Sound Practice No.7

Emergency Prevention and Attention Plan for the city of Bogotá - PDPAE

1 Overview

This Sound Practice refers to the design and implementation of a 10-year risk management integral policy for the city of Bogotá through the adoption of an Emergency Prevention and Attention Master Plan (PDPAE). This long term plan is the concerted institutional reply to Decree 332, 2004 which regulates and organizes the District System for the Prevention and Attention of Emergencies. This Plan is the first of its kind in the nation and includes 1) risk management policy for the period 2005-2015 2) responsible institutions/agencies 3) strategic areas and sectors 4) objectives, goals and indicators 5) programs and projects.

What is innovative about this practice is the type of planning used in its formulation, in the sense that instead of using the traditional risk planning based on hazards or risk management policies, it is built upon a systemic approach based on risk management partial scenarios *(escenarios de gestión)* which include: 1) real people linked to each other by social and economical daily relations 2) developing daily activities that use, occupy and transform 3) a specific territory delimited by those social relations.

2 Significant Background Information

Even though risk management in Colombia has remained on a very technical level, as any other sector in society, it has also been very sensitive to political and administrative changes. In Bogotá's recent history, every new elected major has had new approaches and priorities in the theme of risk management. All in all, very important human and financial efforts have taken place, but due to multiple reasons little impact on real risk reduction has been achieved. There is still a lot to be done and the consolidation of unified protocols and procedures is absolutely necessary.

Based on the important experience the city has gathered since the creation on the Fund for the Prevention and Attention of Emergencies – FOPAE in 1987, The System for the Prevention and Attention of Emergencies – SDPAE has built sufficient tools to make its investment more efficient. In light of the great knowledge on risk conditions and the experience on prevention, mitigation, attention and recuperation activities, Decree 332, 2004 compels risk management experts to create a 10 year Plan for Risk Management in Bogotá. The formulation of this Plan is the responsibility of the DPAE, but it is meant to be achieved in a participative inter-institutional process and in a concerted manner.

Taking into account that the most important urban planning tools in Bogotá (Territorial Ordering Plan – POT and the Environmental Plan - PGA) were conceived under a systemic approach, it was decided to follow the same methodology for the city's risk

management policy.

As it was mentioned before, the PDPAE is designed based on risk management partial scenarios. What define a risk management scenario are the human relations that control the processes which transform the territory. These human relations can be territorial (shared space) or sectoral (shared of means and chains of production). The bottom line is that people are the common element in all kinds of hazards, people are the agents and victims of risk, therefore, risk management ought to be directed to the protection of life and the promotion of a prevention culture. The concentration in human relations implies a new social perception of risk management which is now perceived in a complex and organic manner since the way people interact is through the spontaneous generation of networks and relations. The networks that may be found among people tend to be efficient and reliable; people reunite to solve problems and tend to build a solid trust between themselves and a series of customs and habits. The idea of the partial scenario approach is to fortify the existing networks and guide them in the consolidation of agendas which are compatible with the District guidelines.

The pillar of this type of planning has to do with negotiating a common agenda with all the different actors that are part of a specific scenario, and the agenda of the scenario has always a dual nature:

1) On one hand, it tries to modify certain risk related processes handled by the actors, and the situations and objects that those processes generate

2) On the other hand, the fact that those actors need to meet and communicate to negotiate builds up the second agenda, which points to modifying how we relate to each other, strengthening the social network.

Philosophically this method is based on three premises:

1) The State does not produce development. The State interventions do not determinate health, justice, education, well-being, sustainability, etc. Development is the result of networks of social relations, therefore, what the State does, is to accompany, understand and transform those relations in order for them to produce the changes that have been decided to be politically convenient.

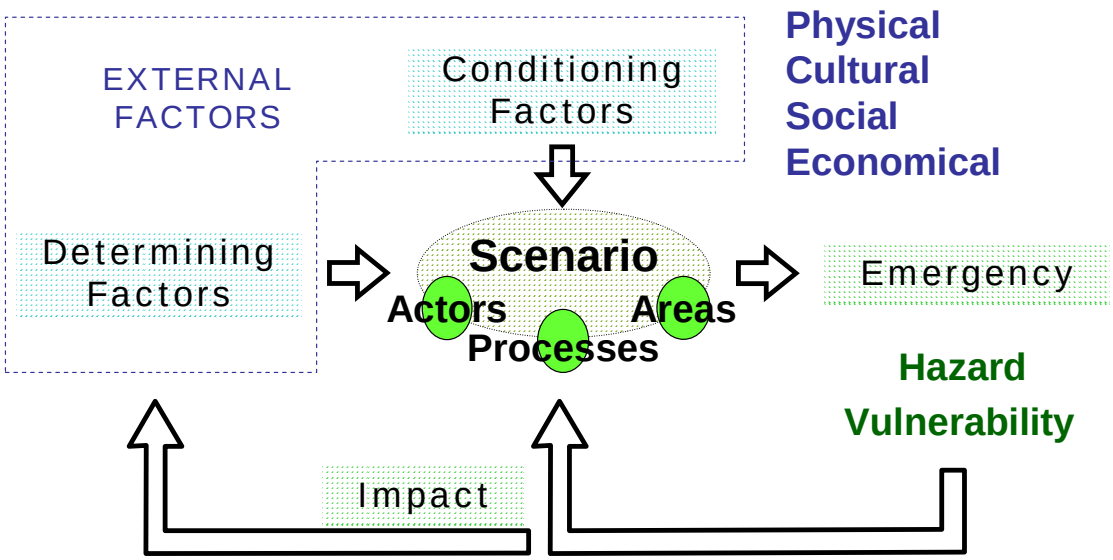
2) Public Administration must stop being a State task to become a concerted social process. For this purpose, every intervention field of the administration must start combining the strict technical and specialized processes with their immersion into real scenarios of social interaction. This new approach will ensure the generation of social processes and new transformation vectors.

3) Public Administration not only intends to modify certain objects or behaviors. It is transforming the way we relate to them, the way we relate between ourselves,

how we perceive at those objects and behaviors, and how we perceive ourselves.

Taking these principles into account, the integral approach of the risk management policy is guaranteed by the application of specific instruments (techniques and tools) on the four risk fronts: 1) environment, 2) risk scenario, 3) emergency, and 4) impact. Following these criteria, a sound planning of risk management practices may be achieved. The eco- systemic approach to risk management is a new methodology that gives tools for planning actions, decision making and measuring the impact of mitigation, sensibilization and emergency attention actions.

Architecture Under the Eco-Systemic Approach



It is important to clarify this diagram which is known as the Pressure, State and Response Model. The end is to properly understand each scenario:

- We must identify the external factors (political, environmental, social, economical and cultural factors) which determine and condition the scenario. These external elements tend to put pressure over the scenario and, most of the times, they may not be intervened in short term or require equally external elements to be modified and eventually reduce the risk they produce.

- We must identify the nucleus of the scenario, that is, the actors, processes and areas which constitute it. The nucleus of the scenario shows the state and conditions of a territory in light of the social processes within it.

- We must identify the effects of the processes in order to determinate the risk conditions and vulnerability that these processes generate. This allows us to

understand how each scenario would be affected by an emergency and the impact it would generate in society.

- The impact is the effects that the processes within each scenario generate over a general perception of the city's living conditions. The impact eventually modifies the external conditions of each scenario for good or for bad. If there is a proper planning, the whole model may be applied to improve living conditions for everyone.

3 Sound Practice Details

After deciding on the systemic approach, the next step was to design the proper risk management scenarios for Bogotá. For this purpose, under the coordination of the Technical Advisor of the Direction for the Prevention and Attention of Emergencies (DPAE) and with the support of a consultant planning group, several steps were taken.

- Interviews with specialized technicians in DPAE
- Discussion meetings inside DPAE
- Workshop with internal and external consultants and experts
- Discussion meetings with specialized technicians form DPAE and other institutions of SDPAE

Throughout the different meetings and workshops several proposals were studied, but the final agreed upon scenarios are the following:

Territorial Scenarios	
Rural and Natural Areas	• Rural populated centers • Farming spaces • Natural protected areas • Regadera Reservoir
Slopes	• Progressive housing developments • Formal housing developments • Active or abandoned quarries • Protected natural areas • Forests • Schools • Doña Juana Waste Disposal
Areas prone to flooding	• Bogotá River Basin • Gravilleras sector on the Tunjuelo River Basin
Consolidated City	• Residential sectors • Conservation sectors

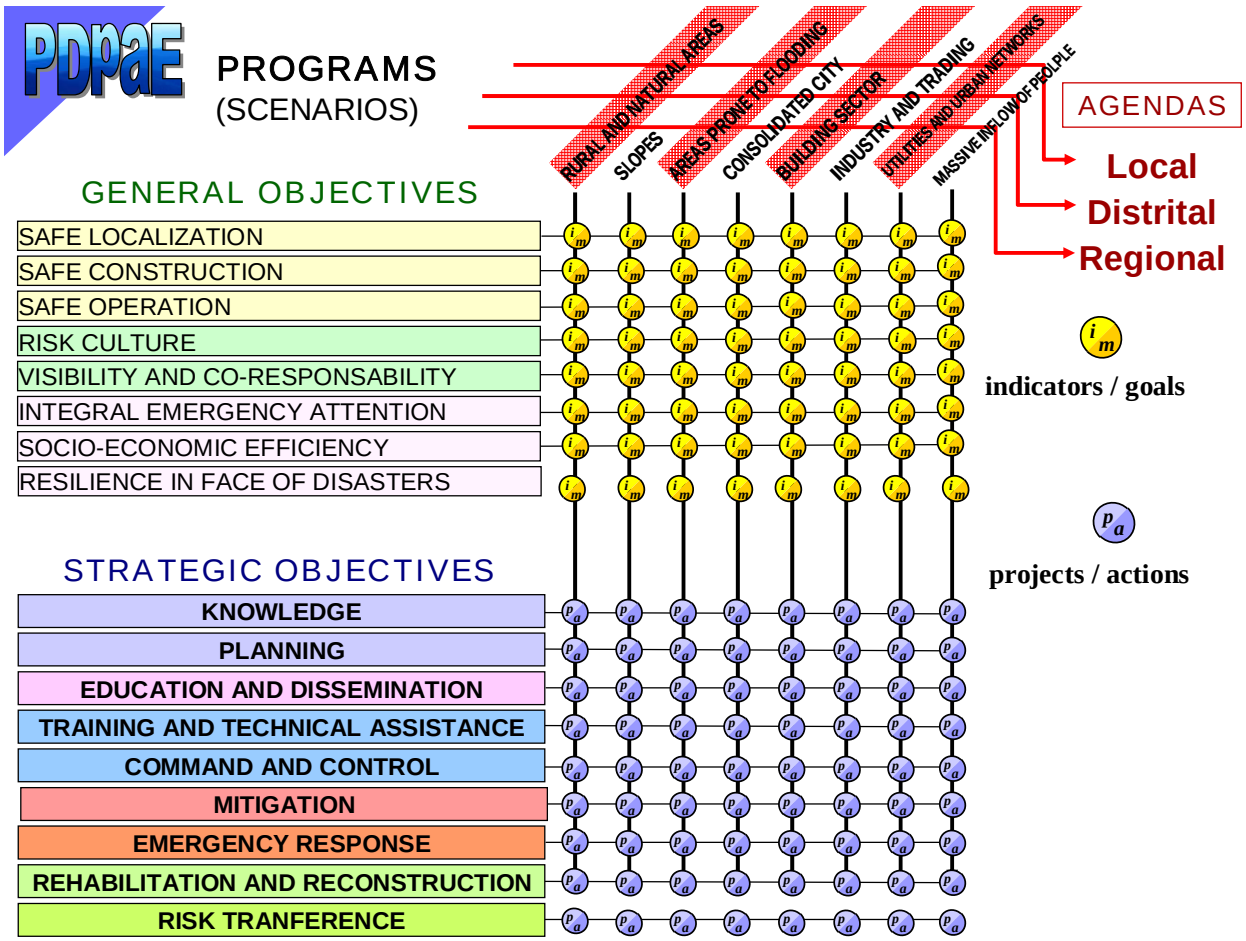
Sectoral Scenarios	
Building Sector	• Real State • Construction material producers • Formal constructors • Informal constructors • Debris disposal
Industry and Trading	• Large Industry • Small formal and informal industry • Large trading • Small formal and informal trading • Cargo and Storage businesses
Utilities and Urban Networks	• Water • Electricity • Hydrocarbon distribution network • Transportation • Waste disposal network
Massive Inflow of People to Entertaining/Religious and Other Events	• Public spaces • Private spaces • Public institutions

Each scenario has a series of actors that are constantly in contact with each other, but have not necessarily formalized their agendas or coordinated their activities in light of a risk management policy. The end of the practice is to promote the settlement of agreements between the actors of each scenario in order to properly outline their responsibilities and commitments. Therefore, the scenarios are meant to be formalized in agreements and pacts which constitute the programs and projects set in each agenda.

PDPAE counts with the following main elements to design strategies for risk management according to the risk scenario.

Element	Responds to	Evaluates
General Objectives	What we want to accomplish	Results and Impacts
Strategic Objectives	What we should do in order to accomplish the general objectives	Products and Results
Intervention Instruments	How we should do it and with what techniques and tools	• Technical and methodological development • Response to the programs
Programs	How the instruments are applied in relation to the accomplishment of the objectives	Accomplishment of the general and strategic objectives.

The following diagram synthesizes the Plan's structure:



In regards to the general objectives, two distinctions are made: the first three objectives refer to security issues, the next two refer to sensibilization programs that imply investment in communication strategies, and the last three refer to how the society actually lives the emergencies. These general objectives must count with a system of indicators in order to properly follow their consecution.

On the other hand, the strategic objectives indicate what has to be done in order to meet the general objectives. They are listed in a logical order. In order to formulate a risk management plan each strategic objective must be translated to projects and actions according to the conditions of each scenario. The general objectives become the goal to be achieved, and the strategic objectives are the means to achieve them.

Each risk management scenario is studied in order to formulate a program which contains specific goals and indicators in relation to the general objectives (what we want to do), and establishes punctual activities and actions based on the strategic objectives (what we should do), in order to accomplish the goals set. The program will be

consolidated in a scenario agenda which exploit the following elements:

- Activities and sub-activities
- Executors of activities
- Research team that generates information
- Variables that need to be intervened
- Intervention instruments
- Products
- Results
- Impact

On the other hand, the PDPAE contemplates in all the process the elaboration of **evaluation parameters**:

Each program or project will have its own system of indicators to measure the products, results and impact it has. In order to measure the efficiency of institutions and actors in each scenario the following vectors are considered: a. actions, b. costs, c. time, and d. products. In order to evaluate risk management these additional vectors must be considered: e. results, f. impacts, and g. execution. Each project counts with a set of indicators that may facilitate the follow-up of the risk management actions in the city.

An important element considered in the construction of the agendas is the **Definition of Intervention Instruments***:*

Intervention instruments have been studied intensely and need to define the following elements: agents, conceptual background, method and tools, propedeutic method to facilitate dissemination, interdisciplinary articulation, specific applications, evaluation instruments and retrofitting processes. In addition, each instrument has an executor (plans, develops, follows, documents and updates the action) and a technical coordinator (guide and share technical processes). The following are some instruments determined by the PDPAE:

- Instruments for external risk scenario factors (actions outside the actual risk scenario that facilitate risk management): normative development, dissemination, formal education, international and national cooperation agreements, one on one actor coordination, financial strengthening, urban planning and research and knowledge production.

- Instruments for internal risk scenario factors (actions on the elements that cause risk and seek prevention of risk): local urban planning, local risk management plans, surveillance and control, evaluation and follow up, technical assistance, formal education, capacitating, one on one actor coordination, participation, preventive mitigation, research and knowledge production, preventive relocation, Integral Risk Management promotion and prevention contingency plans.

- Instruments for risk management (actions during risk situations): resettlement programs, emergency evaluation, temporary relocation, mitigation and emergency works, monitoring, operation management, logistic management, one on one actor coordination, emergency plans and rehabilitation plans.

- Instruments for risk to mitigate environmental, social or economical impact: rehabilitation, reconstruction and sustainable development plan, financial instruments, financial plans for recuperation actions.

Sponsors and Actors

This practice was sponsored and coordinated by the Direction for the Prevention and Attention of Emergencies – DPAE through a consultant group conformed by 4 people (3 planning specialists and 1 assistant). This team was hired for a period of seven months (June, 2005 – January 2006) and the total cost was USD 36,000.

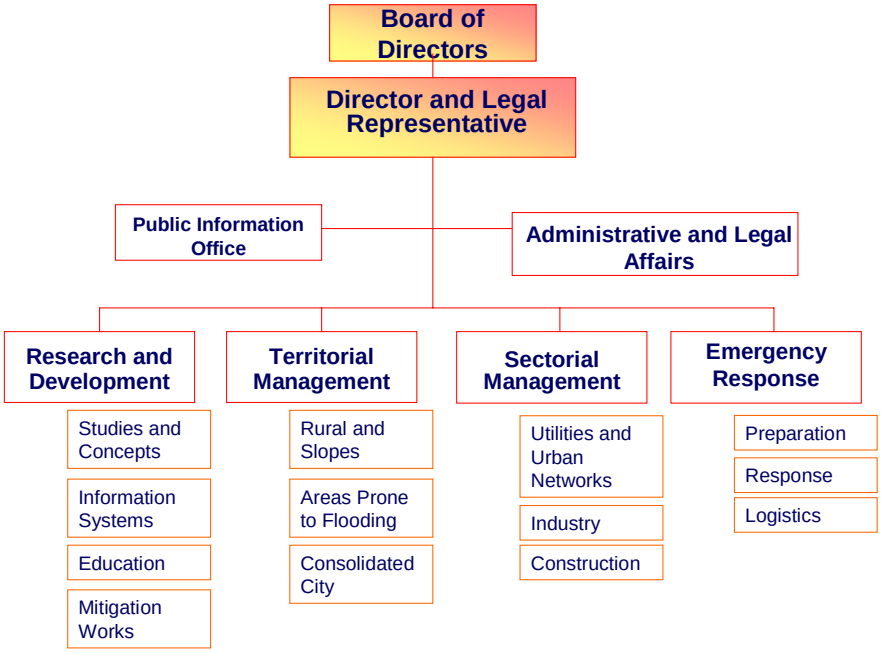
Ten half-day inter-institutional workshops were developed throughout the formulation process. These workshops were intended to be the legitimate space to gather the information needed from other institutions and for validating each step of the formulation. The cost of these workshops was USD 2,000. The PDPAE was also presented to the five SDPAE's inter-institutional commissions.

This practice will orient all the risk reduction and emergency response activities developed by the 43 institutions that make part of the System for the Prevention and Attention of Emergencies in Bogotá. Once the PDPAE is adopted by a Major's Decree, all the different institutions with responsibilities on risk management processes in the city, will have to adjust their investment in accordance to what has been consigned in the plan.

Even though the plan is centered on key actors, processes and areas, it intends to reduce the risk conditions in the whole city. The philosophy under the emphasis of these key elements is that 20% of the actors, processes and areas are producing 80% of the risk conditions in the city; therefore, in order to make the city's risk management investment more efficient, the whole System for the Prevention and Attention of Emergencies will direct its efforts towards these key elements identified.

In order to efficiently implement the PDPAE, the Direction for the Prevention and Attention of Emergencies has gone through a profound transformation on its organization. Before the formulation of the Plan, DPAE's organization was based upon the risk management policies (knowledge, prevention, mitigation, emergency response, rehabilitation and reconstruction and risk transference). Under this scheme, the organization had a Technical coordination which handled knowledge, planning and mitigation actions, an Emergency Coordination dedicated to the coordination of incidents, a Local Management Coordination, which focused its efforts on local governments and communities, and Information and Education coordination. A Technical Advisor Bureau handled Rehabilitation and Reconstruction as well as Risk Transference policies.

After the formulation process of the plan the structure had to adjust to the risk management partial scenarios. Therefore, the new organization has a Territorial Management Coordination and a Sectoral Management Coordination as the core structure. The Research and Development Coordination and the Emergency Coordination support the activities of the other two areas as follows:



The practice includes the total territory of the city of Bogotá. After the general formulation, DPAE intends to continue to formulate local plans for each of the 20 localities in Bogotá, as well as a regional plan for the Central Region or *Region Central* (this region includes four provinces of the Colombian territory: Cundinamarca, Boyacá, Meta and Tolima)

PDPAE Implementation Process

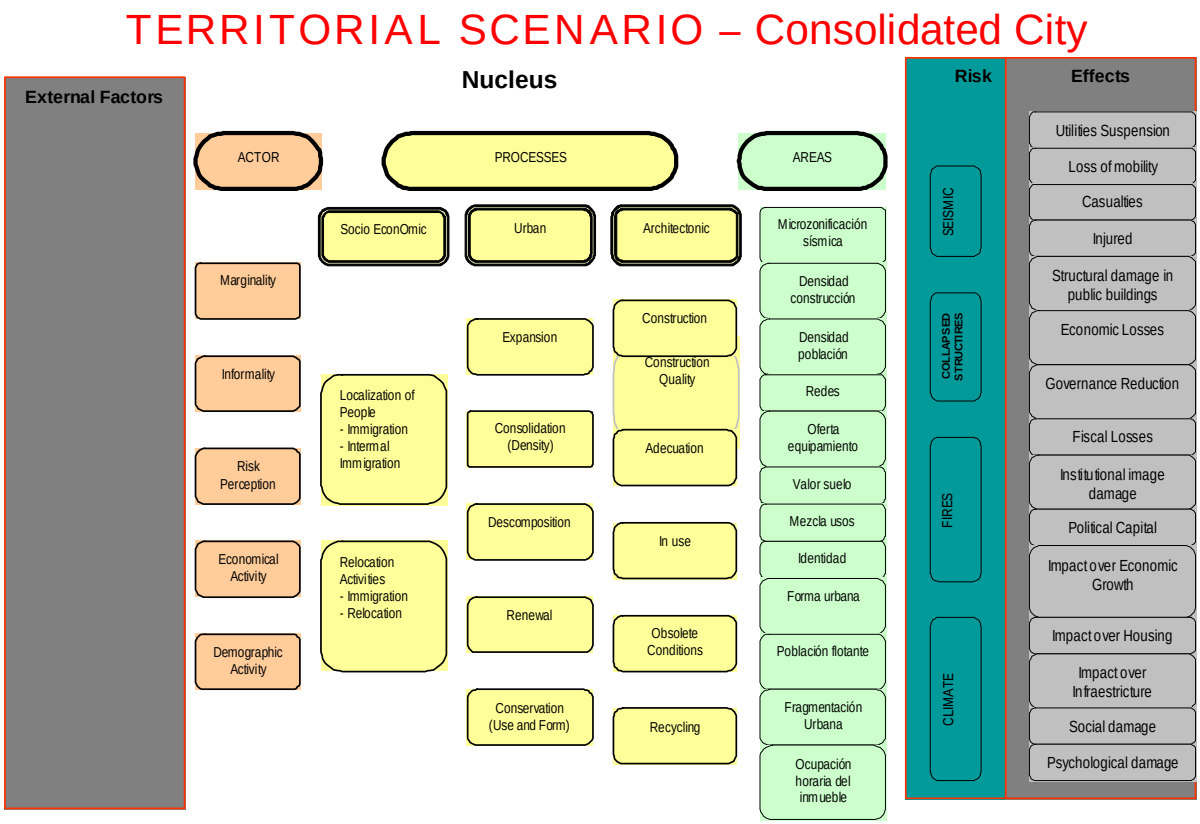
The PDPAE implementation process began in January 2006 under the supervision of Germán Camargo. Some research groups were formed by advisers and DPAE staff members for each of the risk scenarios.

The first step consisted in the characterization and definition of each risk scenario following the systemic approach and the Pressure, State and Response model explained above. The process consisted in the identification of the external factors and the actors, processes and areas which constitute the nucleus of each scenario. This process lasted two months. The identified variables were classified in the following groups:

- External Variables
- Actors (Quality and Type)

- Processes (Urban, Architectural, Socio-economic)
- Areas (Quality and Type)
- Risks
- Effects

For instance, the following chart shows the variables identified by the Consolidated City Scenario:



Each scenario has different variables but also some variables in common. Since the systemic approach implies an organic conception of risk management, a study of how all the variables were interconnected was started. This comparative process aimed to identify the most critical variables in order to prioritize them and have a sense of what kind of intervention was more urgent and what projects would be more effective. Therefore, the second step consisted in elaborating classification matrixes of the variables for each scenario. In other words, each research group had to compare external, internal, and state variables in order to determine if the risk they produced was low, medium, high or none. This process involved extended discussions and agreements between the researchers and the supervisor.

Each variable is compared to all the other variables in order to identify the most critical ones and to establish priorities. For instance, in the consolidated city scenario we may find the following cases:

EXTERNAL FACTOR / ACTOR: Poverty and marginality may be considered to provoke

high risk conditions since the constructions do not follow the seismic codes, there is also a low perception of risk and the territories marginal communities inhabit tend to locate in high risk areas.

EXTERNAL FACTOR / PROCESSES: Informality and urban decomposition are factors that may lead to high risk conditions since informality implies a decrease in economic and urban conditions which translates into poor construction, no planning and no application of the seismic code.

The third step in the implementation process consists in consolidating a Priority Map. This map would show the interconnections between variables within each scenario and within all the scenarios. At the end, this Priority Map would show the weakest areas in risk management and it would also indicate the causes and effects of each variable. The result is a spider scheme that relates all the variables of all the risk management scenarios.

After the knowledge of the scenarios was consolidated in this priority map, the construction of agendas began. Each agenda would propose a series of projects in order to modify and improve the risk conditions already identified as critical. The formulation of the projects was first done for each scenario and then compared and contrasted with all the other scenarios in order to avoid overlaps.

Each project consists on a series of activities and sub-activities necessary to improve a risk situation and generate a positive impact over Bogotá's living conditions. It specifies executors, support groups, critical variables, intervention instruments, expected products, expected results and expected impact. At the end, the agenda of each scenario is constituted by a number of projects that may involve territorial management, sectorial management, emergency response plans, research and development, international cooperation or legal, financial or administrative support.

The next step is to discuss these agendas with the other institutions in the SDPAE in a public negotiation process that involves the communities, guilds and other institutions. The idea is to define the political and economic interests of each actor and integrate them in the development of the projects already discussed. The general Master Plan should be completed in the period 2005-2015. By the end of the implementation process the whole SPDPAE would be redefined and strengthened.

Results

This practice has greatly advanced in the definition of the agendas that the DPAE is going to discuss with the other entities and parties involved. As an example of the results this practice has already achieved, we may say that the group for the territorial scenario Consolidated City has defined 18 projects: six in the sectorial and industrial area (113 sub-activities), one in the basin area (4 sub-activities), two in the slopes area (3 sub-activities), one in the emergency support area (10 sub-activities), two in the communication and divulgation area (9 sub-activities), five in the emergency response

area (14 sub-activities) and two in the research and development area (4 sub-activities).

For instance, the two projects in the area of research and development area proposed by the group of consolidated city are the following:

Research and Development	**GI**	**Risk Management Indicator System**	**Consolidated City Proposal**
		Design of a general indicator platform for risk scenarios	Definition of the risk management indicator base lines
	CA01	**Emergency Attention Capacity Buiding**	
		Capacitation in post seismic recognition of buildings	Capacitation of technicians and professionals in disaster damage evaluation.
		Fortification of the response organisms for the attention of industrial events.	Strengthening of emergency organisms
		Strengthen and increase risk management risk knowledge in Emergency Local Committees	Emergency Response Fortification n communities and institutions.

Each territorial and sectoral scenario has determined their agendas and when summed up constitute Bogotá's Master Plan for the Attention and Prevention of Emergencies.

4 Relevance to Megacities

Universality/transferability

This practice is the result of a concerted process and synthesized policies related to risk management that are concentrated in prevention and in social agency. The general and strategic objectives may be used by any megacity as a guide to construct their risk agendas according to their own damage scenarios.

The mission of the whole PDPAE may be considered universal since it aims to guarantee safe living conditions under inclusive and sustainable parameters. It also has emphasized on the importance of constructing social agendas under a systemic approach for risk management in an environment of co-responsibility. At the end, it

points towards an integral perception of risk management.

Applicability

The application and implementation of this plan requires an institutional reorganization. In order for other megacities to implement a similar project, other instances such as local coordination committees must be created and scenarios analysts groups must be conformed.

A technical approach to risk management is not sufficient in order to apply this practice, this process must be accompanied by a strengthening of the institutions in charge of risk management. Decree 332 represents the city's commitment as it grants a legal frame to all the process of definition of the disaster and risk management master plan.

Expandability

Bogotá is interested in building an inclusive society, therefore most of the risk management practices intend to cover all the community, especially people who leave in marginal situations. The risk scenario approach and the systemic approach guarantee a local treatment of risk which aims to alleviate specific risk situations in a concerted process with local actors. This mechanism may be irradiated all over the city with the proper coordination and social agency.

Orientation/ Focus

Each program formulated under the parameters of this strategy intends the following general objectives: safe localization, safe construction, safe operation, risk culture, visibility and co-responsibility, social inclusion, socio-economic efficiency.

Impact

This strategy has had an unquestionable impact over the institutions in charge of risk management in the city of Bogotá. It is a strategy that aims an integral approach to risk management, therefore it implies a drastic shift in the traditional approaches to the theme. Even if the practice is just starting its implementation process, the impact may be seen in the whole reorganization of the SDPAE.

Sustainability

The current situation of the practice is actually the least expensive since it corresponds to the research phase. In order to implement the projects, it is necessary to forward agreements and pacts with public and private entities. The sustainability of the project relies greatly in reuniting all the institutions under a common goal: sound risk management. This requires a lot of efforts for the directives and administrative staff in the DPAE as well as the support of political representatives, public organisms and private entities.

5 Supporting Documentation

The documentation used for the development of this report was facilitated by the DPAE. Contacts for further development in this practice are: Germán Camargo, Diana González, Diana Rubiano and Jairo Varcárcel which may be contacted through the DPAE in Bogotá.

Knowledge Base Coding Reference:

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