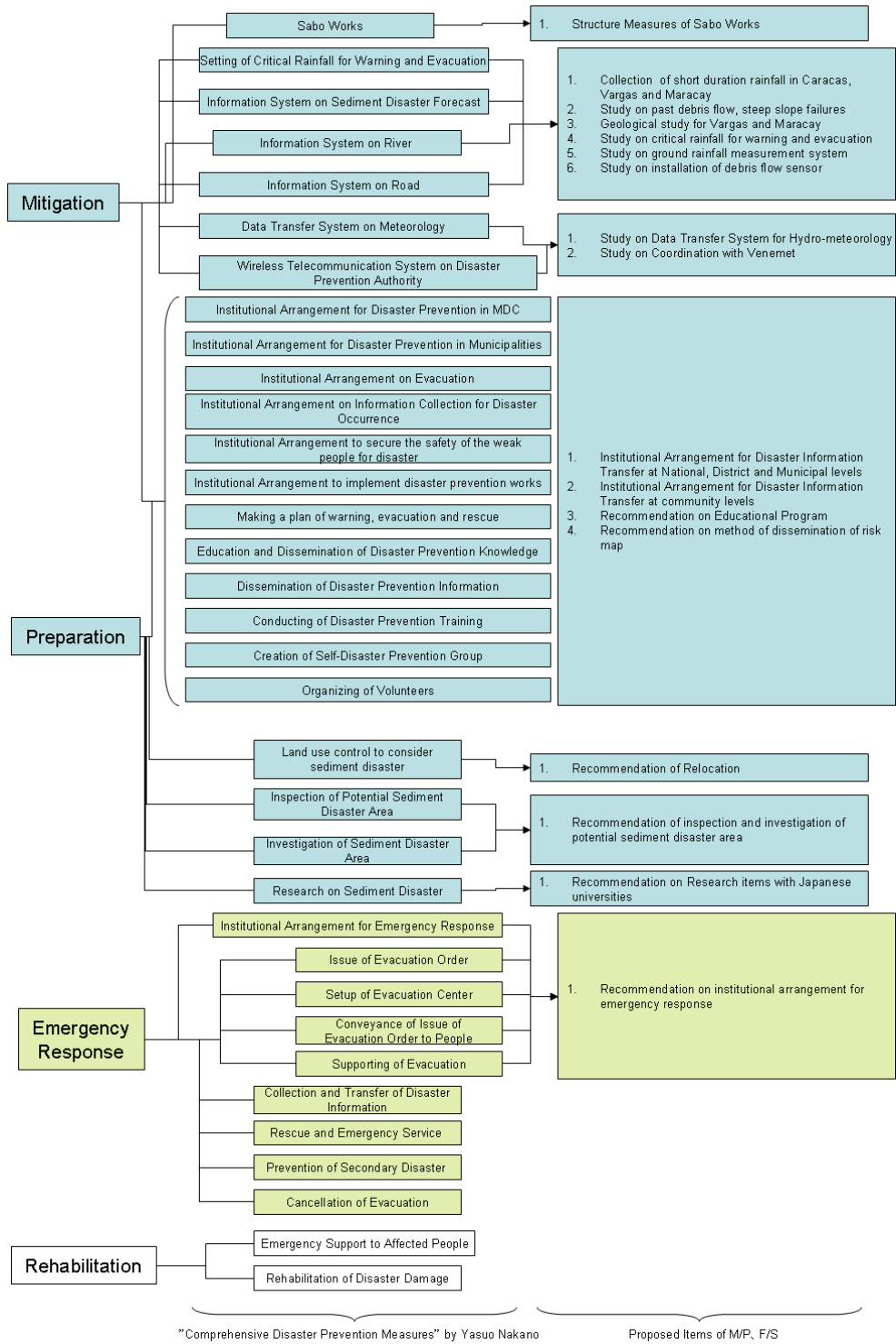


Figure 4.3.5.1 Overall Menu of Sediment Disaster Prevention Plan in Caracas

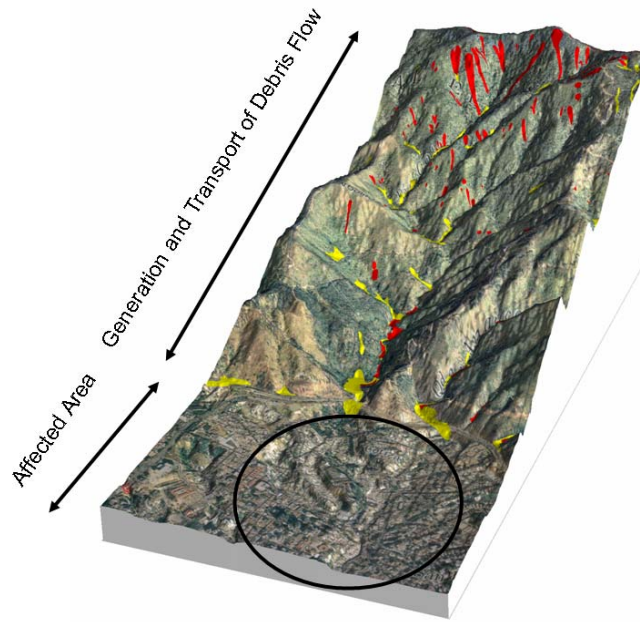


Figure 4.3.5.2 Closeness between Debris Flow Occurrence Area and Affected Area

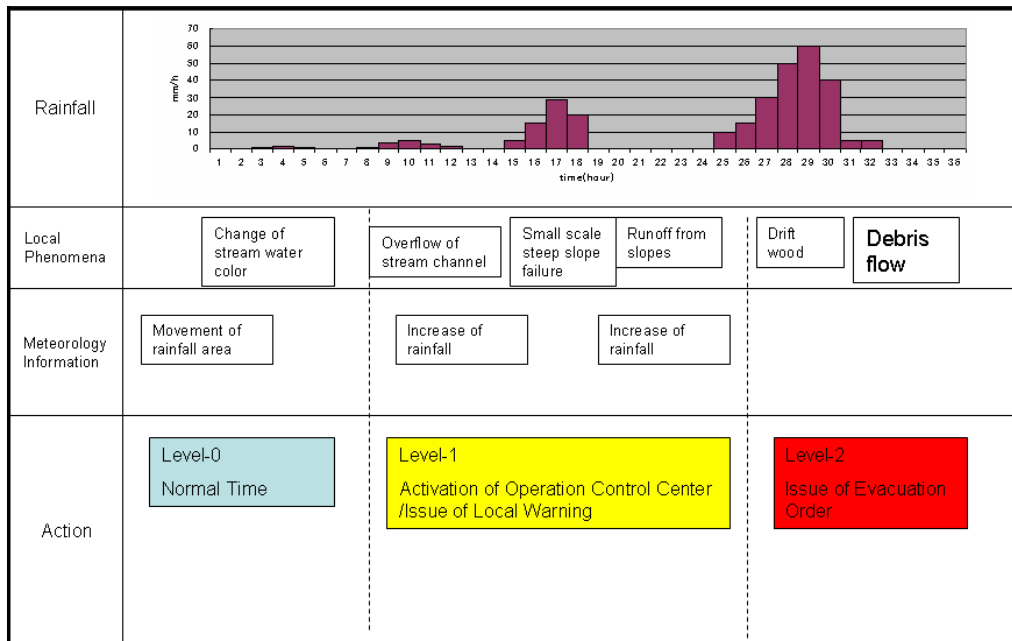


Figure 4.3.5.3 Timing of Activation of Operation Control Center

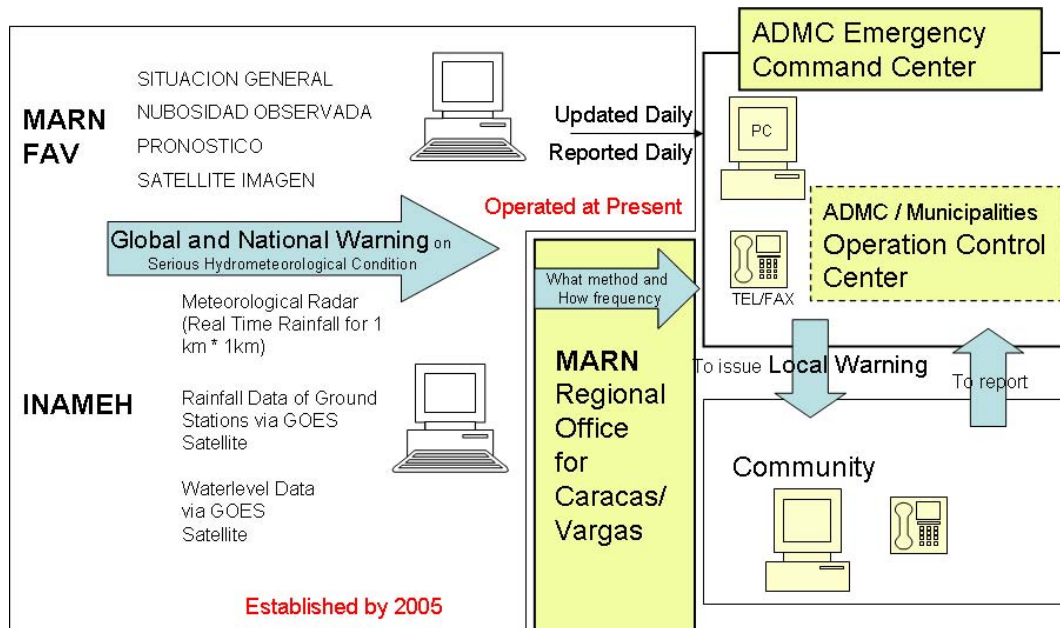


Figure 4.3.5.4 Position of MARN Regional Office in the Early Warning System for Caracas

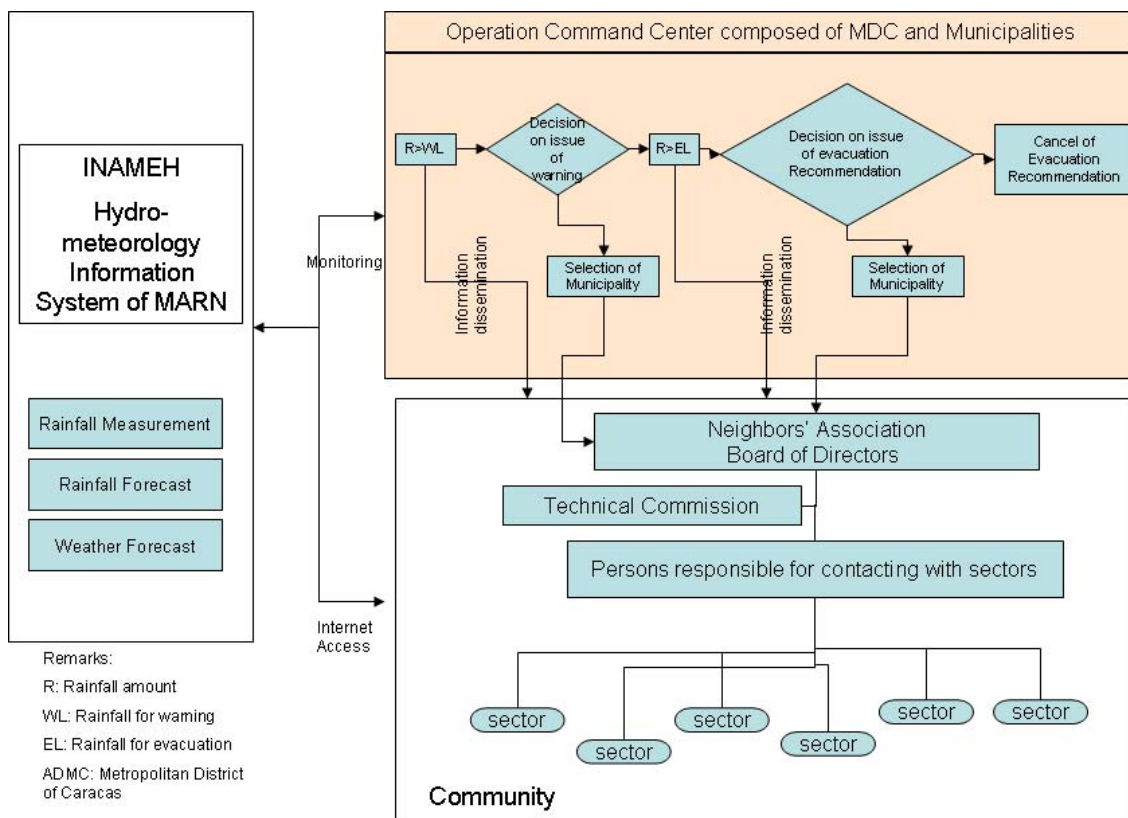


Figure 4.3.5.5 Proposed Information Transfer System for Early Warning and Evacuation in Caracas

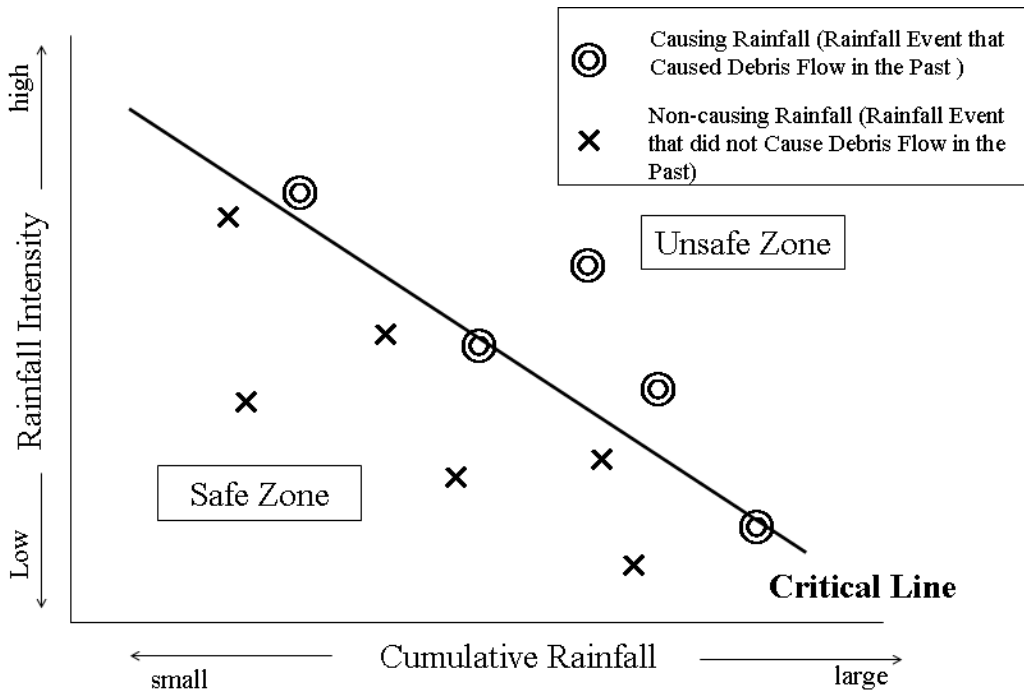


Figure 4.3.5.6 Concept of Critical Line

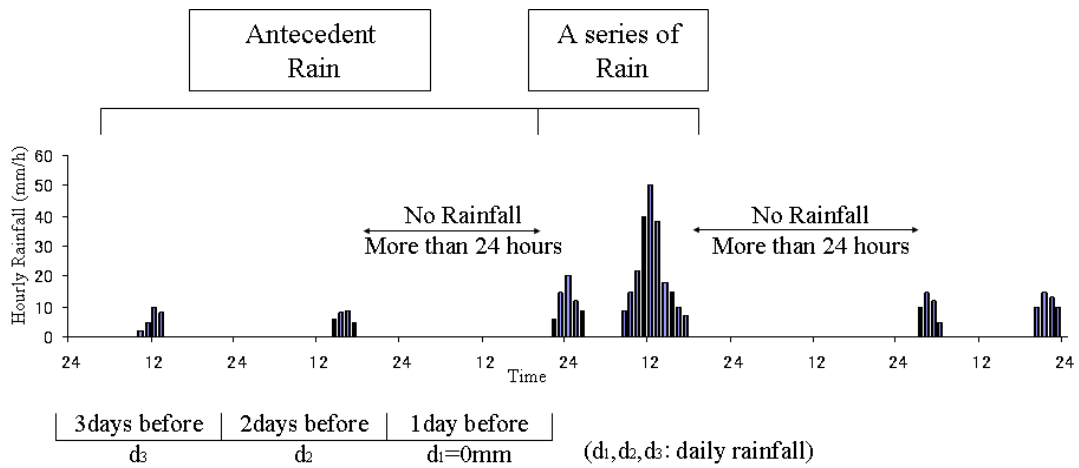


Figure 4.3.5.7 Concept of antecedent rain and a series of rain

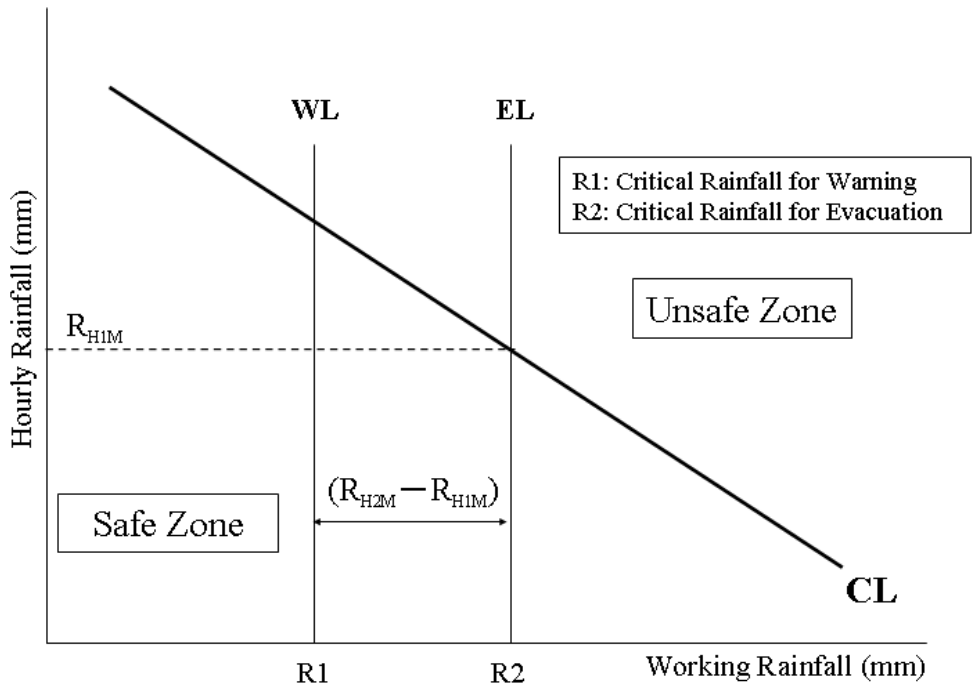


Figure 4.3.5.8 Concept of Warning Level and Evacuation Level

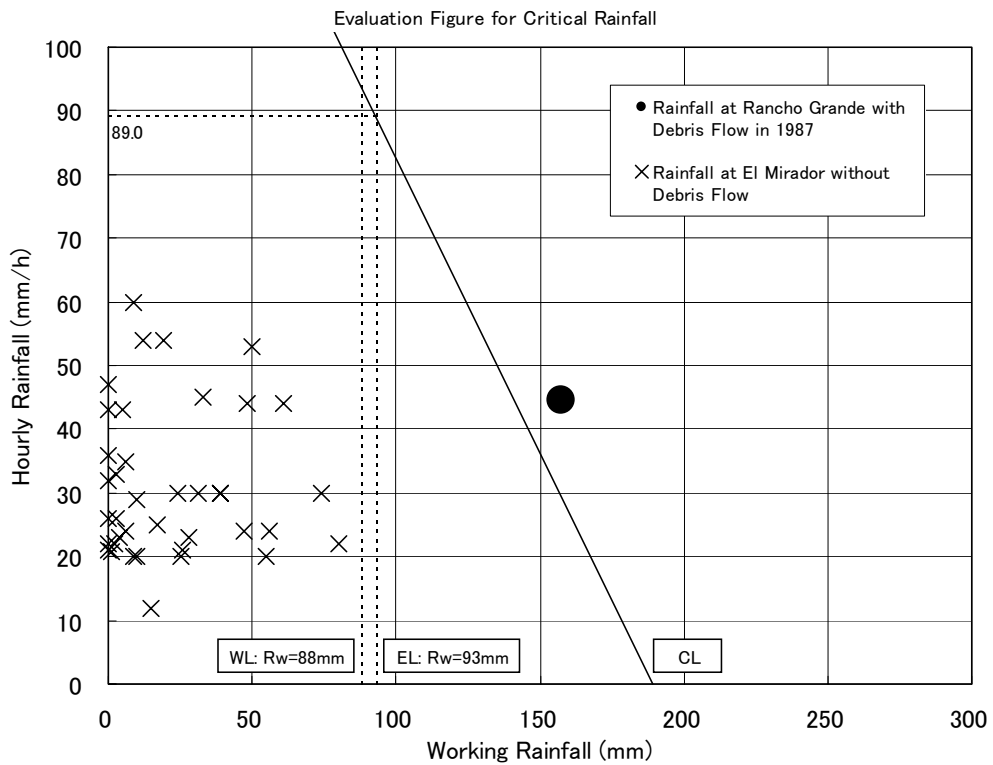


Figure 4.3.5.9 Warning Level and Evacuation Level of Limon River

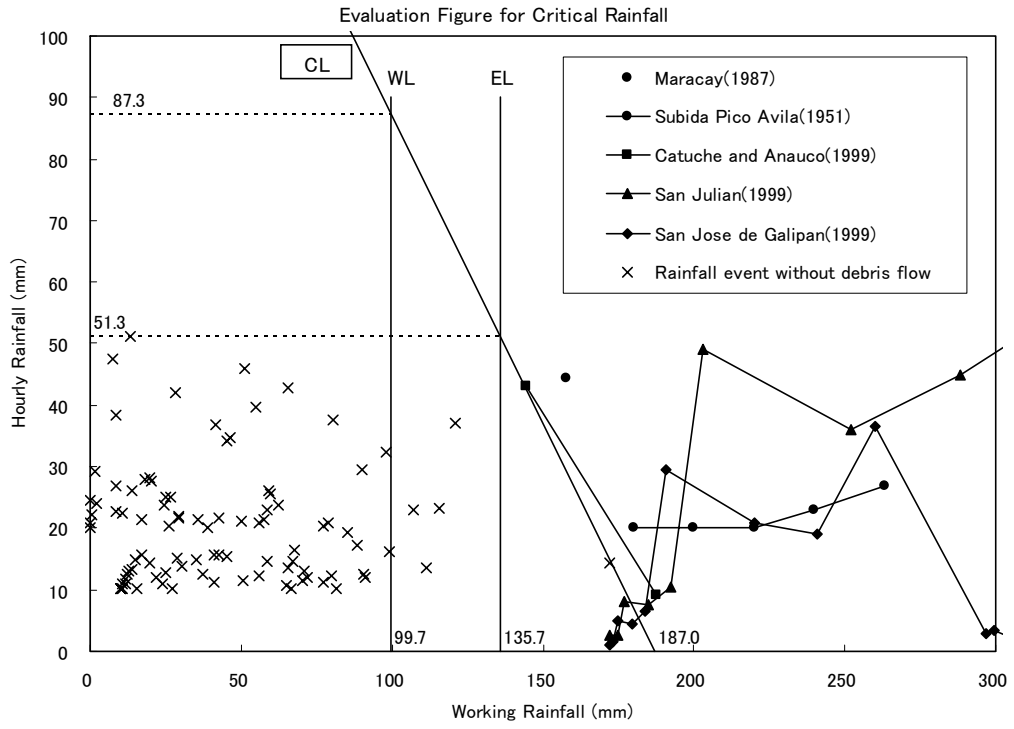


Figure 4.3.5.10 Warning Level and Evacuation Level for Caracas

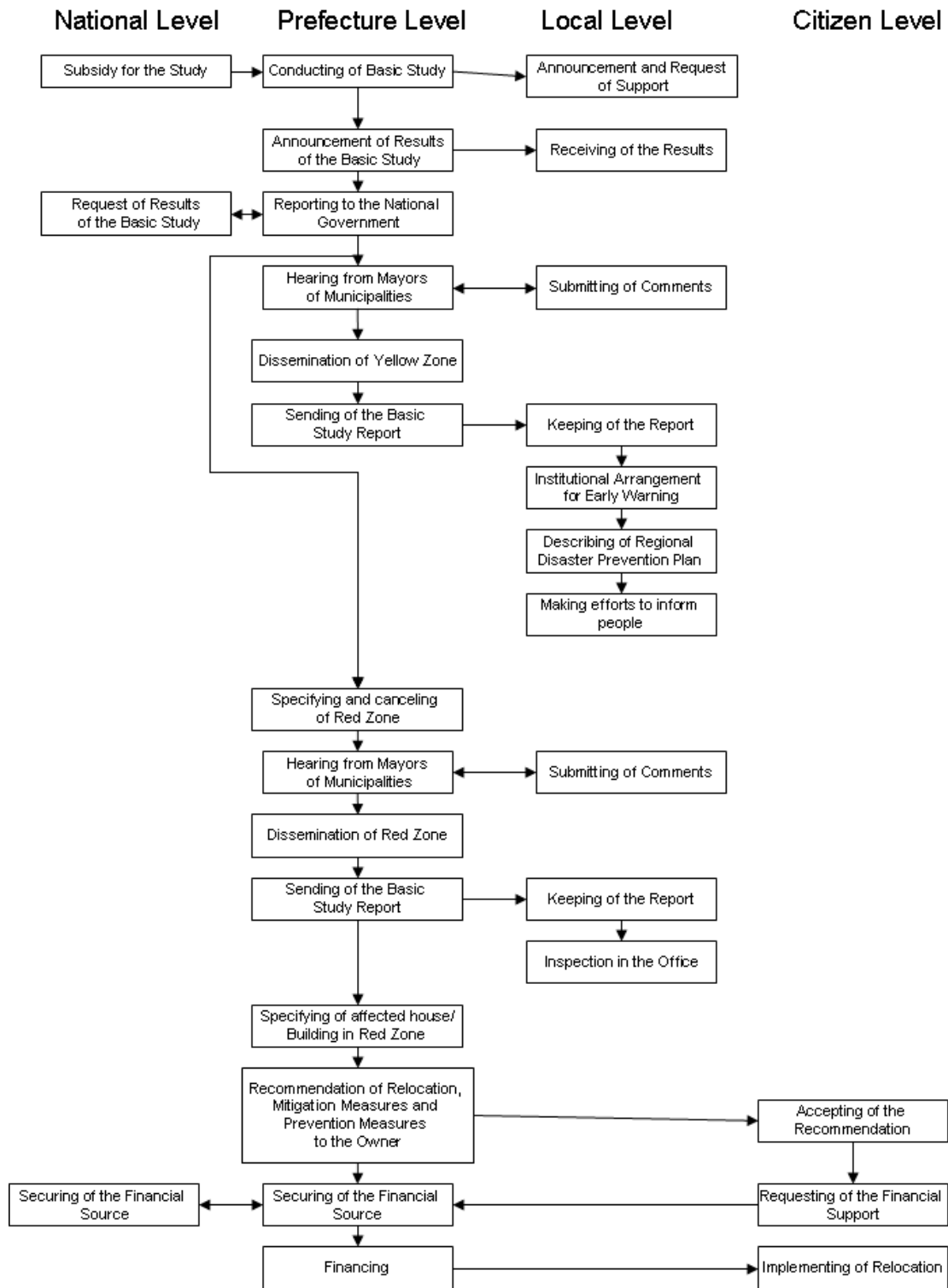


Figure 4.3.5.11 Process for Relocation suggested in the Japanese Sediment Disaster Prevention Law

| | | Implementation Schedule | | | | | | | | | | | | | | | | | | | | | |
|-------------------|--|--|---|---|---|--|------|------|------|------|------|------|------|------|------|------|------|------|------|--|--|--|--|
| | | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | | | | |
| Proposed Projects | 2003 Data Collection and Basic Investigation Preparation of Hazard / Risk Map for Sediment Disaster Study on Countermeasures Formulation of Master Plan and Study on Priority Projects | Structure Measures 3. Debris Flow Control Structure 4. Slope Protection Structure in Formal Area 5. Drainage Improvement in Barrio Area 9. Publication of Hazard / Risk Maps 7. Land Use and Development Control 12. Relocation from Risky Area | Design and Construction of Sabo Dam (Catuche, Chacalito, Tocome) Design and Construction of Sabo Dam (Anaucos, Gaurimare) Topographical, geological survey Promotion of Surface water drainage works in Community-basis in Barrio Area Update of Hazard Map (Landslide / Steep Slope) Update of Hazard Map (Debris Flow) Control of Landuse and Development (Debris flow, landslide and steep slope failure) Promotion of Relocation according to Hazard Map | Design and Construction of Sabo Dam (other streams) | | | | | | | | | | | | | | | | | | | |
| | | | | | Non-Structure Measures 6. Early Warning System 19. Emergency Command Center 11. Enhancement of Community Activity | Agreement on Early Warning System Telemonitorization of Existing Rainfall Station and New Installation Establishment of Disaster Information System Capacity Building of MARN-Caracas Regional Office Design and Construction Operation and Maintenance Continuous activity of community and support by municipalities | | | | | | | | | | | | | | | | | |

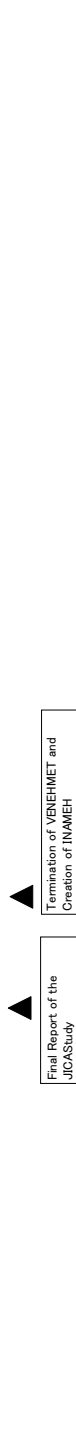


Figure 4.3.6.1 Implementation Schedule

CHAPTER 5
SOCIAL STUDIES

*“The communitarian participation is
the best antidote against the occurrence of disasters”*

Marielba Guillen

CHAPTER 5. SOCIAL STUDIES

5.1 Legal and Institutional Basis

5.1.1. Central Issues and Recommendations

This section seeks to establish the legal basis for disaster mitigation and preparedness planning in the Metropolitan District of Caracas (DMC). Further it is examined if the DMC has adequate institutional arrangements to pursue effective actions in order to complete and implement a basic disaster preparedness plan. After examining the legal and institutional basis, some recommendations are made in regards to coordination between government units and specific actions needed to address disaster countermeasures.

The core findings are that sufficient legal basis does exist for disaster preparedness planning, but that the institutional arrangements need strengthening in terms of coordination, professional training, establishing agreements and capacity building with community level groups and public organizations that form the risk reduction and response system in Caracas. There is a growing awareness of disaster mitigation and preparedness as part of a more basic concept of overall societal risk reduction. The lack of plan guidelines from the national office of civil protection and administration of disasters in no way prevents the DMC from completing its own plan effort. The basic recommendation is that more time and effort be spent at coordination as an operative methodology, as defined in 5.1.2 of this Chapter.

5.1.2. The Legal System as it Relates to Disaster Mitigation and Preparedness

(1) Overview

Public safety and security are guaranteed by the Venezuelan constitution, and municipal governments exercise considerable autonomy in establishing their own civil protection programs including local institutes that govern by ordinance. There are four levels to Venezuela's legal structure. At the top of the structure is the 1999 constitution is composed of 350 articles that cover far reaching aspects of government structure, peoples' rights, government obligations, and procedure. Under the constitution are the organic laws that set the framework for a particular subject area established in the constitution. At the same level are organic codes that formulate specific practices. The organic levels establish the guidelines for the ordinary laws that are found at the next level. The organic laws related to territorial management as most relevant to disaster management issues. Decrees with the force of law, which are statements of action taken by a particular government level, are also at the same level

as ordinary laws. The bottom level is that of ordinances promulgated by the municipal councils. These are shown in Figure 5.1.1

Each lower level generally conforms to the laws or decrees made at a higher level. It is a hypothetical pyramidal system built in on the concept of concurrency. The legal structure of laws as it relates to disaster mitigation and preparedness is shown in Figure 5.1.2. Relevant articles in various laws are listed by level. This provides the legal framework concurrency flow. In Figure 5.1.2, the main constitutional articles are cited at the national level, and the main articles are cited at the national level. The main articles from the organic laws are highlighted as are the major metropolitan ordinances. The disaster prevention and response responsibility has been clearly decentralized in Venezuela. The Office of the Metropolitan Mayor pointed out that disaster declaration is in the hands of the city councils regardless of the actions of the national assembly.

(2) The structure of laws related to citizen safety and disaster management

There are many articles in the constitution that relate to safety of the person, and the state responsibilities to address citizen security. In this study we have organized the relevant constitutional articles, organic laws and ordinary law into charts that indicates which level of government is involved by the article and how they relate to which stage of the disaster management process. We asked the question, is the legal structure broad enough to promote disaster prevention for different types of disaster events. The answer is yes. The legal basis is shown in Table 5.1.1, Table 5.1.2, and Table 5.1.3. Table 5.1.1 sets down the legal basis for addressing an earthquake event, and provides descriptors for specific laws. Figures 5.1.2 and Table 5.1.1 organize the legal basis by disaster category and stage in the disaster response cycle, demonstrating that all stages are covered in the law.

The law that created the DMC establishes certain governmental responsibilities including preservation of public order and the security of people and property (Chapter II: 3); and civil protection and security and the preparation for emergency and disaster and providing services of the firefighters (Chapter VII: 6). The ADMC council passed the Urban Guidelines Ordinance, (September 2003) that again establishes the responsibility for efforts in disaster prevention. These actions include: citizen education on subject of the disasters (Art. 74), Early warning systems and attention to mitigation measures (Art 75), information systems for disasters (Art. 76), and disaster prevention, especially in barrio areas (Art. 77). On March 9, 2004, the DMC council issued a degree establishing a metropolitan disaster coordination committee for civil protection and administration of disasters (CCCPAD). The CCCPAD functions are: (1) to plan, coordinate and develop activities with other governmental agencies

and (2) to provide and coordinate measures for prevention, education, and administration of disasters. Thus, there is sufficient basis for the departments and agencies of the DMC to proceed with disaster mitigation and prevention activities.

(3) Institutional Arrangements

Venezuela has four tiers of government institutions. The higher the government level the broader the coverage, with the municipal levels being the lowest levels and the service provider within their set boundaries. These levels are shown in the Institutional Pyramid, Figure 5.1.2.

At the municipal and the MDC levels, the civil protection agencies (institutos de protección civil) are located under a secretariat of citizen security, which usually also supervises the police and firefighters. In the national assembly there is pending legislation of a new law of risk management that could encompass citizen security as part of a broader concept of lowering risk to the community. To implement the existing laws there are many different agencies, ministries, and organizations that have partial responsibilities. A chart of these agencies and their relationship to the stages of the disaster management process is shown in Table 5.1.4.

5.1.3. Coordination

In disaster planning and management the coordination of resources (personnel, supplies, and equipment) is an essential tool for saving lives and protecting property. The central aspect of institutional capability is the quality and quantity of coordination procedures among and between government units to accomplish the tasks required of them at any given time. The larger the disaster the greater the number of entities involved in emergency and disaster response at different times. This calls for the use of new resources, and more decisions need to be made by higher government.

In order to understand the process a flowchart of an emergency/disaster event was developed to follow the life cycle and to identify the various institutional actors involved at different stages of the disaster management process. This chart is shown as the figure below. The chart is central to identifying when decisions are made, and by whom. It also allows us to see the broadening of the set of resources used in combating a disaster, and gives us a deeper sense of the need for coordination in the Caracas metropolitan district. The legal framework establishes that when primary attention units cannot control an event that they ask for assistance, and cede control, to secondary units (who have control over greater amounts of resources and operations). The key concept is that more resources are utilized (put into action) to control and manage the emergency/disaster event over time and that upper levels of government officials are brought into the process to make decisions, such as declaring a disaster.

The flow chart Figure 5.1.3 shows the response flows in four phases: emergency, disaster, and rehabilitation and mitigation. The Metropolitan Coordinating Committee on Civil Protection and Administration of Disasters will play a major role in all disaster and post disaster activities. This committee serves to fulfill the transversal coordination and communication role set down in the national civil protection and disaster administration law.

(1) Coordination defined

Coordination can be defined in many ways. Venezuela's Citizen Security Coordination Law (November 6, 2001) defines coordination as a mechanism to integrate efforts for the execution of actions. Those actions are addressed by principles of reciprocity, information exchange and cooperation in order to guaranty citizen security. This definition and reciprocity shall be utilized at the national, state and local levels. The local and state level actions shall be concurrent with those of the national level. For the plan process now under development we use a definition that is more generic and functional in the context of the Caracas metropolitan district reality. Coordination is defined as working together to obtain the resources and to select the necessary activities to achieve an objective or an agreed upon task.

(2) Application of coordination in this project

1) Generic application of coordination

The core function of coordination occurs to accomplish objectives and tasks. In practice this means that one agency, or individual program, serves as the coordinator for activities that involve more than a single unit of government or agency of government. Thus, any coordination requires that tasks (outcomes) are established, and agreed upon at the outset. This requires some form of agreement that guides that work effort.

2) Horizontal coordination

Horizontal coordination occurs between two or more units of government at the same level or two or more units within the same government entity.

3) Vertical coordination

Vertical coordination occurs between two or more units of government at different levels. Example: a ministry and a municipal department working on a single project.

(3) Analysis of institutional coordination in Caracas

The metropolitan and governmental units in the Metropolitan District of Caracas area are new (except for Libertador which was the Federal District up to 1999). While there has been civil defense agencies established for many years (dating back to 1958), civil protection as a broader policy of government is new under national law (1999) which directs state and municipal governments to maintain a coordinating committee for civil protection and disaster administration.

Three types of coordination issues are central to the institutional analysis. First, is the strength of horizontal coordination within municipalities at the formal and informal levels. Second, is the strength of horizontal relations between municipal units at the formal and informal levels. Third, is the strength of vertical relations between different levels of government; in this case the municipality, the MDC, and the national ministries that operate programs and services within the metropolitan area (including roads, housing, and parks).

The coordination strength or weakness were determined through interviews with local counterparts, through a review of formal documents that call for coordination in organization charts, etc, and by searching for formal agreements that require coordination to fulfill the terms of the agreements. Under the reality of present political period of the country, it is informal coordination that works best. Informal coordination is based on personal friendships and professional respect rather than institutional arrangements. The coordination within municipal units is the strongest, mostly coming from years of personal contact. Thus it is fragile and can be easily interrupted by political interests. Personal coordination requires that local cultural norms are followed, such as who calls who, and who is invited to a meeting and how. This is acceptable, as it is customary. The institutional problem is that there is no consistency in the process over time and no clear forms of reciprocity established.

Horizontal coordination between municipal units on a formal basis does not appear to exist. No signed agreements that establish or promote coordination were found. In part this is due to the newness of the PCAD effort under this government form. No consistent types of joint exercises between units were found. This is not positive for disaster preparedness because integration of effort requires practice.

Vertical coordination between different levels of government does exist at the formal and informal levels. The linkages however are weak, and mostly top-down from the national to the state/metropolitan level. The top-down linkages are part of the historical way institutions are

organized in the country. For this project, the metropolitan government provides overall fire and police services for the district.

There are no written formal agreements on a service or a project level between the metropolitan and the municipal governments. Linkages for joint efforts at civil protection appear in reports and documents, but these linkages (through committees) have not been implemented on a consistent basis. The lack of consistency makes coordination difficult to achieve, and limits the ability of the metropolitan district to properly manage multiple resources requirements during a disaster or a catastrophic event. One working example of vertical coordination that appears to function well is conducted by the police. There is a committee established at the national level of the Vice Minister of Interior and Justice that coordinates criminal issues with the Metropolitan District of Caracas police, the municipal police and with the State of Miranda (where Chacao, Sucre are located). This committee meets on a regular basis on task related to crime reduction in the area.

The existence of the Barrios creates special coordination challenges. The uncontrolled areas are constructed without regulations, proper roads, and lack of adequate water. They are, by definition, risk areas for many natural hazard events and are socially vulnerable. The ministries at the national government level operate housing improvement programs with municipalities directly, and not with the metropolitan district. The ministries make the policy and provide the resources, making municipalities dependent national directives. There is no integrated effort for the ministries to coordinate with the DMC, and there are weak incentives to coordinate. Table 5.1.5 is a summary chart of the horizontal and vertical coordination levels presently understood to exist. More effort is required to strengthen coordination as a functional PCAD concept.

(4) Tools for coordination

Formal tools for formal coordination efforts exist under the law. These tools include: *actas convenio*, *acuerdos mutuos* and *mancomunidades*.

1) Convenio (contract)

This is a legal agreement to achieve some objective and obligates both parties to perform. It is very useful when different units and levels of government are involved in delivery of a complex program, such as an Early Warning System where the collector of information (MARN) may not be the final user of information (civil protection) or the maintainer of the data system.

2) Mancomunidad

This is an agreement to conduct an activity between two or more municipalities units. It has been used in the garbage collection system where the electrical utility company collects the local garbage fees along with the electric fees and then rebates these to the municipalities to pay the private collection companies. These agreements carry less legal support than the convenio. It is mentioned separately in the national constitution.

3) Acuerdo Mutuo

These are agreements to provide support and services or activities. They can cover as many issues as the parties want, and are based on voluntary participation. These can be used to bring together various public and private agencies and groups to address common problems and can be time limited.

(5) Coordination for the Alcaldia Mayor

For mitigation and prevention counter measures that require coordination between two different government organizations (horizontal or vertical) the Alcaldia Mayor is the most appropriate institutional actor to serve as the coordinator. Different offices within the Alcaldia Mayor can act as coordinator depending on the objective or task. For example, for preparation of an evacuation plan, the DMC IPC would serve as coordinator. For upgrading of ordinances related to urban planning, the Office of Urban Planning and Environment could coordinate this work. For projects that require many years to complete, consistent coordination is needed. Therefore, the use of the strongest written agreement possible is recommended for long term efforts.

The DMC Coordinating PCAD Committee should be the main entity to manage the process and strengthen both horizontal and vertical coordination. Through the use of coordination many of the counter measures in the plan can be implemented if a general principle is followed. That principle states that the implementing agencies and managing agencies do not have to be the same as coordinating agencies. Groups, or sets of agencies, can be involved in one project under a general coordination process. For example, building reinforcement will take place in all municipalities, but may require a standard set of field review procedures, and building stabilization techniques. Coordination of this project could be done by the Metropolitan District of Caracas's Engineering Office, but the guidelines developed by private contract and the field work conducted by municipal departments.

Many counter measure operations extend to multiple municipalities, and require the participation of many agencies. To be effective the process requires collective efforts. This is a fundamental reality that must be accepted by all the participating actors. During a disaster there many of the actors are not part of the formal response process. This is because in the Barrios the first respondents and most likely, the rescuers will be people at the incident (site) level; that is the residents. Working collectively can mean that traditional role and level of control over a project is shared with others in order to achieve an agreed upon objective. This administrative principle needs to be agreed upon from the upper level of administration at all levels of government and supported by the administrative leadership. An annual review of all coordination efforts should be made by the MDC PCAD Coordinating Committee to determine what progress has been made to expand the network of potential actors, and ways to continue to improve the coordination system.

5.2 Rescue Operations / Medical Service

5.2.1. Overview of the Response Mechanisms and the Health Sector

In order to measure an emergency impact and provide an adequate response, 4 levels were formulated where the situation is controlled using:

- (1) Some resources locally available.
- (2) All the local resources.
- (3) Resources of superior administrative levels.
- (4) Resources at the national level.

At each level, in accordance to the Disasters Administration and Civil Protection National Organization Law, three types of organizations face an emergency situation. The first is provided by the police and firefighters corps as organizations of primary attendance. The organizations of secondary attendance are all the public or private institutions that are requested to collaborate because of their degree of specialization and/or resources. And finally, there are the supporting organizations that can provide information and resources for the two former groups of organizations, in order to manage the emergency jointly¹

Organizations of secondary attendance include Red Cross, NGOs, groups of volunteers. And supporting organizations include Ministry of Health and Social Development: MSDS [initials in Spanish] and the Army.

¹ Gaceta Oficial. Ley de la Organización Nacional de Protección Civil y Administración de Desastres. Noviembre 2001.

The responsibility of metropolitan civil protection is to obtain and provide support of medicines, materials and equipments supplies required by the organizations of primary and secondary attention.²

The Civil Protection and Disasters Management system has a national, state and municipal level. This system coordinates the work of different public organizations in relation to civil protection issues. One of these public organizations is MSDS which has stipulated a specific mission related to the sanitary aspects of catastrophes. Currently, the national office of Civil Protection (CP) is revising the legal framework and the organization in accordance with it for planning formulation.

The health sector is constituted by a private, a public, and a military sub-sector. The public sector is formed by multiple institutions that do not operate not in an integrated way because of the decentralization process. The MSDS is ruling the health sector and has the responsibility of the formulation, design, evaluation, control and monitoring of the policies, programs and plans, and being the municipality level the executive entity.

At present, there is identified a technical committee of emergencies and disasters working to elaborate the plan for emergencies and disasters of the MSDS that will be as guidelines in activities related with the risk management in this sector. On the other hand, in the military health department, due to the characteristics of its organization, contingency plans are demanded and to be put into practice periodically. Table 5.2.1 shows an abstract of some aspects of the health sector.

5. 2. 2 Response Mechanisms and the Health Disaster Preparedness Program

(1) Little Coordination Activities

There are little coordination for prevention and mitigation among the technical units of the different leading institutions both at the pre-hospital and hospital level as volunteers groups, firefighters, police, the MSDS, CP, Ministry of Infrastructure, Ministry of Defense, international organizations, NGOs, Red Cross, the Army, and others. This delays an effective response both at pre-hospital and hospital activities.

(2) Planning and Technical Programs

- 1) Disaster Plans
 - a) Civil Protection

The CP has responsibility to obtain and provide support of medicines, materials and equipments supplies required by the organizations of primary and secondary attention in

² Ibid

each level of the response (national, state or municipal) according to the impact of an emergency.³ CP has to organize the response in each level and instances. But at present, from the national level to the municipal level there are no official documented plans.

b) Ministry of Health and Social Development

The Emergencies and Disasters Office of the Population Health Office has recently presented an emergency plan (Figure 5.2.1). However, because of the decentralization process, most of the public hospitals are being administered by the ADMC while the MSDS has a ruling role, the emergency plan only considers a response of the medical institutions that are still under their administration or the ones that belong to the national government programs (Barrio Adentro, Popular Doctors' Offices, Popular Clinics), without considering the major public hospitals administered by ADMC.

As for the inventory of hospitals and medical resources and staff, the Hospitals Net Office has just started an inventory process of all the national public hospitals.

c) Hospitals

The hospitals only have emergency plans within their ordinary operating structure, which does not take into account situation of disaster event. They do not consider disaster events in which the own hospital infrastructure is affected.

In May 2004, the MSDS gave instructions to the ADMC through a guideline to establish hospital emergency committees, which guideline includes some actions as part of a contingency plan and recommendation of the elaboration of hospitals for emergency evacuation drills.

2) Mass Casualty Management

a) Pre-hospital Activities

There are four main actors for the pre-hospital activities: Firefighters, Civil Protection, Groups of Volunteers and Community. Table 5.2.2 illustrates their recognized capacities. The darker spaces indicate strength and the lighter indicate weakness.

Firefighters

³ Op cit. Gaceta Oficial

The fire brigade has a military-type organization structure, this guarantee a chain of command based on preparation and training with a fluid information system that enable planning to face disasters. Concerning the resources, this brigade has 25 rescue units and 40 fire trucks which would cover the needs for the next 5 years. As for firemen, the international average is 0.8-1 fireman/1,000 inhabitants, thus, 5,000 firemen (2,300 firemen at present) are required. Currently, according to the Fire Department, approximately 30% of the firefighters live outside Caracas. This means that in case of a disaster and if they are not in service, some time will pass until they arrive, which besides will depend on the good conditions of the roads to Caracas. As for the stations, according to the needs in Caracas, 30 stations will be needed for the next 5 years (21 stations at present).

In relation to the ambulances, there is a deficit that is intended to be controlled with the unification of the service among fire department, public hospitals and CP. Since ADMC is in charge partially (central government is covering some liabilities) of the administration of most of the public hospitals, 21 ambulances are serving them.

Volunteers groups

There are groups of volunteers specialized in searching and rescue operations that are also trained to offer first aid and basic vital support. There are the approximately 90 groups of volunteers registered in the Metropolitan Civil Protection office. These groups are divided in missions: training (to train new volunteers and teach them theoretical and practical aspects), planning and operations, registration and control; legal aspects; communications, among others.

The training they offer is really good and has the support of the Metropolitan CP. They have trained personnel from foreign and national institutions. At metropolitan level, the groups of volunteers have identified the leadership of the Mayor's Office through the PC of the metropolitan area in order to lead the institutionalization process of these groups thus benefiting their updating, equipping and the creation of strategic alliances so that private companies can collaborate with this activities. We think that all these activities can be included in a rule of procedures that enable a better coordination and communication among the groups of volunteers and CP.

Community

The immediate support of the community to help the victims in the event of disasters is empirical and it could be more efficient and effective to fill the lighter spaces of the Table 5.2.2 by transferring the capacities of the more qualified actors.

Although in the pre-hospital activities there are more actors than those included in Table 5.2.2, this is useful to identify where the efforts and capacities transfer must be directed.

b) Hospital Activities

Hospitals⁴

Hospitals and ambulatories of the MSDS, Venezuelan Institute of Social Security – IVSS [abbreviation in Spanish], Ministry of Defense, Prevention and Social Assistance Institute for the Education Ministry personnel – IPASME [abbreviation in Spanish] and other organisms as CANTV (telephone company), Luz Eléctrica and the Journalists Association (see Tables 5.2.3 and 5.2.4)⁵ are located in Libertador. The major health centers are not equitably distributed and the effects of an earthquake would not be limited to only one municipality but would affect as a whole.

The hospitals are not organized as a network for facing situations of disaster. At the present time, if a serious event occurs, they are only in the capacity to coordinate at the time of the disaster, without having an action plan and without knowing the real capacity of the system. Most of hospitals do not have disaster plans, and the supplies for emergencies are not considered.

The number of physicians is 54,000 approximately in the whole Venezuelan territory and 14,676 nurses.⁶ It must not be considered just the medical personnel at the Caracas area but it is necessary to assure a good communication network to convoke the necessary personnel at the appropriate place as soon as possible.

Many hospitals are rather old and, many of them do not have ramps of access for evacuating the patients in litters, wheeling chairs, assuming that elevators could not be used for some emergencies.

Military activity

⁴ At this moment, there is no information about the private health facilities available to the JICA Study Team.

⁵ www.msdm.gov.ve

⁶ La Salud en las Américas, edición de 1998, Volumen II, page 584

The military has the contingencies plan. They have personnel trained for evacuation, fire, communication, etc. They have identified the zones for the triage of the evacuees and areas to place additional beds on, separation of the patients according to the gravity of injury. The access is secured with the heliports and large peripheral zones which can be used in case of collapse of the infrastructure itself.

Salud Chacao

At the municipality level, there is an effort in Chacao. “Salud Chacao” is a program equipped with 4 ambulances and 2 vehicles to provide medical service to the neighbors and to attend any emergency in this area. They have 4 medical centers and one emergency room. In massive events, the Civil and Environment Protection Institute of Chacao activates the Risk Management Bureau in which are participating “Salud Chacao”, the fire department, and the police. They have an agreement with private clinics to provide in case of emergency with 10 beds, including medical service for 48 hours free of charge.

5. 2. 3. Assuming Scenarios with the Existing Conditions

In the case of the 1967 scenario earthquake, it is estimated that out of 314,657 buildings and 2,740,381 inhabitants, there will be 10,020 heavily damaged buildings, 602 deaths and 4,306 injured people.

After an earthquake, it is possible that the small injuries, it means those that do not require admittance in a hospital, exceed the number of major injuries at a 10:1 rate.⁷ In Caracas there are 8,876 beds⁸ with the average occupation percentage of 53%,⁹ which means that 4,170 beds would be available only in case no damage would occur in those hospitals.

Figure 5.2.2 shows how people are carried to hospitals. The ambulatories (148, the majority in Libertador) can serve as triage and treatment centers for people with small injuries to avoid the saturation of hospital services .

The number of firemen is lower than optimal (2,300 present against 5,000 required) and some of them live outside Caracas. In the event of a disaster, where the vital communication lines are damaged, the number of victims is greater so that more firemen would be required but they would take more time to

⁷ Op cit. SEAMAN, John

⁸ www.msdm.gov.ve

⁹ Ibid

arrive. The CP coordination is really important because the participation of many other actors would be required, such as the Red Cross, the groups of volunteers, NGOs, etc.

Although the number of beds and personnel would cover the emergency needs in terms of quantity, it is not clear that the quality of service would meet the needs because there are external factors that would interfere with the response capacity.

In addition, communities do not have the capacity as the base of the pre-hospital response. Neither exist the appropriate number of firemen to link this first phase with the hospital response, nor the organization of the actors to face the disaster in a coordinated and integrated way.

5. 2. 4. Recommendations

- Currently, it is added to the economical and social vulnerability, the political vulnerability. There are public and private efforts to work the risk management issue, but when planning and plans are started to be formulated, the authorities are changed and all the work is stopped halfway. Many resources have been wasted because of this volatility in the posts especially at the public sector. It is recommended to begin working and to involve middle command officials from the institutions who are the ones with a longer permanency at the post, and involving international institutions with long permanence in the country and other NGOs with recognized background, thus giving to the implemented plans a longer life time.
- The institutions working at the pre-hospital and hospital level must work in relation to a potential disaster (scenarios), identify their own components and determine the effects of the disaster to the system. The capacity of response to the possible demand must be estimated, thus determining the critical and vulnerable components.
- The ADMC through Metropolitan CP has to be in capacity to organize and manage the search and rescue activities considering that firefighters and approximately 90 volunteers groups are in capacity to provide search and rescue support, but are not effectively organized. Metropolitan CP has to coordinate, organize and include all the actors in the flowchart of response in case of disaster, according with their present conditions and capacities that also mean that a process of certification is necessary.
- Considering an earthquake scenario, assuming at least 1967 scenario, it is necessary to organize a certain number of ambulatories as the first line of medical response and hospitals to cover the necessities where there would be 4,306 injured persons and from this number, 430 persons would need to be hospitalized. At present, there is no plan to prepare the medical response in case of disaster in Caracas.

- With the decentralization process, ADMC is in charge to coordinate the direct administration of help in Caracas. Because of this, it is necessary to implement a plan considering minimum standards in disaster response on: water supply and sanitation, nutrition, food aid, shelter and site planning, and health services.
- It is necessary to organize the response in case of a disaster, to foster coping skills and adaptation to post-disaster changes in the community so that survivors will be able to carry on and respond normally to an abnormal traumatic event and to the changes in their lives.

5.3 Education

5.3.1. Current Situation

(1) Introduction

Proper information, education and training on preparation for disasters should be given to people in Caracas. With the knowledge about the risk, they can take action to prevent, mitigate, prepare and respond the risk caused by disasters. Essential information is of the risk people face in their living places and working places.

Information and education have to be accurate, reliable and frequently provided to people to make self-protection efforts of people functional. People in Caracas have different social, economic, cultural, educational backgrounds. Consequently, how to educate or provide information to people about the disaster management depends on their features. Tasks to motivate people to act properly and to become informed of the risk is ones pertinent to disaster and risk educators and trainers, covering all the segments of the people of Caracas.

(2) Risk information and people

Not all the Caracas people know what to do, where to go, who to help them in disaster events. It was found in the Social Vulnerability Study conducted by the JICA Study that 8% of the total of 4,800 respondents did not to know where to go in case of earthquake disaster. 15% of responded similarly in case of flood and 26.7% in an event of a mudslide.¹⁰ Only 7.5% of the surveyed claimed knowing the Civil Protection agencies close to where they live (Municipal), comparatively lower than other entities such as Rescue Groups (14 %) or Neighborhood Associations (15 %). Better known are national entities such as Protection Civil -National level (32.6%), or the Firefighters with 80% of responses.

¹⁰ Social Vulnerability Study. Quantitative Report. JICA Study Team, subcontracted to BL Consultants. November 2003.

The information about how disasters could affect the society and everyday life is not disseminated adequately. According to the survey, people of Caracas commonly received information about disasters during and post events from TV and radio, which, however, seldom provide information on how to act before or during disasters.

This implies that people have to have information and knowledge to act properly about risk before and after disaster event.

(3) Perception of people about government in risk management

Perception of people about public government institutions related to disaster management varies. While the fire department is well known (80%), only 15% of the respondents said they were familiar with Civil Protection according to the Social Vulnerability Study. This is partly because of little studies about people's perception and actions about the disaster by the governmental institutes.

Professional disaster administrators should be admitted by communities and general public when they make an effort to education them. Therefore professional disaster administrators are required to have proper information and skills to develop the effective methods to educate communities and general public about the disaster management.

5.3.2. Education Needs on Disaster Prevention

(1) Areas of education needs on disaster prevention

Based on the opinions and responses from the Social Surveys¹¹, interviews with local consultants and education counterparts, and education related organizations, and on the agreed ideas of the participants of the Education Counterpart Work Group¹², the following are raised as the priority areas for education, information and training requirements.

- higher education and professional involvement in risk management and disaster,
- risk education in basic, middle and diversified/vocational formal education (grades 1st through 11th),
- training programs and methodologies in non-formal education for risk management and disaster preparation,

¹¹ A social survey was conducted by the JICA Team to education related government officials, consultants, academics and others.

¹² Education Counterpart Work Group - ECWG: During project time, JICA Study Team provided ground settings for the Education Departments Representatives of Civil Protection to meet regularly. This working group is named as ECWG.

- education in capacity building,
- mass communication systems, and
- educational mechanisms to introduce risk related matter into public policies.

(2) University students and professionals

There exists a gap in the programs of professional education and practitioner training for disaster management in Caracas, according to the opinions of the surveyed. Technical, vocational and high education entities provide knowledge and practices, but require some revision in education methods and performance evaluation.

The majority of the students are taking programs that concentrate on academic learning process and less practical experience and learning processes targeting risk reduction which will be useful in their future professions. Most of the current learning processes employed in higher education entities have little practical learning opportunities.

Specialized technical careers in disaster administration do not exist in Caracas. The existing programs tend to emphasize on the technical operation, and less in human planning aspect. For example, Fire Fighters Institutes focus on learning techniques of rescuing, responding emergencies effectively, but little on participatory approaches to interact with communities in daily lives for community preparedness. The development of continued community-based risk reduction programs are not topics taught in their professional training course. A professional training course that integrates disasters technical aspects with a social aspect would improve an understanding of the risk management in the natural, socio-economic contexts of Caracas.

There is a clear demand in the country for disaster administrators. In a recent career screening, it was revealed that at least 300 people expressed great interest in specializing in disaster management.¹³ University professors also require new courses, especially to integrate the social and physical aspects into improved disaster programs. Academic should give students more opportunities of actual good practices and examples to expand and explore their career.

Further, as urbanization or development has been going on, the disruption of society has emerged, which has created a mechanism of risk occurrence in Caracas. Disasters and development are two sides of the same coin. Education processes should establish knowledge and creativeness to diminish such disruptions of the society.

¹³ Raven, Elizabeth. Higher Education Ministry. Interview on February 27th, 2004.

(3) School children and youngsters

Formal School System are composed of Primary School (1 to 6th Grade), High and Diversified School (7th to 11th Grade), and Technical Vocational Education for both middle and college degrees.

Despite the disaster content in public education curricula have been adopted in previous years, these have not yielded the expected outputs. Only 15.2% of surveyed people reported to have learned about disasters at school, according to the Social Vulnerability Study carried out within the JICA Study. School teachers are required to teach students about disaster related topics for some grades, but in reality they do not adequately teach the topic in classrooms, homes and neighborhoods.

School students do not fully receive education and information on risks management in daily lives. Strategies of risk management usually go beyond the school settings and merge directly into community daily lives. There is a need to teach disaster preparedness in risk reduction topics at school.

(4) General population

Around 40% of the surveyed people in Caracas claimed never receiving information related to disasters, as revealed in the social survey sample.¹⁴ Broken down by types of disaster, the responses specifically evidence lack of information on respondents about earthquakes by 44%, landslides (70.8%), and floods (68.9%). More than half of respondents (57.3%) receive information about disasters by mass media: TV and radio (38.7%) and from newspapers and magazines (18.6%). But this information received does not come from Civil Protection because there is not a coordinated system of public dissemination by Civil Protection.

Consequently the information presented by the media is mostly related to events from other countries, or about seasonal emergencies and events such as floods. People in Caracas is lacking in informational programs guiding people to proper action to prepare themselves from large scale disaster events such as earthquakes, or to reduce the vulnerability to disaster.

¹⁴ Table 5-24. Information on Disasters received by community and frequency. Social Vulnerability Study. Quantitative Report. JICA Study Team, BL Consultants. November 2003.

(5) Community needs

The social survey suggested that disaster preparedness should be introduced with the focus on more information, raising awareness and training programs.¹⁵ Activities to improve community preparedness from leaders of 15 communities of Caracas are summarized as below in which education processes take place are:

- Raising awareness
- Informing and orientation without a panic approach
- Forums & workgroups
- TV, radio, news programs
- Adequate preparation techniques
- Learn how to organize community people (themselves)
- Public offices learn from community experiences
- Include disasters in popular culture

The Social Survey revealed that there is a gap between specific areas people are willing to collaborate in the event of emergency and the specific areas in which people have been trained. Table 5.2.1 and Table 5.2.2 present the lacks of the training currently received by citizens. The percentage of trained people in the topic in which they would like to collaborate in emergency situation is far less the percentage of rate of those who received actual training in the topic.

(6) Government officials and administrators

Officials, administrators and professionals are unaware of the peoples' opinion, needs, conditions, and levels of preparation in Caracas. They do not evaluate the results and impacts of the educational programs delivered by disaster administrators, educators and trainers.

There is no program to reach the public through the media. Protection Civil does not have any particular arrangement with media. It is up to the media to inform or not on citizen responsibilities on self-protection. However, disasters are not a topic covered in a regular basis on their communication agenda, except when unexpected events directly affect the city.

¹⁵ Ethnographic Study Section Social Survey. JICA Study Team. November 2003.

On the other hand, current disaster managers and staff of Protection Civil offices of all the Metropolitan District offices, require specialization courses to fill their particular gaps on technical skills in an individual basis. Since most of the staff has extensive experience gained over years, the program being discussed is to focus on recognizing skills in place, and encouraging staff to update missing knowledge required to improve their work.

The trainers are required to replicate their skills by training new responders and attracting new protection civil volunteers in order to cope with the understaffed present condition. The core education topic about effective response of communities (technical skills in response) has to include preparation programs to manage the disaster situation optimally.

Finally, the media do not treat with topics on effective response or disaster management. Journalists do not receive any training from Civil Protection to understand disaster phenomena better.

5. 3. 3. Policies for Education

The following are summed up as basic polices for education of people in disaster management in Caracas, based on the analysis of the gap between the requirement from people and the performance given by the education-related entities.

- Existing education and training institutions must search and apply effective mechanisms of coordination to bridge the educational gaps in disaster prevention identified in this Study for all segments of society in Caracas.
- Strengthening and building up local capacity against disaster events, rather than creating new entities, enhances the stability and sustainability of the institutional and citizen's responsibilities and functions for self protection.
- Education for disaster prevention includes both short-term education on preparation for unexpected events, and mid- and long-term education and awareness raising efforts to reduce the existing risk conditions affecting the majority of Caracas' population.
- Education for disaster prevention must be treated as everyday concern and integrated into a topic of the Metropolitan's development. Education on prevention of risk situations must be a transversal principle of both city and countrywide.
- Existing educational programs and resources must be optimized at this moment. And in addition, the current capacity should be increased to continue all the disaster prevention education policies and programs.

- Education programs must be framed under the following five approaches: 1) technical education for preparedness; 2) technical preparation for reducing the built risks; 3) pedagogical and multiplying techniques; 4) capacity and community building; and 5) educational planning and programing skills. Disaster attention agencies, community leaders, government personel, NGO staff and voluntary personnel must have access to this integrated educational approaches.

5.3.4. Education Strategy

The education program's overall purpose is to provide knowledge, information, tools and procedures for citizens of Metropolitan District of Caracas to prepare to protect their lives, families and assets from disaster events in Caracas.

One of the main non-structural measures to protect human lives and assets is to change people's perception, attitudes and actions when facing disasters. By increasing the knowledge of hazards upon buildings, social and physical vulnerability can be reduced substantially. Educating decision makers, professionals, leaders and general public about the risk factors can help develop better understanding to minimize or eliminate possible risks. Also, by understanding the nature of the impacts and the associated consequences, disaster managers as well as citizens can adopt measures to protect themselves and their families at the crucial time.

All this assumes that society has the ability to acquire adequate knowledge and transform it into a series of actions for preparedness and reduction of impact in a timely manner.

The Educational Programs follows closely the broad framework, as shown in Figure 5.2.1. But it can be implemented in the smaller units. For example, raising awareness programs should be considered inside the larger strategy rather than a single program. Raising awareness through public dissemination is intended to be linked to actions that provide options for self-protection and preparation of people by local and metropolitan-wide programs.

To achieve such strategies, programs are proposed in the following sub-sectors: 1) higher and professional education, 2) formal education (basic, middle, and diversified education), 3) community education, and 4) governmental personnel education. Details of these programs are described in Supporting Report 22 Education.

(1) High and professional education

The three subsets of programs are introduced, directed to a range of professionals related to buildings, policy decision making, disaster administration managers, professionals with

emphasis in social components, and particularly professionals that form future teachers – educators of educators.

- 1) Sponsoring current initiatives of Disaster Manager Degrees
- 2) Development and refreshment programs for current academics, trainers, teachers and decision makers
 - a) Updated applied teaching techniques
 - b) Periodical city wide seminars
 - c) Curricula revision
- 3) Mainstreaming Disaster Prevention into Public Education Policies through Higher Education

(2) Formal education -- basic, middle, and diversified education

Proposed programs include school program revisions, training programs for teachers, training guidebooks for teachers as well as for student handbooks. Procedures have to be discussed and formulated to set into place a task group for establishing communication among entities involved in the Metropolitan District School System.

- 1) Key entities coordination in public education
- 2) Disaster related training for teachers and students
- 3) Curricula revision and update (see Table 5.3.3 and Table 5.3.4)
- 4) Risk prevention and disaster prevention joint approach by the related agencies

(3) Community Education

Effective educational policies set by the responsible agencies such as Protection Civil require adopting a Strategy to Promote Education for Public, Community Promoters and Trainers Multipliers in order to increase population coverage, particularly in the most risky areas identified in the present study. Educational strategies should stress raising awareness of the potential hazards and current risks; urging the population to be prepared, targeting distinct population groups; techniques on how to act before, during and after events; and last but not least, how to reduce risk.

A Community Training Program covers the following five main areas: 1) Preparedness Training, 2) Risk Reduction Training, 3) Pedagogical skills, 4) Capacity building, and 5) Community planning and accountability. Figure 5.3.2 illustrates the contents of each sub-component.

Trainers should learn and acquire more knowledge to promote these types of skills. These areas are the skills that the Education Counterpart Work Group discussed and require for their own improvement, as shown in Table 5.3.5

(4) Education for Government Personnel

The Education and Training Program specified as Community Programs in the previous section also applies for the personnel of Civil Protection, Firefighters and the counterparts participating during the discussions. The holistic approach explained previously in Figure 5.3.2 has to be included as well in the curricula of government workers related to disaster prevention. Summarily the five areas are: 1) Preparedness Training, 2) Risk Reduction Problem Solving, 3) Pedagogical skills, 4) Capacity building, and 5) Planning and accountability.

The institutional strengthening of education for disaster prevention requires careful building of a collaborative agenda. This can take various forms and setting different task groups by shared concerns or issues is a good way to keep the organizations involved. Some meetings can include discussions with university and technical institute's representatives. Others meetings and/or task groups can discuss the formal school programs at municipal and ministry level education departments, to broaden the analysis and adoption of measures for education planning.

5.3.5. Public and Mass Media Dissemination

The production of information for public distribution shall adopt specific means: 1) Mass media spots for TV and radio announcements for raising awareness to the whole population, 2) Multimedia, such as setting up websites, topic specific videos or power point presentations for the use of community leaders to disseminate education within their neighborhoods, and 3) Community booklets with suggestions on activities, tools & resources, best practices and course announcements are among the most recommended written tools to raise awareness to broader public. Suggested topics are:

- Techniques to identify and reduce risk such as building rapid inspection, and simple tools to improve physical building conditions in barrios.
- Memory refreshing icons of past events (both for earthquake and sediment disasters) in most vulnerable areas or sites.
- Community-built risk maps placed in public places, with regularly updated plans.
- Psychological aspects in the case of disasters

- Risk maps made by the community and to place them in public places

5.3.6. Education Projects and Measures

In education sector, programs shown in Table 5.3.6 are proposed based on the following criteria and target population, and implementation policy.

1) Criteria for Education Projects

- Significance and urgency
- Effective social impact
- Sustainable capacity
- Multiplying capacity
- Broader coverage
- Optimize existing structures

2) Target Population for Education Projects

- Disaster Managers
- Teachers and other trainers
- Risk reducer professions
- Youth and children
- Community leaders, particularly women
- Institutional staff and decision makers

3) Implementation policy

The Study identifies the legal and administrative responsibilities of entities in charge of education of disaster prevention and education for the population on how to identify and be aware of existing risks; and act individually and collectively in coordination with the respective agencies. These agencies, most of them involved actively during the process of the Study, must take the responsibility in executing the Plan.

5.4 People's Organization for Disaster Prevention

5.4.1. Current Situation

People of Caracas require to have the capacity to organize and save themselves from unexpected events such as earthquakes, debris flow and floods. People's organization for disaster prevention is a result of a combination of several conditions: (1) proper awareness, (2) understanding of the means or strategies for organizing, (3) having the required resources (human, technical, social) and (4) having the capacity to work effectively with others to prevent exposure and harm for themselves and their loved ones, and their surroundings.

Much of the efforts of preparedness are currently provided to communities through education and training strategies. However, such efforts do not yield as expected and communities do not sustain the community activities by achieving the four aspects mentioned above. It is expected that by trainings and experiencing drills, the communities on their own will find ways to best prepare themselves. The institutions just hope the local awareness will grow and expand into future actions by teaching and training the communities. In reality, more often than not, the expected outcome is quite different after six month or so. Communities have not found the proper ways to expand the knowledge learned, or have not been successful in building collective disaster preparedness.

5.4.2. People of Caracas' Situation in Organizing for Disaster

(1) People's awareness about risk

According to the Social Vulnerability Survey, almost half of people surveyed in Caracas, have experienced a disaster, mostly earthquake (80% of affirmative responses) and floods (24%). 73 % of the respondents recognized their communities and neighborhoods could experience a disaster any time, and 85 % (4,121 persons of a total of 4,802 surveyed) that these disasters could affect them directly.

Despite risk can be to some extent avoided or hedged, however, a majority of respondents believe that their communities experience damages because the risk is out of control, like nature or the force of the event (77%) along with God and destiny (19.6%). The concept of "disaster" as a function of "hazard" (as natural fact) and "risk"(as social or human built factor) is not present in the average citizen.

Interestingly, less than 23% of respondents considered that factors such as lack of community organization, information and training; or location (14.5 %) and urban development without

considering nature (22%) were reasons for the disaster damages. This implies somehow that urbanization process with the lowest strata of society have to line on vulnerable land.

In Caracas, like other countries in Latin American, the greater risks are created by ongoing development with little consideration of the physical conditions surrounding the communities and cities. These policies do not consider much about the social structural problems affecting the population of lower strata towards greater risks.

(2) Organizing communities

There seems to be a gap in understanding of role of the organizing of communities for disaster prevention. According to the interview with community leaders, they said that organizing was not found to important. Rather they stressed awareness level by emphasizing on information, awareness and educational activities.¹⁶ However, organized communities when asked to give recommendations to “other communities” from their own experience, they strongly suggested that the organizing activity itself is more than half (57%) of the effort; training is 30% of the efforts, and individual responsibilities and actions are relatively less significant (13%).¹⁷ Therefore, how to prepare collectively for disaster is one of the most urgent issue to move forward from the present condition.

While technical knowledge and skills are necessary for communities, the organizing experience, (understood as process-driven programs and plans) are the key to the continuity after training is achieved.

(3) Community emergency plan and community activities

71% of 75 leaders surveyed in 15 communities said that they did not know if their community had organizing tools such as Local Emergency Plans and also they explained that no specific entities were presently working in their own communities on disasters or emergencies.

It seems as one of the most difficult tasks to develop sustainable and sound community-based preparedness programs. The desirable procedures are still in the midst of discussions. That’s why there is conceptual overlap in words such as “organization”, “preparation”, “education”, “awareness raising,” which are used in a surprisingly interchangeable way.¹⁸ Table 5.4.1 shows

¹⁶ Ethnography Study JICA Study Team /BL. November 2003.

¹⁷ Successful Experiences Case Study. JICA Study Team-Socsal. November 2003.

¹⁸ The lack of policies in place to organize people on how to take the appropriate measures is evident with the fact that 82.4% of respondents of the confirmed in the Social Vulnerability Survey stressed not have been exposed to training in organization for disaster prevention.

some distinctions between two of the concepts discussed in this section: preparation and organization.

(4) People's background and their needs

An open mindset to gain understanding on the human conditions and social texture of those exposed at high risk is a key starting point in the effectiveness of the organizing policies for disasters. The Social Vulnerability Survey showed that specific sectors of population expressed different interests and needs in the ways they perceived their inclusion into the disaster's agenda.

For example, women expressed the greatest interest in learning about organizing skills, although they had received less training experiences than men. Most of the time, the existing community groups at each Parroquia or sector have developed particular organizing settings on their own, which makes the IPC and Alcaldia's task one of coordination of efforts, planning, resource identification and allocation, and process facilitation.

(5) Response of people at high risky area

The Social Survey reveals that 81.3%, 3904 of all respondents are willing to move out if they were told that they were living in high risk sites. While this figure seems to contradict common expectation among institutional officers, the quantitative survey findings were consistent with the ethnographic sections of the Study. Both in leaders opinion (64% of leaders expressing willingness to move) and in several narratives and interviews, it was strongly stressed for some communities, that the only way to avoid greater damage and loss was to move entire sectors to a safer place.¹⁹

5. 4. 3. Elements of Success for Organizing Community

The elements for success proposed by the Successful Social Study to consider in disaster organization are summarized as follows:

- Minimize affectation and loss; keep the memory of events in daily lives
- Include risk reduction in community development agenda
- Minimize overdependence on entities that helps the community
- Reduce vulnerability while understanding and preparing for disaster

¹⁹ Ethnographic Study Section Social Survey and Quantitative Survey. Jica Study Team. November 2003.

- Minimize conditions of vulnerability – long term process
- Maintain continuous and innovative organizational process
- Maintain good communication as a key aspect as well as motivation, positive attitude, and hope
- Have a community leader with key roles of recognition, credibility, legitimacy, confidence

5.4.4. Institutional Policies for People’s Organization in Disaster Prevention

(1) Legal frames

Various programs are conducted by institutions to organize communities. At least seven distinct laws referring to community level preparation and organization were found. Table 5.4.2 summarizes competencies for People’s Organization in Venezuelan legislation. Local entities are legally bound to adopt measures and develop activities in citizen protection, disaster prevention and fund raising for emergencies. Specifically, the Municipal Law stresses the obligation for Alcaldías to attend and develop civil protection and citizens safety programs. At the same time, the recently created Local Councils of Public Planning (CLPP) are entitled to establish Security Plans, develop safe local urban plans and to establish an emergency fund for disasters. Neighborhood associations are legally bounded to take care of people’s security and protection, specifically to organize campaigns and practices for people’s and asset’s protection and safety.²⁰ Finally the citizens are bounded to develop self protection measures, to be prepared and to follow agencies commands during emergency time. The overall responsibility of design of policies and coordination is mandated to Civil Protection in their own Law.

(2) Education, people’s organization and information strategies

Figure 5.4.1 visualize confluences and differences among Education, People’s Organization and Information Strategies. While educational strategies focus on teaching and providing knowledge to achieve attitudinal changes, organization strategies are process-oriented; they focus on steps and action plans. The tendency found in the practice of preparedness among Protección Civil and Bomberos agencies in the Study Area was the preferential use of information and education strategies as an assumed mean to reach people’s organization.

²⁰ Reglamento Parcial No. 1. Asociaciones de Vecinos. Adjunto a la Ley Orgánica del Régimen Municipal No 4109, 1989.

(3) People's organization in laws

People's organization for disasters is not explicitly present in the laws, but generally defined under words such as "protection" and "security". These concepts also refer to health or property aspects not necessarily related to disasters. The lack of a proper definition about organizing people by the public institutions, is connected to the need to a conceptual and strategic framework of each public organization.

(4) People's organization models sponsored by agencies

The study has identified the existence of several disaster preparedness models in the neighborhoods of Caracas. These are CAELs, Red Cross Community Preparation Program, Barrio Rehabilitation community based organizations such as Consorcios and Civil Association, Neighborhood Protection Committees, Municipal Protection Committees, and Rescue Volunteer Groups. The CAELs are the models created by the Metropolitan Firemen, mostly present in Chacao Alcaldía sponsored by IPCA.

There are at least three preliminary sets of arrangements by which organizing tends to occur for disaster prevention, that is, top down, bottom up and horizontal approach, and third party intervention.

1) Top Down approach²¹

The steps recommended by Bomberos and Protección Civil for new groups or persons interested, are composed by a core of training contents referred to models and materials on specific.

The Metropolitan Civil Protection Office has created Committees for the Actuation of Local Emergencies / known as Local Committees of Civil Protection as a community structure in charge of the tasks of prevention and preparation to face disasters in all their phases.²² The Law of Civil Protection establishes as one its goals, the creation of strategies directed to community preparation in order to guarantee the full use of potential of people, families and communities to face emergencies and disasters.²³

²¹ See "List of Manuals" Annex from Strategies for Disaster Prevention for Earthquakes Fundapris. Social Study Set 2004.

²² Among the tasks of the CAELs it is mentioned gathering population data, identification of hazards, vulnerabilities and risks, the preparation of safe areas, drills and scenario building, support in preparation of actions during the response, such as evacuation of affected areas, and others. Martinez, W. Presentation on October 10, 2003.

²³ National Organization of the Civil Protection and Disaster Administration Law, No 5557 13/112002 (Ley de Organización Nacional de la Protección Civil y Administración de Desastres)

Citizen participation is promoted through the Law of Coordination for Citizen Security, which urges individuals and collectives to participate in an organized manner in the designing of citizen security plans, proposing suggestions, observations and comments to such plans.²⁴

Likewise, the Fire Department is in charge of developing and promoting activities in preparation for the citizens facing emergencies. The law authorizes this body to promote the application of prevention and mitigation measures, and to act as consultants and promoters in risk management matters associated with communities inherently to emergencies.²⁵

The participation in collective community structures is stimulated by the Organic Law of the Municipal Regime, authorizing the Neighborhood Associations to promote, orient and contribute in organizing campaigns, programs and practices directed to the protection and security of persons and properties of neighbors, as well as topics closely related such as prevention of accidents, environmental protection, and citizen education.²⁶ These Associations have full authority to execute programs of citizen protection and civic education explicitly directed to youth.

Recently created, the Local Councils of Public Planning – (Consejos Locales de Planificación Pública - CLPP) are entitled to develop Plans of Local Security for Persons and Assets (campaigns against noise, accident prevention, and citizen education) and also implement programs of citizen protection and education.²⁷

2) Bottom up and horizontal approaches

Successful experience sharing is an excellent tool that supports information sharing and learning in daily community life. Methodologies such as “farmer to farmer methodology”, “training trainers”, workshops for exchanging live experiences, and “community to community internships” are all methods that are stemmed from the basic concept of community-based experiences sharing processes. Sometimes Rescue Groups are seen as community organizing entity born from within when their member lives in the neighborhood.

²⁴ Citizen Security Coordination Law, Official Gazette No. 37318. 6/11/2001 (Ley de Coordinación de Seguridad Ciudadana)

²⁵ Firemen and Firewomen Department and Administration of Emergencies of civil character Law, NO 5561, 28/11/2001 (Ley de los Cuerpos de Bomberos y Bomberas y Administración de Emergencias de Carácter Civil)

²⁶ Partial Regulation No. 1 about Community Participation, No 1297, 22/11/90. (Reglamento Parcial No.1 sobre la Participación de la Comunidad)

²⁷ Local Councils of Public Planning Law, No 27463 12/6/2002 (Ley de Consejos Locales de Planificación Pública)

Communities that benefit from the support by Bomberos methodology are Anauco and La Trilla, in Libertador municipality, despite these communities do not use the name of CAELs.

3) Third party intervention

These are programs sponsored by agencies such as NGOs, national or international, religious or highly committed academic projects. The need of some sort of sponsoring (third sector) or facilitator to stimulate organization. Academic Agents doing field work require the ability to transform technical information into proper material for communities.

Among the three approaches, from the people's perspective, the contributions from third party, or voluntary groups recognized for their capacity to provide specialized support. These groups constitute the specialized community support that municipalities can benefit from. Despite being secondary attention entities, these groups end up playing primary roles, given the budget and human resources limitations experienced by the institutions responsible for these tasks.

5.4.5. Limitations

- In Caracas, despite intensive efforts by the responsible agencies, the current activities are urgently demanding improvement in people's preparedness facing disasters.
- The skills for improvement of people's preparedness go beyond the operational technical sphere and expands into topics like leadership development and group processes; knowledge of age and gender particularities in community organizing culture, as well as knowledge on promotion and facilitation techniques.
- Because appropriate communication, negotiation or planning skills are missing most of the times, the current programs cannot evolve and merge into community-driven preparation activities and action plans.
- Local risk management is only one part of the focus and little is debated on organizing for prevention. There appears to be little reciprocal contact between disaster administrators and most vulnerable people living in most inaccessible places.
- Community face difficulty to improve preparedness facing disasters in such cases as disasters are not one of their primary problems or needs.

5. 4. 6. Potentials

- The preparation entities have recognized the need of policies towards people's organization in disaster prevention.
- There are examples of organization that are working for disaster prevention in Metropolitan District of Caracas (Table 5.4.3)

5. 4. 7. Basic Policies

The goals to pursue with the people's organization is to provide tools, strengthen capacities and set procedures for citizens of Metropolitan District of Caracas to successfully protect their lives, families and assets in preparation for disaster events in Caracas.

The principles of people's organization include a bottom up approach, including:

- 1) A community "motor" starts the initial work;
- 2) Networking and effective coordination among agents in communities as well as between disaster related institutions within municipal jurisdictions;
- 3) Exchange and sharing of resources; and
- 4). Strengthening the capacity of the community.

The set of measures proposed are programmatic actions and processes to be developed in increasing stages as paralleled and combined programs.

5. 4. 8. Strategies

The following four strategies are set:

1. Preparation of a Strategy for People's Organization in Disaster Prevention
2. Disaster Preparation Program
3. Disaster Prevention and Risk Reduction Policy Building
4. Support Programs

5. 4. 9. People's Organization Program

The program is formulated as shown in Table 5.3.4 and 5.3.5, based on the following criteria:

(1) Principles for People's Organization Program

- Significance and urgency

- Bottom Up Capacity Building
- Optimizing existing resources
- Population coverage by diversity and particular needs
- Asset based: networking and capacity sharing
- Sustainability: Ability to create multiplying-effect over time

(2) Objective of the Project for People's Organization

- Communities with greater building damage for Earthquake.
- Communities at risk in Sediment Disaster Scenario
- Most vulnerable social condition: (such as income and education level) as well as accessibility to support system

5.5 Social Surveys

5.5.1. Introduction

Since disaster is attributed to a combination of natural hazards and human systems (social structure and resources, dynamics of human behavior, etc.), it is important to integrate social aspects into the disaster prevention agenda. For this reason, JICA Study conducted three Social Surveys, each with its own specific objective in accordance with strategy for community - based disaster management by empowering community autonomy and ownership, which would reflect Disaster Prevention Plan of Metropolitan District of Caracas (See, Figure 5.5.1).

As the primary step, investigation of the pivotal factors of existing community of risk management, “Social Vulnerability Survey” and “Case Study of Successful Experiences of Social Risk Management” were conducted early in September 2003 for three months by sub contractors. Social Vulnerability Survey pursued existing social vulnerabilities and characteristics in 15 areas of the Metropolitan District of Caracas. Secondary, Successful Case Study of Successful Experiences of Social Risk Management, specifically aimed at identifying key elements and capacity of the community to performance of risk management based on past disaster experience in three local communities: Catuche, Anauco and La Floresta. As final Survey, “Pilot Study of Community - Based Disaster Management” was carried out from early July 2004 for three months by sub contractors. The study was expected to make selected feasibility study (F/S) of the following subjects: 1) preparing early warning system and evacuation for debris flow, 2) promotion of reinforcement of risky buildings

and 3) Encouraging people to live away from risky area. In order to meet goals of JICA Study Team, the participatory approach played an extremely important role in the pilot study and five communities were selected as pilot communities for applying F/S subjects considering urban and Barrio area to meet the study purpose.

5.5.2. Major Methodology through the Social Surveys

In Social Surveys, the main actors are commonly “community people” who are a diverse, complex, multidimensional group of people. Inevitably, many different methods to target community people are needed. In order to fully cover these an ethnographic approach aimed at understanding the human aspects of social life, human actions, social meanings, intentions and beliefs related to disaster was applied for practical disaster management as major approach, particularly, in the social vulnerability survey and case study of successful community initiated disaster management. In addition, in the pilot study of community - based disaster management, “community people” were never passive object for the Survey but considered as initiative actors toward own community - based disaster management. Therefore, various types of participatory approaches were applied as common methodologies in the pilot Study. The following sub-sections describe major and important methodological techniques used in the Social Surveys.

(1) Ethnographic Techniques

As major ethnographic methods, the following techniques were newly applied in order to pursue socio –cultural aspects of disaster management.

- Participant Observation
 - Social Aspects: everyday life in the community, norms, activities and behaviors related to social risk management
 - Physical Environment: conditions of physical vulnerability like infrastructure, measures taken for disaster prevention
 - Identification of key players, basically hidden or informal key players
- Key Informant Interviews
- Focus Group Interviews (applied in the Case Study²⁸)
- Life History on Disaster and Narratives (applied in the Case Study)

²⁸ The Case Study of Successful experiences of Social Risk Management is applying in depth ethnographical approach than Social Vulnerability Survey, which is also taking ethnographical approach, however more focusing on quantitative techniques. This is because of study objectives, scale of samplings, time limitation, etc.

- Semi-Structured Interviews (4800 sampling numbers)

(2) Social Vulnerability Map

For debris flows and earthquakes risk scenarios, Social Vulnerability Maps covering the Study area were made up based on criteria established by results of questionnaires of quantitative part of the Social Vulnerability Survey. For variables for the measures are refereed as supporting report in the section of S24. In this report, an indicator of “Knowledge of Disasters” is presented which show the degrees of vulnerability and capacity of the index at a glance (See Figure 5.5.2).

(3) Participatory and Organizational Development

The main techniques in the Pilot Study are integrated participatory methods applying a bottom up approach such as: 1) Stakeholder Approach, 2) Disaster Imagination Game (DIG) developed in Japan as participatory disaster simulation, 3) Participatory Planning in a topic of community - based early warning system making copying strategy for disaster management. As participatory methods, socio- cultural promotion techniques such as conflict resolution techniques, communicative facilitation, joint-construction for the community strategy with diverse community were used in an appropriate manner.

5. 5. 3. Results of Social Vulnerability Survey

(1) The Setting and Objectives

Disaster management vulnerability for the complicated urbanization development of Caracas has its roots in socio-economic, political, and cultural aspects as well as physical aspects,. The overall objective of the Survey is to identify different types of vulnerabilities that correspond with the urbanization process in Caracas, and thus includes human systems. For the Survey, the focus was on the following specific areas: 1) Socio-economic and livelihood characteristics, 2) Housing and building characteristics, and 3) Risk perception and behavior prior to disasters

(2) Classification of Social Vulnerability Zone

The survey area was classified into 15 zones in terms of urbanization process, type of land use, and social class. The zones are briefly described below

| Name of the Zone or Unit | | Decade developed | Predominant Land Use | Social Class |
|--------------------------|---|------------------|--------------------------|--------------|
| Urban Central Area | | | | |
| 1 | Altamira – Los Palos Grandes- La Castellana | 50-60 | Residential | Medium-High |
| 2 | Campo Alegre – Country Club -San Bernardino-Los Chorros – La Florida – B.Campo | 40-50 | Residential | Medium- High |
| 3 | Casco Tradicionales – Casco Central – Prado de María – San Agustín – San José – Cementerio – Los Castaños – La Pastora | 20-30 | Residential - Commercial | Medium |
| 4 | El Marqués – La California | 60-70 | Residential | Medium |
| 5 | El Recreo-Bello Monte – Los Caobos – Las Acacias – Los Rosales – Valle Abajo – Av. Victoria – Las Delicias – Sabana Grande – La Campiña | 40-50 | Residential | Medium |
| 6 | El Rosal-Sebucán-La Carlota – La Floresta | 40-50 | Residential | Medium-High |
| 7 | La Urbina - Montalbán | 70-80 | Residential | Medium |
| 8 | 23 de Enero-Simón Rodríguez | 50's | Residential | Medium-Low |
| 9 | Carcuaio - Valle – Coche | 60-70 | Residential | Medium |
| 10 | Santa Mónica – Colinas de Bello Monte - Vista Alegre – El Paraíso | 50-60 | Residential | Medium |
| 11 | Chacao - La Candelaria | 20-40 | Residential | Medium |
| Slums (Barrios) | | | | |
| 12 | Chapellín-Sarria | 30-60 | Residential | Low |
| 13 | La Vega | | Residential | Medium-Low |
| 14 | Mariche | | Residential | Low |
| Suburb | | | | |
| 15 | Macarao | | Residential | Medio Bajo |

(3) Socio-Economic Characteristics

1) Inhabitants Statistics

The major statistics of inhabitants are different in every area. Youths outnumber adults in zones 5 and 14; on the other hand, zones 1 and 6 have more elders above 65 (between 10% and 15%), and a higher percentage of handicapped as well. These results help to identify in which zones the social vulnerable people are distributed and contribute to making a community evacuation plan such as vulnerability location map, rescue responsibilities and procedures, etc. It was also noted that the number of women is generally higher than men in the Survey area. This background reveals that an autonomous role for women in disaster management is indispensable and their participation is crucial.

2) Education Level

Almost all adults have completed basic education in all zones. However, a large number of inhabitants in zones 12, 13, and 15 (mostly in barrios) completed only basic

education while inhabitants in zones 1 and 2 (mostly in the urban) are middle and high social class and have received university education. Although there is a relation between social class and education level, the findings indicated that the educational level was not at all related to risk perception or action for risk management proved by ethnographic part of the Survey.

3) Employment Condition

Employment categories such as permanent, hourly or self-employment prevail particularly in zones 1, 2, 5, 7 and 11, which are intermediate-middle and high-middle class areas. However, in zones 1, 7, 9, and 10, middle class unemployment rate is also high, which is reflected by the political and economic crisis. Another characteristic of the employment condition is more than 90 % of people are involved in the Tertiary sector.

4) Estimated Family Income

Income of the majority of those Surveyed is between Bs. 0 and 500,000/mo. In zones 2, 4 and 10, some incomes lie between Bs. 500,000 and 1 million. Zone 6 is the only place in the city where the incomes are pretty well distributed since more than 30 % of the population' earns more than Bs.1 million. The better income residential and commercial areas have ideal conditions for tax collections, which allows the corresponding municipalities to use their larger budgets to apply and support disaster mitigation activities such as offering frequent training, and providing facilities and equipment for first aid and rescue activities.

5) Type of Insurance

Through all zones, insurance for individuals and families includes major types and accounts for 20% to 45 % in the total; Cars are also major insured property, which is only applicable in zones 1, 6, 10 with middle and- high class. In zone 1, car insurance even reach 35 % of the total. On the other hand, insurance for houses accounts for less than 5% which is the least purchased kind of insurance. Only zone 1 has 15 % of houses with insurance; however, it is mainly for protection from robbers. It can be seen that recovery for damaged houses by disaster is not seriously considered yet.

(4) Housing and building characteristics

Type of building structure is predominantly reinforced concrete (97%), followed by almost 3% of prefab buildings. These structures are covered by clay blocks walls (77%) and concrete blocks (18%). In zones 1,2, 6,7,8,9,10 and 14, more than 80 % of inhabitants possess yards, and in zones 1, 6 and 7, more than 20 % of inhabitants have ground floors. Also, in zone 8, 88 % of inhabitants have car parking spaces. The issue of parking on the road in Barrios is crucial since even main roads don't have enough width, and such parking would likely disturb evacuation and rescue in case of disaster.

(5) Risk Perception and Behavior to Needs for Disaster Prevention

Regarding risk perception on earthquakes, more than 80 % of inhabitants in all zones considered that earthquakes would likely occur in over 5 years, and risk perception on floods showed a similar reaction. These results indicate that these kind of disasters are not easily considered as a - daily issue. Even worse, in zone 6, around 50 % of inhabitants answered that floods would never happen, and 26 % of the people replied that earthquakes would also never happen.

Regarding inhabitant's beliefs on disaster. The typical response is among "Destiny", "God", and "Nature". In zones 3 and 9, inhabitants mentioned that these three factors are causes of disaster. In zones 1, 14, and 15(the former is middle class area and latter two are in slum and suburb areas), inhabitants also had not much response. The pattern indicates that the middle and low class habitants have lived with relative safety, and they seemed to be in a place where they can rely on God's will and Destiny or Nature in a disaster. Whereas in middle and high class with a high education profile, they seemed to consider that this type of question is not applicable in terms of reliance on science, etc. On the other hand, in case of barrios, inhabitants have lived daily with extremely high risk of disaster, and pragmatic thinking overrides their beliefs and values.

The results on how inhabitants analyzed the cause of vulnerability. In all zones, the major cause of the vulnerability (20-40 % of answers) is considered to be just unfortunate and unusual natural hazard that occurred. Another interesting point is that around 10 % of inhabitants in the whole zone regard the cause of vulnerability is lack of training, information, and urban development without considering the nature of events. The results indicate opportunities to turn these attitudes vulnerability into positive factors for reducing disaster.

(6) Variations of Community Leadership

Through the Survey, various leaders were identified from the in-depth analysis. The results show the representative types of leaders are as follows: a) Institutional Leadership - relatively constant and associated with the community institutions, b) Situational Leadership - addressing each situation, c) Community Promoter Leadership - working for community development at the grass-roots level, which especially functions in barrios, and d) Religious Leaders.

(7) Summary

Although the above analysis illustrated only one part of the Survey, various social vulnerabilities exist in communities of the Metropolitan District of Caracas. The vulnerabilities are complex, fuzzy and not uniform, but they definitely affect people. As shown in the social vulnerability map in Figure 5.5.2, the extent of social vulnerability varies from place to place. Although vulnerable zones were identified, this doesn't mean the zones won't be fixed; there is the possibility to improve the community capacity by some kind of approach to tackle vulnerability in the future. Also, as seen in the procedure for defining indicators, some biases are contained as limitations. Therefore, the map needs to be used as output of quantitative results together with the results of ethnography. In general, factors of vulnerability are considered as a negative or problem. However, JICA Study Team is attempting to take advantage of social vulnerability factors as indicators of potentialities to better the community, particularly for community based disaster management.

Findings on typical vulnerabilities are summarized below:

1) Cultural Vulnerability

- Knowledge from disaster experiences and awareness of risk in everyday life do not necessarily directly produce risk management activity. Also risk preparation knowledge seems to depend on the types and frequency of risk or disaster happening. For example, local knowledge from experience of flooding or sediment disaster, tended to raise awareness for the preparation. However, earthquake disaster doesn't happen frequently in the same area. Therefore, past one time experience rarely stimulates enough preparation knowledge for another earthquake in a particularly community.
- However, these factors could be improved by active social organization, solidarity, leader initiatives, knowledge through training in community, etc.

- Perception that it is somebody else's issue is distinct among higher social class and people with higher education.
 - Belief that disaster won't occur since it has never happened so far.
 - Attitude that taking action for preparedness and prevention are a separate unrelated to the great concern about disaster in barrio areas.
 - Attitude that people only need to care about disaster after 5 years; this is related to the issue of sustainability.
- 2) Socio-Organizational Vulnerability
- Lack of capable leader who can apply charismatic supervision
 - Leaders and their approaches in communities are less integrated
 - No agenda for disaster management in community
 - Less consistent approach and method for disaster management
 - Less idiscussion about disaster outside the community
- 3) Economic Vulnerability
- Lack of budgets for community disaster prevention work.
 - Lack of access to essential preparedness resources including technology
 - Belief that Economic conditions don't have practical influence on disaster management activities
- 4) Factors of institutional vulnerability
- Weak legal and normative regulations are counterproductive by duplicating roles among governmental organization
 - Weakness or less effective institutional support from government
 - Lack of institutional management in community
 - Weak communication and collaboration work between community and government

5. 5. 4. Case Study of Successful Experiences of Social Risk Management

(1) The Setting and Objectives of the Study

Three communities (Catuche, Anauco and La Floresta) are well-known models since they have executed community-initiative risk management on disasters. The experience has proved their capability to cope with the disaster situation. The ultimate objective of the survey is:

- To identify elements which potentially could improve capacity for social risk management in the three pioneering communities in order to adapt the self-management systems to other communities.

(2) Findings

Obviously, each community is heterogametic possessing specific characteristics of reflecting backgrounds. However, this study attempted to clarify the common elements of successful experiences of disaster management in order to inquire way of dissemination to other community. Through investigation in the three communities, the following key elements and common vulnerability elements in social risk management were identified.

1) Key elements

- Leadership is ultimately the key element for community organization of risk management in terms of solidarity, innovative challenge, diplomacy and sustainability for community organization.
- Everyday life with disaster arouses awareness of risk but doesn't directly affect knowledge on disaster preparation. Additional actions such as contact with knowledge technicians or spontaneously attending training for risk management by community people themselves puts risk management into the community agenda as a priority. As a result, these actions strengthen community solidarity and improve the quality of risk management.
- Multiple approaches integrated by internal organizations (such as Neiborhood Association), intermediate organizations (such as Consortium), and external organizations (like ADMC, municipality, local and international NGOs) collaborate with stakeholders to enable risk management activities to function in sustainable way.
- The communities have completed risk maps and recognized evacuation routes, as part of their own early warning systems in the communities. In addition, they set up high priority roles in the community's agenda.

- The reputation as a well-organized community for risk management increased the community's confidence, which will lead to future influence on other communities.
- There was learning by doing and diffusion of good practices, such as the relationship in the case between Catuche and La Trilla. A practical method for diffusion of community risk management activity was described "Learning from Neighbors, Catuche".

2) Common Vulnerability elements

- Not all individuals are interested in disaster and prevention management. People are diverse.
- Cooperation with external organizations sometimes bring about dependency and limitation for community risk management in terms of motivation, innovation and financial promotion.
- Individual enthusiasm and participation for community risk management easily disappears without any personal attention.

(3) Summary

Through the case study, it was found out that some kinds of vulnerabilities exist in, even these three precedent communities, accompanying with good elements for risk management. In other words, vulnerability and key element for better risk management seem like opposite sides of the same coin but also have possibility to turn vulnerability into good points by appropriate understating of the causes of the vulnerability. Key points learned as stated by the actual words of informants in Catuche indicate the answer more than anything else. That is to say, people in Catuche have recognized the key role of having organizational management power in the hands of community especially against problems or constraints for human beings. Complex but spontaneous communities have adapted better beliefs, attitudes, and knowledge for risk management through interaction between stakeholders as well as by taking advantage of frequent disaster experience.

5. 5. 5. Results of Pilot Study of Community – Based Disaster Management-Improvement of Early Warning System for Evacuation in 12 de Octubre and Los Chorros

(1) Common Aspects among 12 de Octubre (Barrios area) and Los Chorros (Urban Area)

Through stakeholder analysis, the characteristics, position, relationship with the community, individual role of the key actors in the community were inquired, which applied for community

- based activity by introducing new topic, early warning system. In both cases of the targeted communities, the neighborhood association represents a key factor for any kinds of community activity for achievement to integrate the inhabitant as well as negotiation to governmental agencies to better support for these communities. Other findings also shows that attitude, capability and uniqueness of these leaders have brought a lot of credibility and legitimacy in the community, which enable to get organized and to get diverse inhabitants of the different sectors involved. That is, trustful, skilful leaders have united community as an organization with solidarity. On the contrary, there is bilateral effectiveness that community challenging situation also possibly discipline these key actors to dedication of community improvement activity. That is to say, active community with any existing organizations related with stakeholders have great potential to apply for community-based early warning system. These factors would guarantee monitoring system, autonomy and sustainability of the community-based early warning system. For details of stakeholder's information are not presented in this report in terms of privacy.

And further interrelationship analysis through the stakeholders also figured out the community relationship with other institutions, which are influential and effective body to get cooperation. For preliminary introduction of the community - based early warning system, good and communication skills and trustful channels are indispensable, which will function as the most reliable and friendly institutions for warning information from view points of communities. Respectively, community social network of Los Chorros and 12 de Octubre is shown in Figure 5.5.3. and Figure 5.5.4. As these figures reveal both communities have some link with governmental agencies and other organizations with specific purpose for the operations. That is, results of these social network analyses can lead to establishment of appropriate disaster management network as well as expanding community development capacity through the network.

By the interaction of the DIG in both community, the following are considered as relevant and common for making of the strategies of the Disaster Prevention Plan for the community, such as:

- Identification and recognition of community vulnerability and the emergency in the community
- Establish an inter-external communication network that works with a link to governmental institutions or the rescue groups,

- Define evacuation plans including cartographic maps of possibly affected area and vulnerable map.
- Establish possible sheltering centers with necessary equipments and materials etc.
- As diagnose, evacuation of the images and losses suffered,

In sum, regardless of urban or Barrios area, dynamics of the DIG validated effectiveness of mutual support among neighborhood and aroused necessity of strategy for preparation and mitigation in case of disaster. And the participatory approach encouraged participants involvements and raised the motivation to work for community – based early warning, the collective behaviors, the interpretation of the disasters, atypical behaviors and other concepts that allow to formulate action guides or plans to reduce the effects of the disasters in the community. As the working product in the DIG, risk map and evacuation map were made by own hands of participants in accordance with town observation and additional knowledge they got by facilitators.

Making Community Risk



(2) Participatory Planning in a Topic of Community – Based Early Warning System

1) Introduction

The participatory planning aimed at examination on applicability of the early warning system proposed JICA Study Team, ultimately focusing on the community part, which have been unknown, as adjustment into Caracas model.

In the participatory planning meeting, first of all, the concept of and expecting effectiveness of early warning system were explained as a prevention measurement for occurring disaster in the community. In addition, as basic risk information on related disasters, the alarm system, sediments concept, debris flow, land collapses, landslide,

others also illustrated to community participants. Secondary, the participants were divided to two groups for the purpose of providing the global institutional framework to promote the study in the community. As the main topic of the discussion, early warning system, particularly at the moment of 1) Level 0 (normal)-Level 1 (Alarm), 2) Level 1 (Alarm),-Level 2 (Evacuation) among community regarding the process and channels for warning information were highlighted.

2) Results of the Participatory Planning of Early Warning System Proposed by JICA Study Team

As achievement of the workshop, constructive development of the participatory planning with community on the Early Warning System were completed as shown in Figure 5.5.5. In 12 de Octubre, community participants concluded that taking advantage of existing active community organization actors such as Sector Coordinators (12 persons), CTU(20) and Bolivarian Circle (5), these actors functions under neighborhood association which is considered as direct contact to Emergency Operation Center for effective warning information flow to each sectors (more than 20 sectors) at any level of warning for evacuation. On the other hand, in Los Choros, as shown in Figure 5.5.6, from Level 0 (normal)-Level 1 (Alarm), community participants showed the availability of Internet and Web side of meteorological information site and give information to technical institution as local observation as well. In this community also, likely suggested center function of neighborhood association and sector coordinators under of that. Interesting point is that formation of “Community Technical Committee (5 persons)” was suggested by these participants from the necessity through the constructive meetings. The role of these technical members are considered with specific skills of early warning for evacuation. In addition in Level 1 (Alarm)-Level 2 (Evacuation) moment, the committees merged into neighborhood organization as disaster prevention committees to strengthen the capacity and against coming disaster (See Figure 5.5.7).

And summary of discussion of participants are presented Table 5.5.1.

These findings proved the characteristics of two communities, Barrio and urban, are ultimately important to take into account all stakeholders related with disaster management from policy-makers till community people if these actors truly wish to implement functionally proposed early warning system. Apparently, it indicates physical resource and demanded information are different among these different communities although both communities require simple local messages to receive and willingness to provide local information to governmental agencies as well. Therefore, it is strongly

recommend for these policy makers and technical engineers in governmental agencies to make effective and useful early warning system corroborating with community.

(3) **Role of Intermediate Group**

Through the Pilot study, the “Intermediate Group” (a sub contractor) contribution revealed mutual intermediate role between community and governmental agencies or others, and improved interrelationship among them as well as strengthening and enlarging capacity of community. In the Pilot Study, the “Intermediate Group” with interdisciplinary skills brought interesting aspects by constructive mutual trust and interrelationship with community and brought up to community voice to municipality during work of evaluation of community-based early warning system. Following contributions of the Intermediate Group were found out;

Intermediate Group enabled to:

- get into community and also accepted by the community, and then introduced the community newly the topic, early warning system and encouraged and motivated community to constantly work sharing with common goal, community – based early warning system. ⇔ **Communication Skills**
- bring interactive group dynamic within the community and through constructive workshop and meetings like new digging up hidden leaders were shown up
- ⇔ **Facilitation Skills**
- make link and connection between community and Civil Protection in municipality, other agencies. ⇔ **Negotiation Skills**
- stimulate consolidation of community by integrated existing community resources
- ⇔ **Community Promotion Skills**

(4) **Summary**

Through all community based early warning management in the pilot community, following factors were come up for expecting capacity of for better community-based early warning management.

- 1) Understanding Own Community’s Risk and Vulnerability

Every community members have responsibility to know and understand the neighborhood risky environment and condition where could occur floods or landslides etc.

2) Establishment of Community Resource Profile

Community resource profile such as identified stakeholders; the role of emergency situation and diplomacy roles such as negotiation to governmental organization to get more supports or cooperation with other community is ultimately necessary from the stage of preparation. Beside, *contact telephone trees* within the community are to enable effective any information of risk or evacuation flow in the community.

3) Community Map

Including evacuation route, shelter locations, risk and vulnerability area, responsible persons with instructions or possessing key, and locations of community organizations (Neighborhood Association, CTU and others), Disability persons needed with help etc.

4) Registration of Information System

Communities own initiative and actions are enormously important for any case of community- based disaster management. By technical supports from related organizations, the community should develop and update community information including own censuses. This preparation would be useful to become the data base in case of disaster, for registration of human data such as insured and missing people causes by flooding or other disaster would be management by community people as preliminary actor.

In the end, brief strategy is summarized below. According to each step, main actor's responsibility are shown as ★.

| Step | Items for Setting up Functional Community – Based-Early Warning System for Proper Action (CEWS) | Government al Intuitions | Community | Intimidate Group with facilitator skills |
|------|--|--------------------------|-----------|--|
| 1 | Identification the necessity and efficiency of CEWS in the targeted community | ★★★ | ★ | ★★ |
| 2 | Identification of Existing Community Organizations and its development toward Community Organization for Early Waning System | ★ | ★★ | ★★★ |
| 3 | Empowerment of the Community Organization in a topics of Leadership, Consolidation, Communication and Negotiation skills, Sustainability, Autonomy etc for CEWS. | ★★ | ★★★ | ★★ |
| 4 | Building up Strategy for CEWS based on Investigation in depth. | ★★ | ★★★ | ★★ |
| 5 | Implementation of the Strategy from no 1 to 4) and How, ? Methodology? materials? training? | ★★★ | ★★★ | ★★★ |

5.5.6. Results of Pilot Study of Community–Based Disaster Management–Strategy for Earthquake Disaster

One human characteristic revealed in the ethnography part of Social Vulnerability Study is that perception of earthquake disaster wouldn't stay people's in minds due to the low frequency of earthquake occurrence and its episodic trend. Thus, it is not so simple to raise community awareness on preparedness for an unknown earthquake disaster beforehand in spite of the importance to the community. For the purpose of raising community self-motivation and self-preparedness against disaster, Stakeholder Analysis and DIG of earthquake disaster were applied as participatory community centered methods in two pilot urban communities (La Vega as Barrio area and San Bernardino). In this section, results of DIG in San Bernardino and Stakeholder Analysis in La Vega are presented because of the limited space in this report.

(1) San Bernardino

The population estimated in San Bernardino is about 26,973 inhabitants (National Institute of Statistics 2001). San Bernardino is composed of the middle and high class families, with high income levels related with import and commercial activities; it is one of the areas in Caracas with a higher number of public and private assistance and educational centers. The environment is considered as having important parameters for establishing the outlines for earthquake disaster preparation. DIG of earthquake disaster is presented as follows:

Earthquake Disaster Scenarios

Notification Message 1 Hour: 4:30 p.m.

A strong seismic movement shakes the whole sector. Screams and aid calls are heard since then. Many houses have collapsed or are seriously affected. Due to the collapse of towers and antennas there is neither electric power nor telephone service and the cell phone lines are faulty and congested. Pipes carrying drinkable water have collapsed. There is no information about the magnitude of the event in the parish, or in the rest of the city, or the country.


Notification Message 2 Hour: 4:40 p.m.

Information from a radio station was obtained: Seismic movement, 7.5 on the Richter scale has affected the centre and west part of the city. The damage scale is over the capacity of security and emergency organization: Police and Fire Departments. Several bridges have collapsed, particularly the bridge of Panteón Ave that links the Parishes of San José and San Bernardino. The authorities have prohibited the use of the Cota Mil because of structural damage. The roads are obstructed by trees, posts and electric lines knocked down.


Notification Message 3 Hour: 4:50 p.m.

San Bernardino's population is isolated due to collapses in several sectors. A neighborhood group went through to estimate the degree of damage. At least 30 fires have been detected in several sectors. The only exit from the community is the Cota Mil. In Avila Ave., 2 buildings are affected. To the north of San Bernardino 50 houses, and in the commercial sector 52 and 23 houses are not able to access any assistance

After the above-mentioned individual simulation work on the community map, the group simulation work proceeded. Output of certain workgroup in DIG is described below.

| | |
|--|---|
| <p>Immediate Action Taken Output of summary of simulation by participants</p> <ol style="list-style-type: none"> 1. - Looking for exits and rush to open spaces 2. - The neighbors were evicted to concentration places. 3. - Communication with Fire Stations and Assistance centers. 4. - Confirmation of appropriate communication measurement (Bicycle ?, foot ?) 5. - Location of Banks (to look for Radios) 6. - Transfer the injured to safety places 7. - Searching localization of electric plants 8. - Gathering to activate security brigades by sectors 9. - Starting evacuation by sectors 10. - Precaution regarding our neighbors (areas) 11. - Logistics and distribution of medicines, food, water and first aid. 12. - Contact with the Companies to cut off services. 13. -. Location of possible heliports | <p>The DIG Group</p>  |
| <p>Strengths <i>Available Physical and Organizational Resources</i></p> <ul style="list-style-type: none"> • Assistance centers • Available free areas • Coordinating Neighbors Association • Support Institutions (Navy-CALEV-Banks, etc.) | <p>Weaknesses Lack of Resources for Disaster Management</p> <ul style="list-style-type: none"> • Less Organization and communication among neighbors (community) • Lack of roads which help communication for rescue • Missing pharmacies and medical information • Lack of urban area and infrastructure maps • Lack of Community contingency plan • Lack of a Security Committee • Lack of knowledge of the roads for the planning and urban areas |


Work Map




Through active participant involvement, people understood the strengths and weakness of the surroundings of the community from earthquake disaster imagination game and developed group responses. In short, this type of “Learning by doing” in participatory lessons encouraged the community to take next step for community preparation to target reducing vulnerability and overcome weaknesses in the community. The constructive meetings for the next step were

proposed from the community. The material below presents conclusions through Stakeholders Analysis in San Bernardino by revealing different responses of each stakeholder in the community.


Community People, San Bernardino:

| | |
|---|---|
| <p>Demands - we need;</p> <ul style="list-style-type: none"> • Technical knowledge for making our own emergencies plan by ourselves • How the existing organizations take responsibilities in emergency prevention and attention. • The risk policies of institutions at municipal state/national levels • Housing Reinforcement Fund and subsidies • Improvement of training given accessibility |  |
|---|---|


Civil Protection - Municipality Libertador:

| | |
|--|--|
| <ul style="list-style-type: none"> • We try to offer our maximum support and training in communities, for emergencies prevention and attention. • The members of the community worked par excellence. They were the first to respond in an emergency, and so it is necessary to stimulate the creation of voluntary groups to integrate the emergencies brigades and by training them in accordance with the necessities of the community. • The members of the voluntary groups can help in the training of the community. |  |
|--|--|

Caracas Metropolitan Fire Department:

| | |
|--|---|
| <ul style="list-style-type: none"> • We are at the disposition of the community, offering a wide range of courses. • Tell us which training they need as support • We have the capacity of also assisting them on Saturdays. • We offer to apply them in the educational facilities for the School Emergency Plan. |  |
|--|---|

Electricity of Caracas:

| | |
|---|---|
| <ul style="list-style-type: none"> • Our organization directs most of the actions of risk prevention in the internal and operational environment. • We have programs of preventive education directed to the community for electric risks. • If requested by the community, informal lectures can be presented in schools about electric risk prevention and energy saving. • We have worked much in neighborhoods to address the risk of the aerial electrical installation. |  |
|---|---|

The results of the stakeholder analysis show that related stakeholders do work together to discuss the common topic of earthquake disaster management and to understand each stakeholder's role, contributions, conflict/controversy and strategy. By exchanging views in dynamic group situations, they reached common understanding regarding community needs such as establishment of disaster prevention and evacuation policy, initiatives for both institutions and the community. The contributions of intervention by facilitators were recognized by stakeholders themselves. Also, the results show that both civil protection and fire department were willing to provide training courses to the community. This suggests the need for improvement of the current duplicate management condition among these agencies and to clarify an effective role individually along with the organization policy. Thus, the stakeholder analysis meeting brought fruitful information of the community both internally and externally as well as questioning areas for better disaster management.

(2) La Vega

The Parrish of La Vega has 122,189 inhabitants and most of the houses were constructed on the steepest mountain slopes and built by non-engineered structures symbolic of Barrios (see photo). This results in physical vulnerable condition because the analysis of the seismic scenario of the 1967 Caracas (JICA Study team) indicated that the community possesses high positional of earthquake disaster damage. Although the inhabitants have noticed their risky conditions, attempts to improve these vulnerable housing conditions and its location for disaster preparation have not been put into the community agenda.



On the other hand, a Catholic Church helps the community for improvement of basic human services like sanitation, education, etc. as well as the traditional religious services. Under the coordination of religious theme that provides coherence for the community and direction for their global work, several community leaders have engaged in community work with dedication, including activation of neighborhood association and other community organization activities.

Generally, the community has contact with municipal Civil Protection, but contingency plan for disasters has not been prepared and few communication mechanisms in case of an emergency functions so far.

Accordingly, as major participatory techniques, Stakeholder Analysis and DIG were also conducted in La Vega also. The responses or opinions were basically similar to the case of San Bernardino regardless of urban or Barrio areas, although the community resources are totally different among these communities. They mentioned the functional role of neighborhood associations; effective support form governmental agencies including the comment that subsidies are essential to improve community preparation. For example, in La Vega, vulnerable physical conditions economically and environmentally are vast; however, organizational resources have links with governmental and other institutions, and human resources social and culturally are strongly enough. Thus, the degree of participation and motivation of community people were pretty high reflecting the presence and role of leadership.

Reflecting the conditions in La Vega, the first Reinforcement of Risky Buildings in Barrios was attempted for promotion of the approach to other similar areas. In the next section, the results are discussed.

5. 5. 7. Promotion of Reinforcement of Risky Buildings

From the Social Study in Community Organization for Earthquake Disaster Prevention, Table S24-4.5.1 offers a set of economic parameters for household investment in barrios, which include household assets from land tenure to small utensils, home improvements up to large appliances and interior finishing details. In other words, these parameters are used as indicators to estimate the economic value of different types of housing in Barrios. The concept is that larger investment in homes means that there is greater likelihood to invest in mitigation of value loss if proper education and awareness is in place. Less investment in homes implies less likelihood to invest out of their pocket in house reinforcement. The parameters reveal what could be investment factors that economically would encourage community to use in the decision-making process; it is an economic approach based only on asset and property value.

However, our approach focused on human systems and so necessarily includes other aspects besides economic assumptions. One is the value of human life that is the highest factor to be considered since the value placed on life is priceless, monetarily speaking. Research and interviews with specialized professionals with long standing experience in social and psychological aspects of barrio communities explained that in normal community livelihood, the building of self-identity is socially constructed along with all the physical improvement of habilitation. Particularly, it was pointed out that the care for children, elders and extended family can make certain members of the family (head of households) to carry on the burden of family safety, at the cost of their own nutrition, health condition and education opportunities, at large personal sacrifice, and this was particularly true for women. In terms of measuring their own risk to disasters, the tendency is to avoid thinking of themselves and their own

safety, but to center their worries and sensitivity of risk on they loved ones. Understanding this rationale, the awareness raising task can use the vision of the affect on cared ones as well as on themselves, in order to help visualize the likelihood of loss in the eventual case of earthquake disasters with practically no time for preparation. The construction of self-identity and self-value of their own lives involves a psychological process (more feasible by collective social intervention rather than individuals in barrio settings) which takes time to develop since it is based on self-esteem and self-image values. In addition, the lesson from the 1995 Kobe earthquake in which many human lives were lost in very short time due to building collapse with weak structures to the community helped show how much building structures influences the loss of human lives.

In sum, through the pilot study and reinforcement program (obviously an integrated approach which includes many factors in terms of economic decisions, the value of human lives and personal beliefs), social contexts, institutional framework and education processes were aroused. Applying real teaching materials from Kobe earthquake was understood by some of the community. in order to involve the community in the reinforcement programs, interdisciplinary groups were formed with the intervention of Key Actors in different matters, technical as well as social (engineers, social communicators, economists, sociologists, psychologists). This multidisciplinary approach guarantees in a way to be the first action for the implantation of effective and efficient reinforcement projects for the community.

5. 5. 8. Results of Pilot Study of Community–Based Disaster Management–Strategy for Relocation of Community away from Risky Areas

(1) Introduction

Relocation is an option to address risk by moving away from risky areas, and this is the best way to protect peoples lives from disaster. However, most of the people that live in the areas of highest risk in Caracas belong to the lower social stratum and it is difficult for them to leave the area where they live, just to protect themselves from disaster. In the quest of a strategy, how to enable relocation project work in disaster management is proposed. The Study Team conducted a social survey with the approach as follows:

Step 1: A review of previous experiences in relocation in various parts of the country and particularly in Caracas.

Step 2. Review and analysis of Catuche community, considered one of the successful community-based disaster management efforts to identify appropriate countermeasures to relocate people from risky areas.

Step 3. Finally, formulation of strategic countermeasures for the relocation of people from risky areas, based on Catuche experience. These were validated through the assessments made by Los Lanos Community, a neighbourhood located by the Anauco River that was affected during the event of floods occurred in Caracas in December 1999.

(2) Revision of Relocation of Past

There were several relocation projects in the past from 1940's to 1990's. They are categorized into: 1) relocation due to housing substitution, 2) relocation due to adverse events that have destroyed the urban structures, and 3) relocation due to the installation of new public works.

Relocation is also categorized by the distance to the new place and original place, as follows: 1) within or near the community, 2) away from the community in the new distant place with no existing community, and 3) away and toward another community.

In many cases, successful relocation process is accompanied by: 1) organized community, 2) community awareness of risk situation, and 3) understanding of the impact of the relocation to the community. Sometimes even after disaster, when the community has the initiative, the relocation would work; however, when the authority has the initiative, the community would close in on itself and not be willing to move out (see Table S24-4.6.1).

Relocation related to disasters basically happened after the community had experienced the disaster. There seems to be no evidence that shows that a community moved away from the risky place without having experienced any disaster.

(3) Catuche

Catuche community is considered to be a successful community with its active approach for community development and disaster management that minimized the number of victims in the event of the 1999 debris flow disaster. After the disaster, the community started relocation projects from the damaged area to a nearby area. In spite of this example, the Study Team examined in detail how the community was willing to move out from where they lived to a safer place.

From the research on the community and interview with the charismatic leader Mr. Pedro Serrano, the following details were found:

As often pointed out about successful community action, Catuche has: 1) good advocacy by a Jesuit Father José Virtuoso, 2) a strong charismatic leader from the community, 3) a functional community organization which was created as a result of active community activities and

afterwards has been consolidated with other religious organizations, presently forming the Catuche Social Consortium, and 4) experts as external resources, such as an architect like Cesar Martin.

With such formation of the community organization, the Catuche community has collective power as an autonomous community organization and takes actions for the community with full participation of each member of community in every activity in the community.

In addition, the key to a successful community also includes community organization with full participation of members in decision making, and collective team leaders with equality of rights and responsibility in operation of the community activities. It is also important to maintain equal partnership with professionals for technical advice. The community decides what to do and how to do it for betterment of their life there. The process of reconstruction of the Catuche community after the 1999 disaster clearly shows that the community works in this way. However, it should be noted that the path to this stage is not short, but one requiring tenacity and patience.

(4) Aspects to be Considered for the Relocation Process

1) Institutional intervention

Overcoming the difficulties that have had decisive effect in the success or failure of a policy, taking in consideration the experiences in favor of the relocation and/or the reinforcement housing programs of the urban neighborhoods, consider the following aspects:

- Formulation of policies relevant to administration of settlement of immigrants : how to treat with people living in the risky area, the provision of the right to live or land ownership to those living in the risky areas.
- Establishment of the institutional arrangement for relocation of the community and implementation of the relocation projects, including budgeting.
- People's participation in planning and design process of the relocation project. Otherwise, people will oppose the relocation plan.
- Transparency in use of finance for the project.
- Mutual trust between people and government is a prerequisite for the relocation project to start, otherwise the project will not.

- Sustainability of the project by political will (advocation) and continuity should be maintained in spite of government's changes.

2) Professionals

- Professionals for technical support need to spend much time with the community and understand the community's dynamism and work on the project as a partner of the community.
- Professionals need to respect the community's participation in the planning, design, and implementation stages, and have it as open as possible to the community.

3) Conditions on which people would move out of the risky place where they live

The following aspects need to be taken into account for the barrio people living on risky land to move in a voluntary way, otherwise the project will not succeed.

- If their housing is relocated within the same area or near the community.
- If they are fully aware of the risk when living in a high risk area with the presence of a river.
- If it improves their quality of life: i.e., to change their house for another more decent that offers them bigger security, when being located to a safer place, far from the river.
- If the surrounding area where they live improves: i.e., to endow the new area with suitable and sufficient services, to create or to design amusement areas, of recreation, sports, community spaces, educational areas, health services, among others.
- If they will have access to a house they own. The inhabitants of Los Lanos, didn't want to change houses they own, for others that are leased, rented or given as accommodation.
- If the community participates in the design of the relocation proposal.
- They didn't want to be relocated next to inhabitants of other barrios of different and unknown origin; the neighbors were not willing to take the risk of the future coexistence with these inhabitants. The design of the preliminary proposal and the actions to be taken should be developed in permanent consultation with the community.

- If the community has control of the financial elements that intervene in the investment, they are willing to become participants of the rational use and control of materials for the construction of the houses.

Table 5.1.1 Constitutional Articles Related to Disaster Mitigation and Prevention Planning
CONSTITUTIONAL FRAMEWORK – REGULATION TO DISASTER CATEGORY AND STAGE

| Disaster Category | Stage | Government Level (Articles) | | | | Main Articles Description |
|---------------------------------|---------------------------------|--|--|--|----------------|--|
| | | National | Metropolitan | Municipal | Parroquial | |
| | | | | | | |
| EARTH QUAKE SEDIMENTATION | Mitigation | 2 55 127 129 134 140 156 (9 y 23) 185 332 (4) 337 338 | 168 171 178 (4) 182 184 185 332 (4) 337 338 | 168 169 170 171 178 (4) 182 184 255 332 | 169 173 182 | Art. 2: Life as a human value and state right. Art. 55: Establishes civil protection by the State and citizen participation in prevention programs. Art. 58: The right to be informed. Art. 102: Education as a human right. Art. 107: Mandatory environmental education. Art. 108: Communication media as a tool for citizen education. Art. 115: Property rights. Art. 127: Environmental rights. Art. 128: Establishes territorial order policy to attend ecological, geographical, population, social, cultural, economic and political aspects. Art. 129: Requires environmental and social/ cultural. Impact studies for projects of potential impacts. Art. 156: Emergency and disaster administration national policy in territorial order, housing and environment. Art. 168: Municipalities are the primary unit of national organization and public management. Art. 170: Allows for intergovernmental agreements for two or more municipal o metropolitan districts. Art. 171: Allow establishing of metropolitan districts composed of two or more municipalities. Art. 178: Establishes 8 areas of municipal action to improve citizen lives. Art. 182: Requires establishing public planning councils. |
| | Rehabilitation | 2 55 115 127 128 129 140 156 (9 y 23) 332 (4) | 168 171 172 178 (4) 182 | 168 171 173 174 178 (4) 182 | 169 173 182 | |
| | Preparation for Response | 2 55 58 102 107 108 128 131 132 143 236 (7) 281 283 332 337 338 339 | 168 171 178 (4) 281 | 168 171 178 (4) 281 | 169 173 182 | |
| | Emergency Response | 2 55 58 102 107 128 131 132 143 236 (7) 281 283 332 (4) 337 338 339 | 168 171 178 (4) 236 (7) | 168 171 178 (4) 236 (7) | 169 173 182 | Art. 332 (4): Civil Protection and Disaster Administration use institution for citizen security. Art. 337: Allows President to declare a State of constitution exception for natural or ecological causes. Art.338: Allows President to declare a State of Alarm for Catastrophies or public calamities. |

**Table 5.1.2 Organic Laws Framework (Articles)
ASSOCIATED LAW-REGULATION ACCORDING DISASTER CATEGORY AND STAGE**

| Disaster Category | Stage | Government Level | Declaration of States of Exception | Environment and Rules | Territorial Order | ORGANIC LAWS (ARTICLES) | | | Urban Order or Planning | National Armed Forces |
|------------------------------|------------------------------|--------------------------|------------------------------------|--------------------------------------|---|--|--------------------|--------------------|-------------------------|-----------------------|
| | | | | | | Municipal Regimen | Rules | Law | | |
| EARTHQUAKE AND SEDIMENTATION | Mitigation | National | 1 2 3 4 5 6 7 8 15 20 21 22 | 2 3 4 5 9 10 11 15 16 17 18 19 | 4 5 6 7 8 13 28 29 30 31 32 34 35 36 (13) 37 38 | 1 2 3 4 5 6 | 1 2 3 6 8 23 24 | 57 | | |
| | | Metropolitan | 3 4 6 7 20 21 22 | 2 3 4 10 15 17 18 19 | 71 4 5 6 7 8 13 19 28 36 (13) 37 39 | 1 2 3 4 5 6 | | | | |
| | | Municipal | | 2 3 4 10 15 | 4 5 6 7 8 13 36 (13) 37 84 | | | | | |
| | | Parroquial | | IDEM | 73 13 32 34 35 37 78 79 | | | | | |
| | Rehabilitation | National | 1 2 3 4 5 6 7 8 15 20 21 22 | 2 3 4 10 15 17 18 19 | N/A | | 1 2 3 4 5 6 | 1 2 3 6 8 23 24 | 57 | |
| | | Metropolitan | 3 4 6 7 20 21 22 | 2 3 4 10 15 | 71 4 5 6 7 8 13 19 28 36 (13) 37 39 | 1 2 3 4 5 6 | | | | |
| | | Municipal | | 2 3 4 10 15 | 4 5 6 7 8 13 36 (13) 37 84 | | | | | |
| | | Parroquial | | IDEM | 73 13 32 34 35 37 78 79 | | | | | |
| | EARTHQUAKE AND SEDIMENTATION | Preparation For Response | National | 1 2 3 4 5 6 7 8 15 20 21 22 | 2 3 4 5 10 15 18 19 | N/A | 1 2 3 4 5 6 | 1 2 3 6 8 23 24 | 57 | |
| | | | Metropolitan | 3 4 6 7 21 22 | 2 3 4 5 10 | 71 4 5 6 7 8 13 19 28 36 (13) 37 39 | 1 2 3 4 5 6 | | | |
| | | | Municipal | | 2 3 4 5 10 | 4 5 6 7 8 13 36 (13) 37 84 | | | | |
| | | | Parroquial | | IDEM | 73 13 32 34 35 37 78 79 | | | | |
| Emergency Response | | National | 1 2 3 4 5 6 7 8 15 20 21 22 | 2 3 4 10 15 18 19 | N/A | | 1 2 3 4 5 6 | 1 2 3 6 8 23 24 | 57 | |
| | | Metropolitan | 3 4 6 7 21 22 | 2 3 4 10 15 | 71 4 5 6 7 8 13 19 28 36 (13) 37 39 | 1 2 3 4 5 6 | | | | |
| | | Municipal | | 2 3 4 10 15 | 4 5 6 7 8 13 36 (13) 37 84 | | | | | |
| | | Parroquial | | IDEM | 73 13 32 34 35 37 78 79 | | | | | |

N/A: No Application

**Table 5.1.3 Ordinary Laws Framework (Articles)
ASSOCIATED LAW-REGULATION ACCORDING DISASTER CATEGORY AND STAGE**

| Disaster Category | Stage | Government Level | ORDINARY LAWS (ARTICLES) | | | | | Special Law on the Regimen of the Metropolitan District | Creation of Local Councils of Public Planning |
|------------------------------|--------------------------|------------------|--|---|---|-------|---------------------------|---|---|
| | | | Citizen Security Coordination | National Organization of Civil Protection and Disaster Administration | Fire Brigades and Civil Emergencies Administration | | | | |
| EARTHQUAKE AND SEDIMENTATION | Mitigation | National | 1 2 3 4 5 8 9 14 15 16 18 22 23 26 27 28 | 1 2 3 4 5 6 7 13 14 18 19 20 | 1 5 19 24 25 28 29 30 34 35 37 | | | | |
| | | Metropolitan | | 14 15 16 17 | 1 5 11 19 24 25 | 11 14 | 1 2 3 5 6 8 9 10 16 19 | | |
| | | Municipal | | | 1 5 11 | | | | |
| | | | Parroquial | | | 14 | | | |
| | Rehabilitation | National | | 1 2 3 4 5 6 7 | | | | | |
| | | Metropolitan | | | | 11 14 | 1 2 3 5 6 8 9 10 16 19 | | |
| | | Municipal | | | | | | | |
| | | | Parroquial | | | | | | |
| | Preparation For Response | National | | 1 2 3 4 5 6 7 11 13 14 15 18 19 20 22 23 24 25 26 27 | 1 5 11 19 24 25 28 29 30 31 34 35 37 | | | | |
| | | Metropolitan | | | 1 5 11 19 24 25 | 11 14 | 1 2 3 5 6 8 9 10 16 19 | | |
| | | Municipal | | | | | | | |
| | | | Parroquial | | 14 | | | | |
| | Emergency Response | National | | | 1 5 11 15 16 18 19 20 24 25 28 29 30 34 35 37 | | | | |
| | | Metropolitan | | | 1 5 11 15 16 18 | 11 14 | 1 2 3 5 6 8 9 10 16 19 | | |
| | | Municipal | | | 19 20 24 25 | | | | |
| | | Parroquial | | 14 | | | | | |

Table 5.1.4 Legal – Institutional – Organizational Frameworks for Civil Protection and Disaster Administration

| Disaster Category | Stage | Government Level | Public Authority in Charge | Primary Attention Institutions | Secondary Attention Institutions | Support Institutions and Other Organizations Involved | Community Participation |
|------------------------------|--------------------------|------------------|--------------------------------------|---------------------------------|--|---|-------------------------|
| EARTHQUAKE AND SEDIMENTATION | Mitigation/ Prevention | National | MINFRA – MARN – MPD – IGVSB – ONPCAD | ESP | ONPCAD – MD – MINFRA – MARN – MSDS – ESP | ONG – MD – CR – GR – ODS | ODS – SSAI – SOCSAL |
| | | Metropolitan | ADMC – OMPCAD (DG) | ADM (Secretarías) | ADMC (Secretarías) | | CLP – SOCSAL |
| | | Municipal | AM – OMU PCAD (Institutos) | AM (Corporaciones de Servicios) | AM | | |
| | | Parroquial | | | | | |
| | Rehabilitation | National | MINFRA – MARN – MPD | ESP | ONPCAD – MD – MINFRA – MARN – MSDS – ESP | ONG – MD – CR – GR – ODS | ODS – SSAI – SOCSAL |
| | | Metropolitan | ADMC – OMPCAD (DG) | ADM (Secretarías) | ADMC (Secretarías) | | SOCSAL |
| | | Municipal | AM – OMU PCAD (Institutos) | AM | AM | | |
| | | Parroquial | | | | | |
| | Preparation For Response | National | MIJ – ONPCAD | Policía – Bomberos | Instituciones públicas o privadas | ONG – MD – CR – GR – ODS | ODS – SSAI – SOCSAL |
| | | Metropolitan | ADMC – OMPCAD (DG) | ADMC – OMPCAD (DG) | ADM (Secretarías) | | SOCSAL |
| | | Municipal | AM – OMU PCAD (Institutos) | AM – OMU PCAD (Institutos) | AM | | |
| | | Parroquial | CAEL | CAEL | CAEL | | |
| | Emergency Response | National | MIJ – ONPCAD | Policía – Bomberos | Instituciones públicas o privadas | ONG – MD – CR – GR – ODS | ODS – SSAI – SOCSAL |
| | | Metropolitan | ADMC – OMPCAD (DG) | ADMC – OMPCAD (DG) | ADMC (Secretarías) | | SOCSAL |
| | | Municipal | AM – OMU PCAD (Institutos) | AM – OMU PCAD (Institutos) | AM (Corporaciones) | | |
| | | Parroquial | CAEL | CAEL | CAEL | | |

Table 5.1.5 Coordination For Disaster Mitigation & Preparedness

| | INFORMAL COORDINATION | FORMAL | SUGGESTED IMPROVEMENTS |
|----------------------------|--------------------------|--------|---|
| HORIZONTAL Within Unit | Strong | Weak | Adopt ordinances for integration of effort |
| HORIZONTAL Between Unit | Moderate | Weak | Use contracts, and formal service agreements, common model ordinances |
| VERTICAL Between Units | Weak | Weak | Use contracts, and formal service agreements, joint exercises, model ordinances |

Source: JICA Study Team

Table 5.2.1 MSDS State of Advances in Disaster Management¹

| | |
|---|---|
| PROGRAM NAME | Transitory phase. Coordination between the different MSDS structures in an Emergency Committee. |
| Full time staff (Numbers and specialties) | ¿? |
| Operative budget US\$ thousands from public funds and international cooperation | ¿? |
| Hierarchy position | Minister office |
| Disaster local offices (number and geographical influence) | Same structure like central level |
| PREPAREDNESS | |
| Sector Plan last revision | Pre Andean Strategic Social Plan |
| Provincial Plan last revision | In process |
| Hospitals with updated Disaster Plans, number and % | Not available |
| Hospitals with annual drills, numbers | Yes. Army hospitals |
| Hospitals with pre-hospital drills, number and % | Yes. Army hospitals Venezuelan Red Cross hospitals Vargas Hospital. Caracas. |
| Health teams for disaster response | MSDS Civil Protection Red Cross Firefighters Universities |
| Computer equipments availability | Yes. Developed and equipped by the Computation Department: OTIC |
| Internet Access | Yes. Different departments from the MSDS connected in network MSDS web page: http://www.msds.gov.ve E-mails availability at different hierarchy levels |
| Own telecommunication systems (type and quantity) | Yes. Hospitals network connected with the 171 emergency services. Portable systems in the administrative area. |
| Own vehicles | Pool of vehicles |
| MITIGATION | |
| Vulnerability diagnosis (number of hospitals) | Yes. Seven hospitals |
| Reinforcement (number of hospitals) | Yes. Two hospitals |
| Disaster building code | Yes. COVENIN code updated |
| Vulnerability studies in water suppliers | Yes. Three systems. Hydrologic Contingency Plan decree |
| Disaster inclusion in MSDS planning | Yes. Social Strategic Plan |
| TRAINING | |
| University career for specialists | Yes |
| University postgraduated programs (40 hours) | Yes. Central University of Venezuela. Los Andes University Simon Bolívar University. |
| University pregraduated programs (40 hours) | Yes. Los Andes University Central University of Venezuela Andres Bello Catholic University |
| Training courses in mass casualties management (numbers of trained personnel) | Yes. Firefighters National College: Polytechnic Institute. Numbers Colegio Nacional de Bomberos: Instituto Politécnico Bomberos. Numbers unavailable. |
| Trained officials | Unavailable. Estimated in more than 200. |

¹ Information from venezuelan PAHO office

Table 5.2.2 Capacities Matrix for Searching and Rescue

| | Firemen | CP | Volunteer groups | Community |
|---------------------|---------|----|------------------|-----------|
| Organization | | | | |
| Preparaton/training | | | | |
| Information | | | | |
| Planning | | | | |
| Budget | | | | |
| Resources | | | | |
| Communitcations | | | | |
| Drills | | | | |

Table 5.2.3 Hospitals from MSDS and other Organisms in the Metropolitan Area of Caracas (Libertador, Baruta, Chacao, El Hatillo y Sucre)

| Municipality | Hospitals ² | | | | Total |
|-------------------|------------------------|---------|----------|---------|-----------|
| | Type I | Type II | Type III | Type IV | |
| Libertador | 2 | 5 | 6 | 9 | 22 |
| Baruta | - | - | - | - | - |
| Chacao | - | - | - | - | - |
| El Hatillo | - | - | - | - | - |
| Sucre | - | 2 | - | 1 | 3 |
| Total | 2 | 7 | 6 | 10 | 25 |

Table 5.2.4 Ambulatories Placed in the Metropolitan Area of Caracas (Libertador, Baruta, Chacao, El Hatillo y Sucre)

| Municipality | Ambulatories ³ |
|-------------------|---------------------------|
| Libertador | 120 |
| Baruta | 9 |
| Chacao | 1 |
| El Hatillo | 5 |
| Sucre | 13 |
| Total | 148 |

² Hospitals Type I are located in populations up to 20,000 inhabitants, with a demographic influence area up to 60,000 inh. They have between 20 and 50 beds and are organized to provide services in medicine, surgery, pediatrics, gynecology and obstetrics. Hospitals Type II are located in populations with more than 20,000 inh., with a demographic influence area up to 100,000 inh. They have between 50 and 150 beds and are organized to provide services of major complexities than the previous level. Hospitals Type III are located in populations with more than 60,000 inh., with a demographic influence area up to 400,000 inh. They have between 150 and 300 beds and are organized to provide services of major complexities than the previous level. Hospitals Type IV are located in populations with more than 100,000 inh., with a demographic influence area over 1,000,000 inh. They have more than 300 beds and are organized to provide services of major complexities than the previous level.

³ An ambulatory is the first level of health service, and it does not have beds which constitute the main difference with a hospital.

Table 5.3.1 People's Willingness to Collaborate and Training Received

In case of disaster, people are willing to collaborate in:

| | | |
|------------------------------------|------|--------|
| First Aid | 3617 | 75.32% |
| House eviction | 2519 | 52.46% |
| Fire control | 1475 | 30.72% |
| Psychological support | 2537 | 52.83% |
| Rescue | 2266 | 47.19% |
| Radio use | 1556 | 32.40% |
| Organizational support | 2623 | 54.62% |
| Management of food, medicine, etc. | 3149 | 65.58% |
| None | 424 | 8.83% |

Received training in:

| | | |
|------------------------------------|------|--------|
| First Aid | 1282 | 26.70% |
| House eviction | 471 | 9.81% |
| Fire control | 404 | 8.41% |
| Psychological support | 548 | 11.41% |
| Rescue | 569 | 11.85% |
| Radio use | 453 | 9.43% |
| Organizational support | 531 | 11.06% |
| Management of food, medicine, etc. | 593 | 12.35% |
| None | 3224 | 67.14% |

Table 5.3.2 Number of Persons Trained in 2002 (According to Each Institution)

| Institutions / Department Delivering Training | Number of Trained People (approx.) |
|---|------------------------------------|
| Civil Protection ADMC | 20,000 |
| Metropolitan Firefighters | 6,800 |
| Civil Protection of Chacao | 10,700 |
| Civil Protection of Sucre | 6,300 |
| Emergencies of Miranda | 4,000 |
| Local Support Services, A. C. (SOCSAL) | 100 |
| TOTAL | 48,900 |

Table 5.3.3 Suggestions for Risk Perspective Inclusion for First and Second Grade

| Class | Topic | Content | Suggestions to be Included |
|---------------------------|---|---|--|
| First Grade | Family group and housing School community | Cleanliness and housing in food condition What is it? Staff chores | Add "located in a safe place" Include the existence of committees and squads |
| Social Science | Environmental conservation | Ways for human intervention and environmental conservation | Include the concept of threat |
| Physical Education | Outings | Things to take to the beach | Include emergency supplies |
| Second Grade | The community where I live Community Institutions Road education Environmental conservation Risk situations | Community problems Red Cross, Civil Defense, police, firefighters, signals, type of signals, stoplights, conservation, recycling. Natural disasters, causes, floods, forest fires | Include risks Correct Civil Protection Include the concept of threat Include landslides in <i>barrio</i> areas Include earthquakes, others |

Table 5.3.4 Current Approaches on Basic Disasters Including Landslides for Eleventh Graders, Under Pre Military Instruction and Economic Geography (Diversified Second Grade)

| Subject | Topic | Content |
|---------------------------------|---|--|
| Pre-military Instruction | Civil Defense | How does it perform, who performs it, where does it get done Civil Defense organization Concepts of emergency, disaster, causes, civil defense role |
| | First Aid | Importance, basic measures, cases where first aid applies, respiratory revival, hemorrhages and cuts, burns, fractures, poisoning by venomous snakes, drowning, electric shock, poisoning by carbon monoxide, transportation for the wounded |
| Economic Geography | Environmental impact and economic activities | Ecological imbalance caused by human activities Actively participate in the identification and solution of environmental problems directed towards the improvement of the quality of life Environmental education, environmental preservation, contamination factors, solutions Official action on programs and effective political development Proclamation of environmental protection laws Educational type measures |

Table 5.3.5. Training Needs from the Education Counterparts WorkGroup

| Training Needs Mentioned | |
|---|--|
| <u>Management</u> Planning, Supervision Project/Proposal Elaboration Prevention plans, disaster administration (APD) Organizational Development Effective Coordination (with NGOs, private and public organizations) English Language Skills | <u>Preparation and Response</u> Emergencies by hazardous materials Shelter management Telecommunication Rescue: canine, confined areas Hospital eviction Drainage in the case of disaster Order of command |
| <u>Social and Community Aspects</u> Communication Leadership development Personal growth Disaster psychology Social intervention | <u>Methodology</u> Community intervention Community training Training of the trainers Attention to volunteers |

Table 5.3.6 Education Programs and Measures

| Program | Strategy | Target Population | Measure |
|--|--|--|---|
| 1. Professional and High Education | | | |
| 1. 1. Professional Program to Certify by Competence | Reinforce and complete professional skills for currently hired Protection Civil Staff and Managers | - Staff from Protection Civil offices (100-150) -300 persons survey interested in Disaster Management Careers | i. Certification Program Establishment ii. Establishment of Higher Technicians in Emergencies and Disasters Program |
| 1.2. Refreshment Programs and Curricula Enhancement with risk reduction approach for university professional careers | 1. Provide experiences to improve skills for professionals in charge of forming new professionals 2. Inclusion of Technical Courses and Topics into curriculum for key university professions | -Professionals -High Ed Teachers -Academics -Decision makers | i. Exchange programs, internships and national level seminars ii. Study, lobby and reform curricula in professional careers like engineering, architecture, social communication, medical and social work to include risk reduction approach |
| 1.3. Mainstreaming disaster education in teachers education | Raise awareness and promote mainstreaming of disaster approach for future teachers | All University Institutes and Pedagogical Universities | i. Study and proposal for program revision and improvement |
| 2. Primary, Middle and High School Education Programs | | | |
| 2. 1. Inserting risk and disaster programs in official school curriculum | 1. Methodological and topic training in risks and disasters 2. Agreements among MECD, FEDE, ADMC, Municipal Alcaldias | Teachers in most risky areas | i. Curriculum review and proposal ii. Institutional approval and engagement iii. Training modules for teachers (Pilot, implementation, review) |
| 2.2. Education materials for teachers and students | Production of methodological tools for teachers and students for classroom, home and community | 20,000 teachers 500,000 students in Study Area | i. Training materials for teachers and students |
| 3. Community Education and Operational Training | | | |
| 3.1. Community Education Strategy | Policy strategizing and establishment for Protection Civil and related agencies | All agents involved in disaster education, as well as community groups | i. Study, production and implementation of educational strategy |
| 3.2. Training Courses for creating multipliers and community facilitators in communities | Establish permanent educational modules for community persons, leaders, and groups | 28 parroquias community groups and institutions, starting with those located in most risky areas | i. Modules on Operational Techniques, Pedagogy, Leadership and Community Development, Planning. |
| 4. Media Programs for Disaster Preparat. & Risk Reduction | Create and disseminate information to general public | All City Population | i. Production and distribution of multimedia educational programs ii. TV spots and radio programs |

Source: JICA Study Team

Table 5.4.1 Preparation and Organization - Conceptual Continuum

| Category | Community Preparation | Community Organization |
|----------------------|---|---|
| Purpose | Reduce effects (save lives) specific to particular expected events. Strengthen preparedness and response Preparation of a strategy for people's organization | Improve current and structural conditions (quality of life) Strengthen internal leadership, community identity, community capacity. |
| Agenda | Focused to adverse events. Day to day community maintenance. Also tends to focus towards seasonal events | Linked to community development (social investment, zoning, collective health and environment programs) |
| Time Frame | Short / Medium | Médium / Long Term |
| Agents envolved | Civil Protection, Firefighters, Neighborhood Associations, Health committees | Civil Protection, Neighborhood Associations, Health committees, co-management community investments, housing and infrastructure authorities |
| Organizing structure | Ad hoc specific for preparedness, communication networks, education and preparation entities | Ad hoc and also within existing community network or social structures, consensus building, multi sectoral |
| Resources required | Evacuation skills, rescue equipment, food stocks, shelters, emergency funds, hazard and risk maps, community assets and social capital, appreciative approach | Community planning, sustainable development programs, facilitation and horizontal leadership, social capital, lobbying government resources, hazard and risk maps, community assets and social capital, appreciative approach |
| Environment agenda | Maintenance of water streams clean of trash. Improvement of open and green areas, | Improvement of open and green areas. Protection of soil loss, reforestation. |

Table 5.4.2 Responsibilities Pertinent to People's Organization in Venezuelan

| Legislation | |
|--|--|
| Law and Organizations | Responsibility |
| Civil Protection Law | - Must design permanent preparation policies for people's self protection and reduction of vulnerability factors; - Promote and develop citizen self protection |
| Fire Department | - Design and execute prevention, mitigation and preparation for emergencies and function as advisors and promoters |
| Municipal Law | - Mandated to work on civil protection and citizen security |
| Neighborhood Associations | - Promote campaigns & programs for protection of people and assets |
| Local Councils for Public Planning | - Set local emergency fund; people & assets security plan |
| Citizenship (Citizen Security /PC Law) | - Participate in self protection; readiness if required civil support |
| Ministry of Health & Social Develop | - Sponsor community organizing for social development |

**Table 5.4.3 Existing Organization Structures Working in Disaster and Risk
Prevention Metropolitan District of Caracas**

| Community | Organization |
|---|--|
| La Trilla (Libertador) | Comité de Atención Local de Emergencias (CAEL) |
| Catucho (Libertador) | Asociación Civil -Catuche (ASOCICA) |
| Los Anaucos (Libertador) | Asociación Civil -Los Anaucos 2000 |
| 19 de Marzo (Sucre) | Comité de Prot. Civil / Cruz Roja -19 de Marzo |
| El Llanito (Sucre) | Comité de Protección Civil de El Llanito |
| La Castellana-La Floresta (Chacao) | Comité de Atención Local de Emergencias (CAEL) |

Table 5.4.4 Outline of People's Organization Projects

| Concepts/Components People's Organization for Disaster Prevention Concepts |
|---|
| <p>Support to Civil Protection System</p> <ul style="list-style-type: none"> • Organization of appropriate structures or networks in most vulnerable areas • Technical and Institutional Support • Community Preliminary Diagnostic • Identification of initial motors • Inter-institutional coordination • Capacity building and transference • Standardized training modules with specific methodologies and approaches according to characteristics of target population <p>Support to Civil Society</p> <ul style="list-style-type: none"> • Support directly work with populations through social organizations • Identification of capacities in the organizations • Direct support for civil organizations inserting risk factors into their development plans • Identifying development needs and their relation with risk management • Sustaining disaster prevention over time by facilitation and multiplying effect <p>Holistic Perspective</p> <ul style="list-style-type: none"> • Identifying external resources/assets available (institutional, local, community spheres) • Risk reduction screening for development projects • Community motivation • Community prevention and risk reduction indicators <p>Building Community Capacity</p> <ul style="list-style-type: none"> • Methodological tools • Identification of community resources • Creating appropriate materials for community needs |

Table 5.4.5 People's Organization Projects

| Program | Target Population | Measure |
|---|--|---|
| 1.1. Design and Pilot Strategy for People's Organization in Metropolitan District | Municipal PC Institutes, communities in risky areas, social groups and training entities | 1.1.1. Strategy building and institutional lobbying |
| | | 1.1.2. Pilot Project implement Peoples Organizing Strategy |
| 1.2. Policy adoption | 28 Parroquia Sectors, Alcaldias & Alcaldia Metropolitana | 1.2.1. Institute & Community Workshops in Alcaldias Adopt Preparedness Strategy. Program revision, update |
| 2. Disaster Preparation Program | | |
| 2.1. Disaster Preparation Program | Groups and population in most risky areas, expand to all study area | 2.1.1. Program Development in Sector, Parroquia and Municipal units |
| | | 2.1.2. Emergency Plans, Drills & Preparation |
| | | 2.1.3. Community workshops and networking for periodical revision and upgrading |
| 3. Disaster Prevention and Risk Reduction Policy Building | | |
| 3.1. Risk reduction lobbying, planning & policy adoption | Neighborhood associations, CLPPs, Alcaldia, community networks | 3.1.1. Work sessions, Workshops Seminars, Lobbying for Risk Reduction Policy Development |
| | | 3.1.2. Community workshops & networking for policy building risk reduction |
| | | 3.1.3. Municipal Seminars on Disaster Prevention Policies |
| 4. Support Programs | | |
| 4.1. Institutional strengthening | Sectors, Parroquia and Alcaldias | 4.1.1. Policy Development Support Program |
| | | 4.1.2. Evaluation & Monitoring |
| | | 4.1.3. Supporting Materials & Tools |
| 4.2. Community & Municipal Database | | 4.2.1. Inventory of Vulnerability and Assets |
| | | 4.2.2. Computer equipment, programs, training |

Table 5.5.1 Summary of Participatory Planning of Community-Based Early Warning

| Features | Common | | Unique | |
|------------------------------|--|---------------|------------------------------|--|
| | Los Chorros | 12 de Octubre | Los Chorros | 12 de Octubre |
| 1 Local Message | Simple and Understandable | | | |
| 2 Receiving message | No contact, information (Current) | | | |
| | (Expectation from Institutions) ↔ | | Web, Phone, e-mail | Exact Indication from PC for evacuation, Radio |
| 3 Contact to Institutions | (Expectation to Institutions) Often | | | PC Sucre |
| 4 Leadership | Division of responsibility and role established | | | |
| 5 Autonomy | Observation | | | |
| 6 Female Human Resource | | | Gradual Active Participation | Active Participation, Sensitive, time available, close to kids |
| 7 Motivation and Involvement | At first pretty low, it increased because of constructive contact with the third party | | | |

Table 5.5.2 Economic Parameters of Household Investment in Barrios

| Economic parameters | CRITICAL | Bs. | MODERATE | Bs. | HIGH | Bs. |
|--------------------------------------|---|----------------|--|-------------------|--|-------------------|
| Basic construction materials | Wooden/metal for columns, plastic/zinc for roofs wood or tin for walls. | 500,000 | cement in floor, foundations, columns y slabs, zinc roof y partial. flat molding | 5,000,000 | foundations, columns and beams, tabelon or platabanda in roof, 2 or 3 floors, water pipes and embedded light, walls block. | 9,500,000 |
| Primary public services | None | 0 | improvements in wiring y posts, white water tubes ditch | 1,000,000 | street access, sewer & gray water services, public illumination , vehicular access. | 3,000,000 |
| Basic appliances | 2 Stove kerosene / gas small mattress, chairs/stools, etc. | 300,000 | Fridge (9 ft), stove, beds and small mattress. | 800,000 | Refrigerator (+11ft), he/she cooks with oven, room games. | 2,250,000 |
| Tenency of the land | None | 0 | Bienechurias (improvements) | 2,000,000 | Holding of the land | 6,000,000 |
| Complementary construction materials | None | 0 | rustic cement cover in some brick walls, polished cement floors | 2,250,000 | Tile in floors and in walls, macillado in walls, lamps, wooden windows and doors, bathrooms | 5,000,000 |
| Complementary appliances | None | 0 | TV color (13"), basic dining and living room furniture. | 1,200,000 | TV color (+28 "), decoder satellite, team sound, micro-waves, complete dining and living room furniture | 8,500,000 |
| TOTAL INVESTMENT | | 800,000 | | 12,250,000 | | 34,250,000 |

Table 5.5.3 Some examples of Relocation Projects in Venezuela

| Reasons Location | Relocation due to Housing Substitution | Relocation due to Destruction by Adverse events | Relocation due to New public works |
|---|---|--|---|
| Within or near the community | <ul style="list-style-type: none"> • El Silencio (Caracas, 40's) • Primero de Mayo (Calbozo, Guárico state, 80's) | <ul style="list-style-type: none"> • La Quebradita & Nazareno (Caracas, 70's) | <ul style="list-style-type: none"> • |
| Transfer to non-community existing, new distant place | <ul style="list-style-type: none"> • Nueva lagunilas (Caracas, 80's) | <ul style="list-style-type: none"> • Los Cocoteros (Maiquetía, Vargas, 90's) | <ul style="list-style-type: none"> • Nueva Tacagua (Lagunillas, Zulia state, 70's) |
| Transfer toward another community | <ul style="list-style-type: none"> • Urbanization 23 de Enero (Caracas, 50's) • Uranization Caricua & Valle-Coche (Caracas, 60's) | | |

Source: CONAVI, Inavi, Fundacomun and the Institute of Urbanism of the UCV, Mr. Aparicio Zambrano and Mr. Marcelino, neighborhood of La Quebradita.

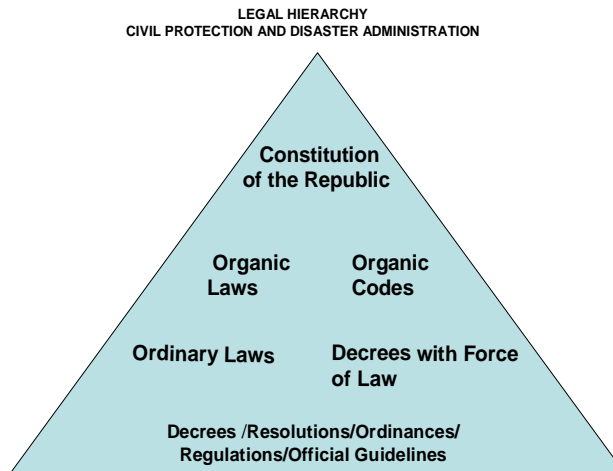


Figure 5.1.1 Legal Framework

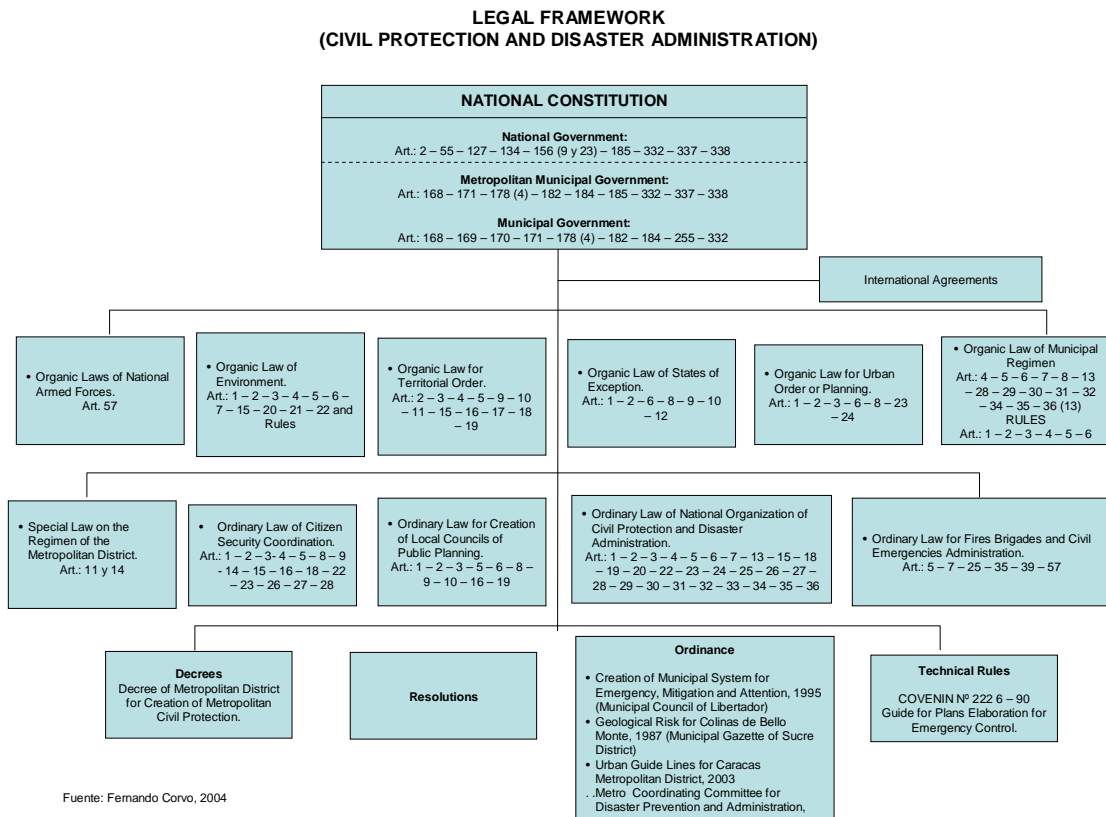
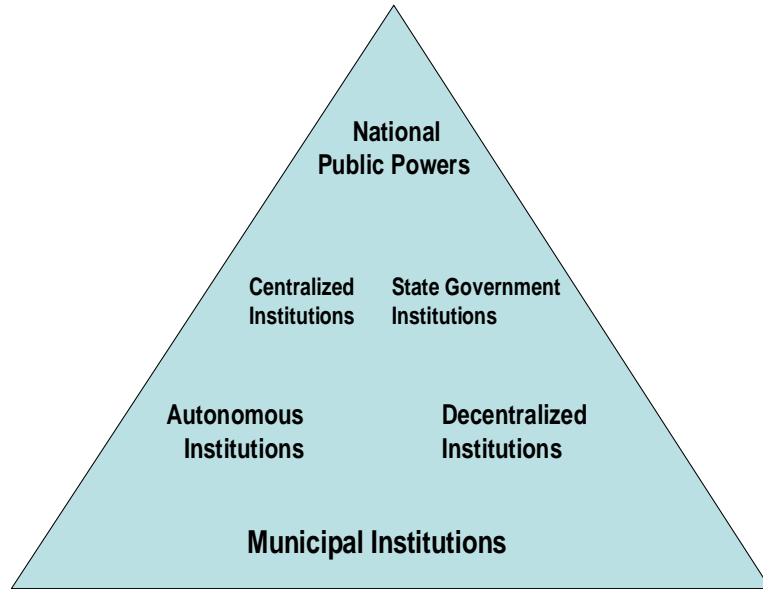


Figure 5.1.2 Legal Framework – Law Level

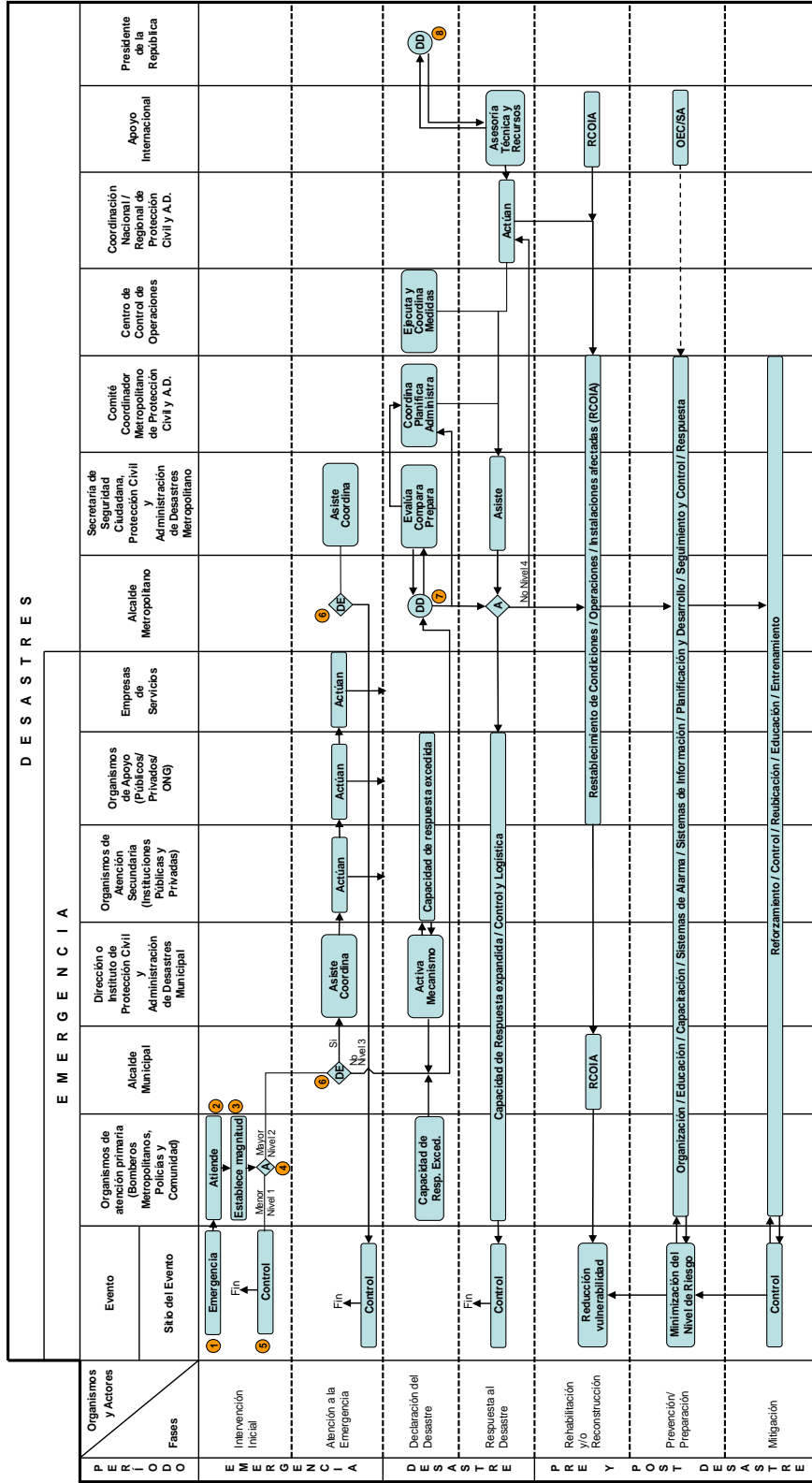
Venezuela's Administrative and Institutional Hierarchy



Institutional Pyramid

Figure 5.1.3 Institutional Pyramid

FLUJOGRAMA MULTISECTORIAL PARA EL MANEJO DE EMERGENCIAS Y DESASTRES EN EL DISTRITO METROPOLITANO DE CARACAS



→ Flujo de Retroalimentación

 A = Activa

 DE = Decreto de Emergencia

 DD = Decreto de Desastre

Figure 5.1.4 Multi-Sectorial Flow Diagram For Disaster & Emergency Management

PHASES OF THE MEDICAL RESPONSE IN EMERGENCIES

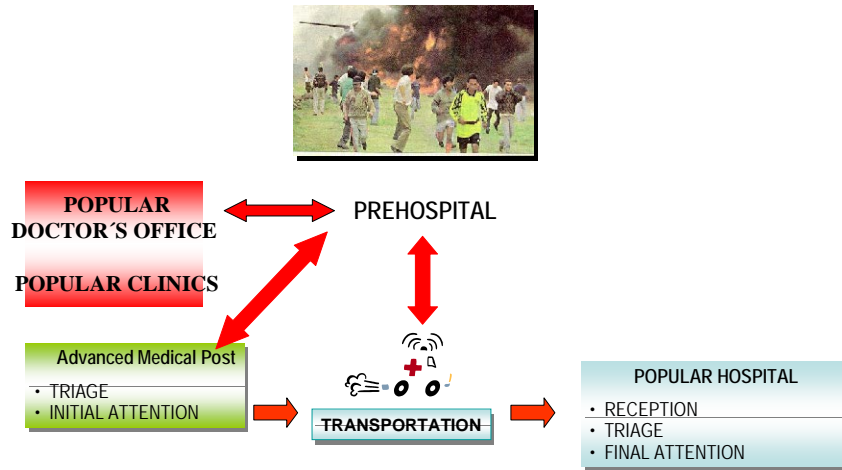


Figure 5.2.1 Emergency Plan for Medical Response.
Emergency and Disasters Department. MSDS

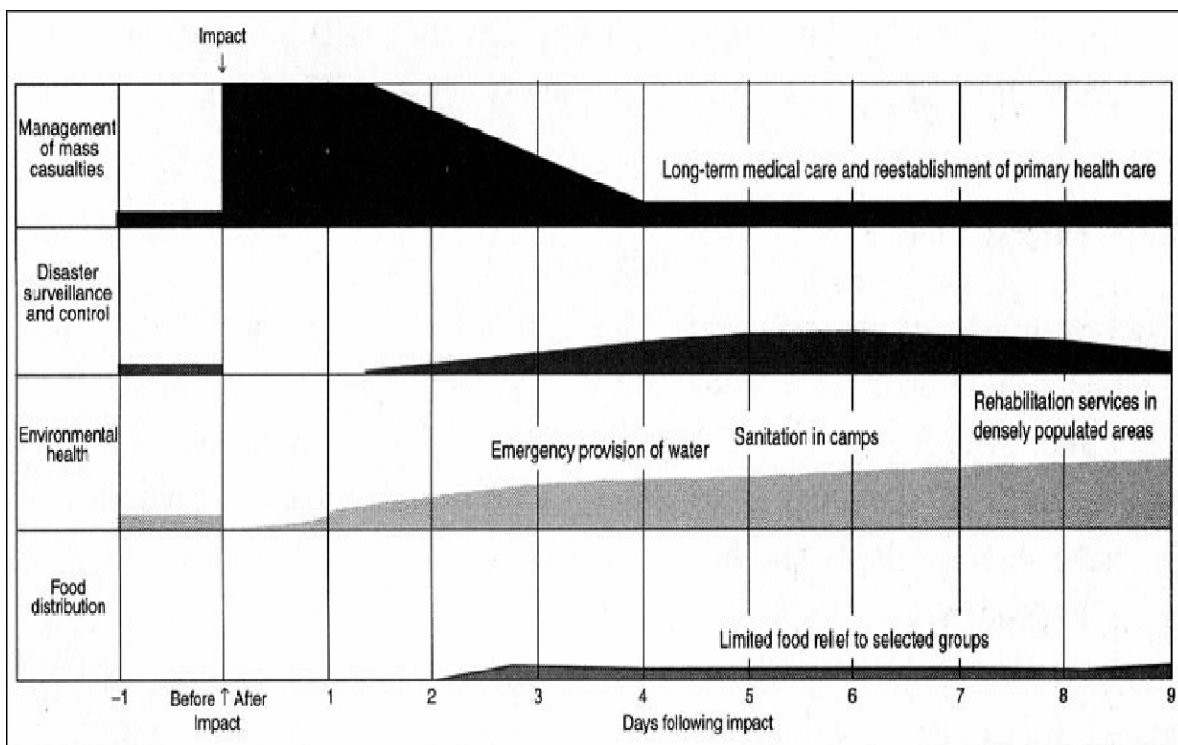


Figure 5.2.2 Changing Needs and Priorities Following Earthquakes¹

¹ Natural Disasters - Protecting the Public's Health (PAHO-OPS, 2000, 133 p.)

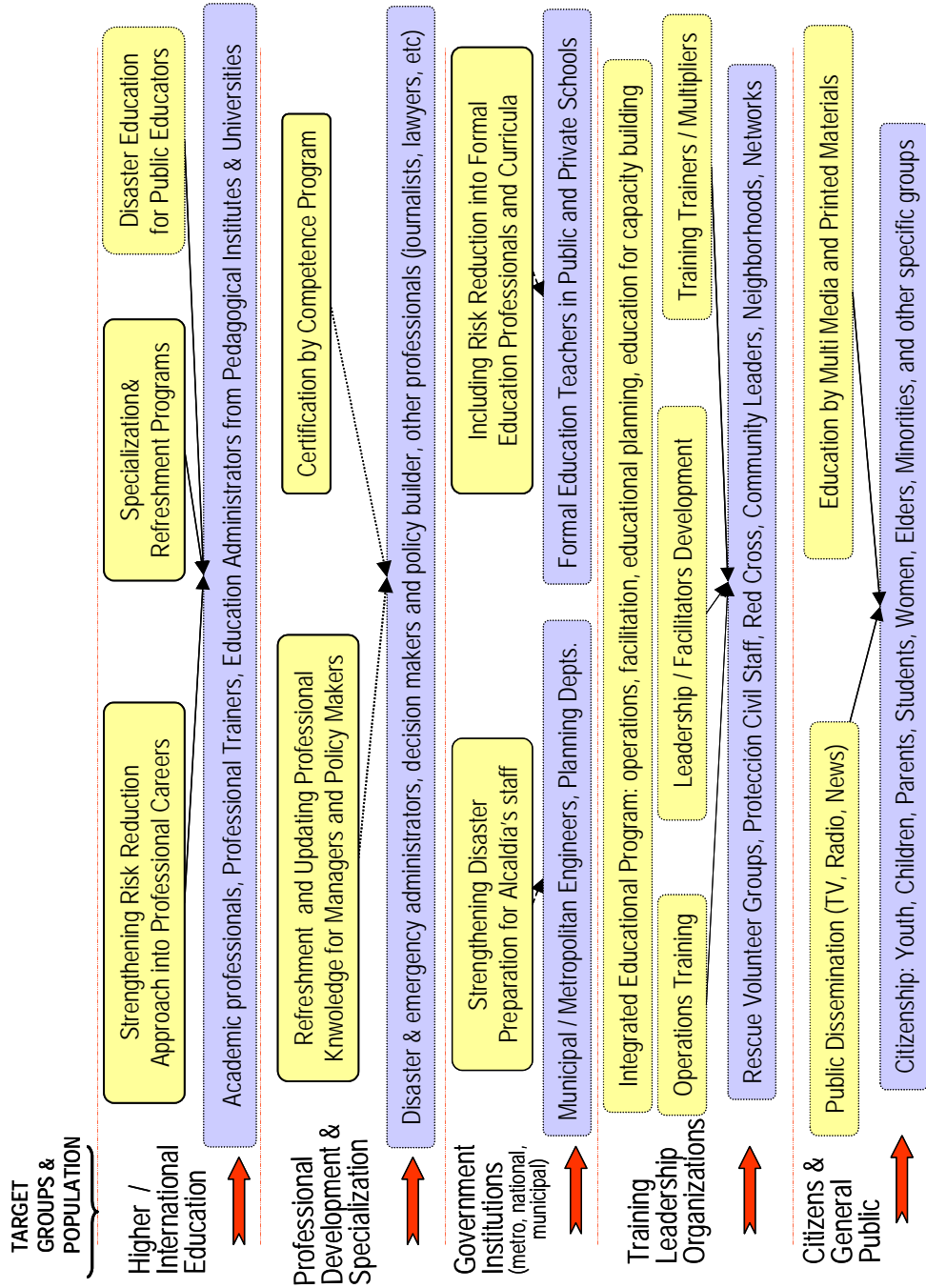


Figure 5.3.1 Education Programs – Master Plan of Metropolitan District of Caracas

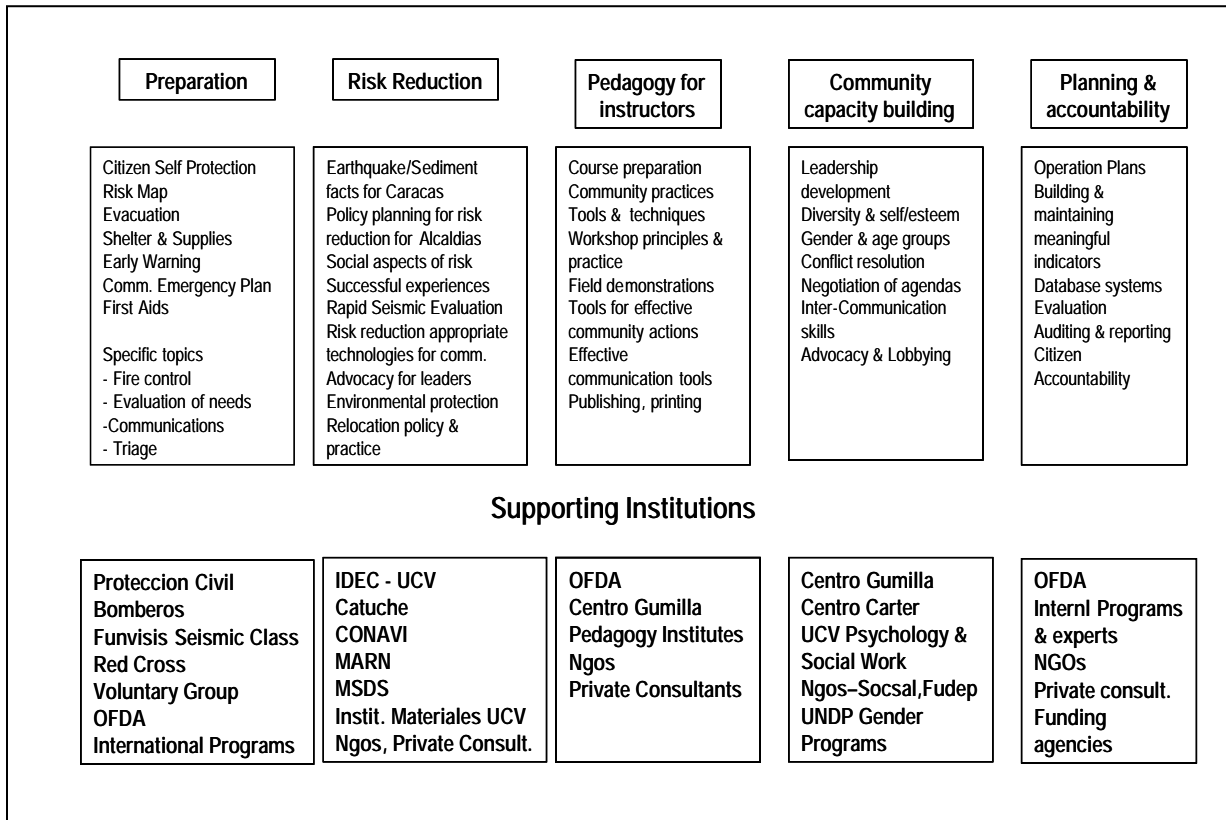


Figure 5.3.2 Holistic Approach to Community Training Program

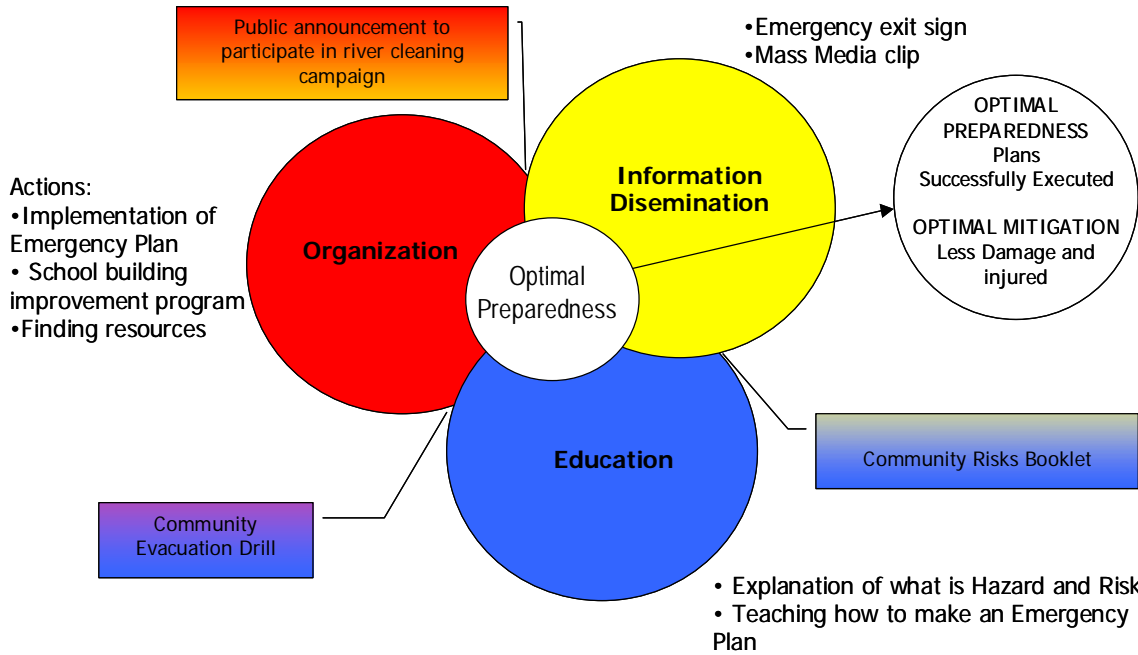


Figure 5.4.1 Interaction of Strategies for Education, Information and Organization for Disaster Prevention

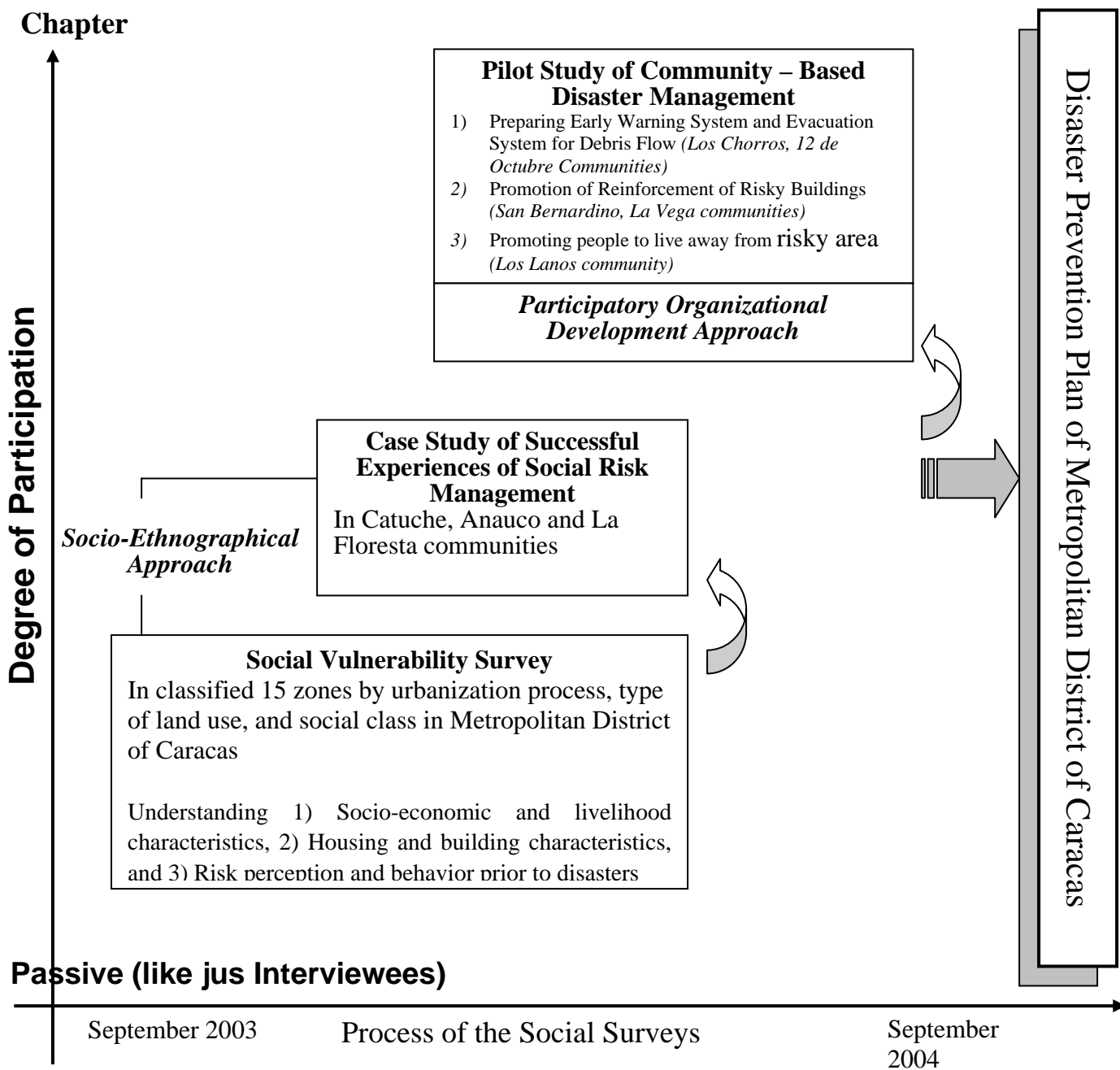


Figure 5.5.1 Process of the Social Surveys in the Study