Dealing with Illicit Construction in Quito[1]

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1. Background information

Quito, the Capital city of Ecuador, is located in a North-South Andean longitudinal valley (2.860 meters above see level) between the Pichincha volcano in the west and Itchimbía hills in the East.[2] The city develops North-South, 40 to 50 Km. length and 4 to 10 Km. wide. It has a mild weather: an average temperature of a maximum of 21 C and a minimum of 8 C; an average relative humidity of 75 percent.

Total population[3] of Quito Metropolitan District (QMD) is 1,842,201 inhabitants, out of which 1,414,601 (mainly concentrated in Quito) are considered as urban population. Estimates show that population will increase to 2,200,000 by year 2009[4].

Total area of QMD is 424.717 hectares[5]. The urban area of the city of Quito occupies approximately 20.000 hectares. The urban structure has been conditioned by the scarcity of flat land and by the topographic irregularities of the surrounding mountain system. During recent past decades significant residential developments have also occupied slopes of mountains (in El Pichincha volcano and other hills such as Panecillo, Puengasí, Guanguiltagua).

1.2. Urbanization in Latin America

Latin America is one of the most urbanized regions in the world. Most of its cities lack effective urban planning and land use control mechanisms. Migration into cities, budget shortages, and decentralization add pressures on municipalities in dealing with urban management and services provision. The urbanization process has had severe impacts on the environment, which in turn increase vulnerabilities in cities.

1.3. Urban growth

In the last two decades, the Quito region has experienced important spatial transformations. The urban area has evolved from a "centrally-oriented city" towards the formation of a disperse agglomeration that develops in the adjacent valleys of Tumbaco-Cumbayá, Los Chillos, Calderón and Pomasqui-San Antonio de Pichincha.

During the seventies and eighties massive immigration to Quito occurred; population grew from 432,228 in 1974 to 890,355 in 1982 and to 1´112,575 in 1990. Urban area grew form 7,355 hectares in 1970 to 19,176 hectares in 1990. The city was not prepared to receive such

[1] Paper prepared for the EMI Thematic Session "Root Causes of Vulnerability of Human Settlements in Megacities", World Conference on Disaster Reduction, Kobe – Japan, 20 january, 2005.
[2] Quito is located at Latitude 0° 15' 30'' and 0° 35' 49'' and Longitude 78° 57' 05'' and 78° 10' 13''.
[3] According to 2001 National Census.
[4] PGDT, Dirección Metropolitana de Territorio y Vivienda, MDMQ, Quito, 2001.
[5] It comprises three main land uses: 42.273 hectares of urbanised areas; 191.723 hectares of natural reserves, parks and ecological protected areas; and 189.921 hectares of agricultural lands.

unprecedented population increase. Most of this growth is due to low-income rural population moving into Quito.

1.4. Environmental impacts in Quito

The need of land for building has caused deforestation is caused. About 100 hectares of forest are destroyed every year; this means that in 15 years it may disappear if strong actions are not taken. Population growth and bad environmental practices generate an increase of solid waste that is not adequately treated. The city produces 1,400 tons/day of solid waste; about 200 tons/day of this waste is deposited in empty lots and ravines affecting the natural drainage system of the city, and blocking the access to the sewage and collector systems where available. Additionally, slopes are anti-technically cut weakening soils, and adding debris to these areas.

2. Quito is subject to high risks

2.1. Main Hazards

Quito and its surrounding area is subject to different hazards. The city has been assessed to have a global hazards index of 9[6], being the highest 12, due to high values given to individual hazards like earthquakes, very high susceptibility of flooding and landslides during severe rainy seasons due to steep slopes and high volcanic exposure. Among all of them, Earthquakes are considered the ones that would produce the bigger losses. Wildfires and technological hazards should also be added to the list.

2.2. Main Vulnerabilities

a) Population Vulnerability

According to D'Ercole (2004), there is a high population exposure to vulnerability. Out of total population of 1.842.105, there is an 18.7% (344,158 inh.) under high to very high vulnerability; 42.8% (789,070 inh.) under relatively high vulnerability: and, 38.5% (708,877 inh.) under low to relatively low vulnerability.

b) Vulnerability of Buildings[7]

- **Vulnerability of Illicit Construction.** Estimates show that there are approximately 60% of total buildings built without municipal permits. In addition, there is no certainty about anti-seismic structures in registered buildings.
- **Vulnerability of Informal housing**. Out of a total 508.728 housing units in QMD, it is estimated that there are about 153.317 housing units built illicitly by low-income groups in popular barrios, mostly through self-help. These buildings do not comply with anti-seismic standards.

[6] According to D'Ercole et al: "Hazards, Vulnerabilities, Capacity and Risk in Ecuador", Quito, 2004.

[7] Like the **Quito-Ecuador, Disaster Risk Management Program** (1994/DMQ, GHI, EPN, OYO Corporation, IRD, and others) and the **Global Earthquake Seismic Index Project** (2001/GESI PROJECT, UNCRD, GHI, EPN, MDMQ and others).

- **Vulnerability of Heritage Buildings.** In Quito, there are 5.086 registered heritage buildings, built since colonial times (16th. Century) up to early 20th. Century. Most of these buildings do not have anti-seismic structures.

3. Dealing with Illicit Construction: the case of low-income settlements

One phenomena associated with urbanization is the appearance of low-income settlements. These barrios emerge as a survival strategy of low-income groups to find a place to live in the city. It is especially significant in Quito the increase of popular barrios since the 70´s.

Low-income settlements in Quito

year	has
1950	267
1960	653
1970	1938
1980	1479
2003	687

These barrios are mainly located in slopes or in risk sites, because of initial low purchasing land prices. Most houses are built through self-help, which have not been approved by the Municipality, though are illegal. Usually low-income families, who settle in these barrios, are subject to "pirate developers", who tricks the people.

4. Municipal current policies

4.1. New Planning Instruments

Since 2000, the Municipality plans and manages the territory with several updated legal instruments, among them are: General Territorial Development Plan (PGDT), Land Use and Occupation Plan (PUOS) and, Architecture and Urban Standards

These regulations incorporate an strategy for risk reduction, sustainable land use and safe territorial development.

4.2. Potable Water and Sewage Programme

During 2001 to 2004, the Municipality has developed a major potable water and sewage infrastructure programme, especially concentrated in low-income settlements: benefiting 350,000 inhabitants with 1,300 Km of water lines and 1,300 sewage lines.

The Environmental Sanitary Programme (funded by IDB) has been working since 1998 in the protection of El Pichincha slopes and installing water and sewage systems in various critical areas.

These municipal efforts have resulted in an important reduction of landslides and floods.

4.3. Land Tenure Regularization Programme

Since 2000, the Municipality is working in an aggressive Land Tenure Regularization Programme.

- By 2001 there were 200 Illegal Barrios to be regularized
- 90 barrios from 2001 to 2004 regularized with 23.339 individual plots
- 182 barrios are under approval process.
- 61 barrios that are not subject of approval because are located in environmental protected or risky areas.

For the administrative period 2005-2008, the Municipality will develop a massive upgrading programme in low-income settlements.

5. Institutional Framework for Risk Management

One of the main problems to confront risks in Quito is the overlapping of functions given that government bodies and other national entities do not coordinate properly (Solberg, Hale and Benavides, 2003).

The national agency in charge of disaster management is the Civil Defense[8] with a national structure that includes a National Direction, Provincial Boards (*Juntas*) and various other local bodies. Little effort has been done at the national level by the national government except that ad hoc governmental entities for areas affected by El Niño phenomenon of 1997-1998 were created. Since 2002, the National Secretary for Planning and Development (SENPLADES) started a project to set up the Direction for National Disaster Management. With the support of the Andean Development Corporation (CAF) under the Regional Program for Risk Prevention and Mitigation (PREANDINO)[9], a project is under course on defining sectoral policies to prevent and mitigate risks by integrating them into planning processes at all levels (Fiallos, 2004).

At the Municipality of QMD, the Community Safety Direction and Risk Management Unit is responsible for disaster management. At city level, there are several plans related to disasters: *Fire Plan* (to prevent fires on the hills surrounding the city, particularly during summer); *Rain Plan* (to prevent flooding on the lower parts of the city during heavy rainfalls); and *Cotopaxi Plan* (to find solutions to the possible consequences on the city of an eruption of the Cotopaxi Volcano); *Healthy Schools Plan* (to prepare sanitary facilities in public schools).

In terms of research in Quito, there are several entities: Metropolitan Department of Territory and Housing, Metropolitan Department of Citizens Security, Geophysical Institute (National Polytechnic) and other university departments, National Planning Secretary (SENPLADES), INHAMI and other national agencies.
This national organizational setting [which is also applicable in the case of Quito] is affected by some drawbacks mentioned by IADB-Solberg et al (2003): "*It is worth mentioning the coordination drawbacks of the system… In theory, each of competing branches must coordinate their activities with each national ministry on a basis depending on the situation and resources required. However, history has shown that in the event of a disaster, coordination has not been functional (problem magnified by the existence of overlapping functions). Each organization uses and allocates its own resources and make decisions without formal knowledge of the activities of others*".

[8] Established by National Security Act 275 of 1979.
[9] The project ends in March 2005.

6. Conclusions

Illicit construction is a critical vulnerability issue in Quito. It has been a result of unprecedented population growth, poverty, shortage of public resources and institutional weakness.

Given that we live in a highly risky area, authorities and population should develop policies, strategies, and actions in order to make Quito a safe place, with enough capacity to response before risks.

The main challenges are to reduce population losses and injuries, reduce vulnerability of houses, and, reduce vulnerability of social infrastructure such as schools and hospitals, heritage buildings, airport, basic infrastructure such as sewage, potable water, electricity, and main road networks.

It has been difficult to deal with illicit construction In Quito. Problems persist even though the Municipality has developed a new legal framework and several improvement programmes.

6.1. An adequate institutional arrangement

In order to meet such challenges it is urgently required to develop an adequate institutional arrangement for prevention and crisis. This institutionalisation should:

- Design and implement permanent policies related to risk prevention and mitigation and establish appropriate legislation and control mechanisms.
- Overcome weak institutions and institutional arrangement, leadership and coordination, to incorporate disaster prevention and crisis planning.
- Develop and adequate institutional framework: clarifying roles of different involved actors, risk institutionalisation, and it is suggested, that the municipality should lead institutional coordination.

6.2. Risk Reduction Plan

Quito requires a comprehensive *Risk Reduction Plan* for prevention and preparation for crises. This Plan must concentrate on actions for prevention and crisis, but also on research and monitoring.

- **Institutional actions for prevention and crisis**: protection actions against hazards; strengthen municipal controls over land use and construction; accessibility improvement for basic services and communications network; insurance contracts for social services and infrastructures; train sufficient personnel; overcome weak community perception about hazards and its capacity on how to react.
- **Research and Monitoring:** Research about the natural environment and the social functioning; micro-seismic research and zoning; research on future urban expansion areas; systematize local and foreign experiences; Monitoring of identified hazards; establish a “Risk Information System”.

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