

PRESENTATION BY MR. PEDRO AGUAYO-CUBILLO, AT THE MEETING OF THE TECHNICAL AND SCIENTIFIC COMMITTEE OF THE INTERNATIONAL DECADE FOR REDUCTION OF NATURAL DISASTERS, WITH THE WORLD BANK, TO BE HELD IN WASHINGTON ON 11 JUNE 1998: "CONFRONTING OUR VULNERABILITY TO THE EL NIÑO PHENOMENON"

INTRODUCTION.

The consequences of the El Niño phenomenon in Ecuador are of such a magnitude that I am not exaggerating if I tell you that this is one of the factors most heavily hampering our country's development possibilities over the past two decades. And this is largely because, in our entire history, we have not yet learned to live with recurring natural phenomena like this one. Moreover, the development models that we have followed over the years have laid the groundwork for the physical, economic and social conditions that have made us a highly vulnerable country when such a phenomenon occurs.

Fortunately, there is now the national interest and political will to face up to this problem, from its root causes. Therefore, we have come to this meeting of the Technical and Scientific Committee of the International Decade for Natural Disaster Reduction, to tell you how Ecuador has dealt with this event and, more importantly, what actions we will be carrying out in the reconstruction phase, in order to guarantee development of a safer society that will be less vulnerable to hazards of this type.

I would like to refer to some initiatives that the Government of Ecuador has taken internationally in regard to El Niño, which show our interest and concern in this area:

- In November 1997, the National Institute of Meteorology and Hydrology (INAMHI) organized, jointly with the ORSTOM institute of France, an International Seminar on El Niño, to discuss and analyze the state of the art in predicting and monitoring this phenomenon, and its main effects. It was attended by 211 representatives of 18 countries.
- During the second half of 1997, the standing mission of Ecuador in the United Nations worked intensely to promote a resolution that would make it possible to strengthen international cooperation mechanisms to reduce the impact of the El Niño phenomenon, particularly in the developing countries most prone to suffering serious damage because of it, and to facilitate the development of a consensus-based, integrated international strategy to prevent, mitigate and rehabilitate the damage resulting from the phenomenon. These actions contributed significantly to this proposal's approval by the UN General Assembly (Resolution A/52/200 of 18 December 1997).

- Through diplomatic channels, the Government of Ecuador has proposed the establishment of a Regional Center to Study and Monitor the El Niño Phenomenon, and has offered to serve as host country for an inter-governmental meeting of experts on El Niño, scheduled for the first half of next October.
- Finally, we have eagerly accepted the cordial invitation by the Technical and Scientific Committee of the International Decade for Natural Disaster Reduction and the World Bank to participate in this meeting and thoroughly discuss the Ecuadorian experience in this area.

With this background, let me describe for you the El Niño phenomenon during 1997 and 1998 in Ecuador, the mitigation and preparedness actions undertaken by the government to cope with this phenomenon, a summary of the impact on various sectors, and how we intend to address the reconstruction phase, as well as the institutional framework that the government proposes to implement in order to enhance their capacity to mitigate and respond to such events in the future.

1. THE PRESENCE OF THE EL NIÑO PHENOMENON.

There is historical record of the El Niño phenomenon since very ancient times, with a range of regional and worldwide effects, and serious damage for the populations of both developed and developing economies. Just in this present century in Ecuador, there have been 29 El Niño events and 11 "La Niña" events, which do not occur regularly or fit in with deterministic modeling. Research by INAMHI establishes that the events in 1982-83 and 1997-98 have been extremely severe, having reached the highest range of intensity, whereas the events in 1957-58 and 1972-73 were in the strong range, another four are considered moderate, and the remaining 21 were weak.

Around March 1997, the imminent occurrence in the Eastern Tropical Pacific Ocean of the event called ENSO (El Niño - Southern Oscillation) was confirmed, and has continued to this day. ENSO is characterized by higher sea surface and subsurface temperatures off our coast, as much as 5°C higher than average normal values. These anomalies had significantly increased by November, and peaked during March and April of this year.

The consequences of this adverse phenomenon in 1997 1998 have been influenced (in addition to their very intensity) by the lack of a suitable territorial ordering (zoning) policy, which has allowed human settlements in steeply sloping areas, near rivers' natural course, and in areas prone to flooding. There has also been a singular lack of technical standards to regulate the construction of physical and productive infrastructure (highways, bridges, shrimp ponds, etc.) in such a way as to prepare for this type of adverse phenomena. Further, there is the problem of institutional weakness, especially

among municipalities, to regulate or oversee the disorderly growth of cities and other populated areas.

2. MITIGATION AND PREPARATORY MEASURES:

When the International Scientific Community announced the presence of the El Niño phenomenon in the South Pacific, the Ecuadorian Government, under President Doctor Fabián Alarcón-Rivera, took precautions in order to mitigate the disasters that this phenomenon could cause.

2.1. Declaration of a State of Emergency:

One top-priority basic action was to declare a State of National Emergency (2 July 1997). In this context, the National Directorate of Civil Defense, which is the coordinating body and visible head of the National Civil Defense System, formulated the Contingency Plan to confront the phenomenon. This declaration of emergency was fundamentally preventive, geared to establish a legal, institutional and financial framework conducive to quickly take all those actions required to reduce the phenomenon's impact and prepare the country to cope with it.

2.2. Contingency Plan:

This was the first time that Ecuador had prepared a contingency plan to confront this phenomenon. The planning involved the Secretariat General of Planning (National Development Council, CONADE) and all Planning and Security Directorates for National Development from the different national ministries. The group charged with formulating the plan received countless requests from political society and civil society, which were selected and processed according to predefined objectives.

The plan establishes institutional responsibilities to address the three stages of the emergency situation: "before", taking preventive actions: "during", dealing with the natural phenomenon; and "after", referring to reconstruction of the damages caused. In establishing institutional responsibilities, the attempt was made to avoid duplicating efforts or overlapping functions. This enabled us to face the emergency under better conditions than in 1982-1983.

On the basis of objective evaluation, we have concluded that we were better prepared this time to deal with this adversity than last time, but not well enough. Deficiencies resulting from over-centralized government operations have lessened efficiency, and the lack of institutional coordination mechanisms has been noted, especially at the operational level. Another contributing factor was the high degree of uncertainty in

technical and scientific circles regarding the predictions of the intensity with which the phenomenon would occur.

A quick evaluation of the Contingency Plan reveals that its goals have largely been achieved (nearly 100% financially), which shows the National Government's concern in allocating resources to address the phenomenon, although no funding had been budgeted for.

When the El Niño phenomenon was announced, there were several versions about how intense it would be: some assured that it would be less intense than last time whereas others predicted that it would be worse. In this context, the Contingency Plan was formulated according to a low-intensity scenario, i.e. assuming that the intensity would be less than in 1982-83. Unfortunately, this scenario was wrong, because evidently the 97-98 El Niño is five times more intensive, and unquestionably the most intense such phenomenon that has occurred during this century. Consequently, the resources allocated by the National Government were enough only to cover the "before" phase partially. In order to address the two following phases, the National Government is forced to apply for loans from international financial agencies.

2.3. Prevention Phase:

In the prevention phase, the National Government allocated nearly USD \$41,000,000 to undertake 569 mitigation and emergency projects, in different parts of Ecuador, but especially along the coast (78% for infrastructure and 22% for humanitarian actions). A key player, close to local demands, is municipal government, so most of these funds were administered at the municipal level. This has fostered the decentralization process, to which we should add the participation of regional development bodies and certain national ministries.

To raise the funding required to confront all three phases of the emergency situation, the National Government signed loan agreements with the Andean Development Corporation (CAF) for USD \$ 25,000,000, with the IDB for USD \$105,000,000 and with the IBRD for USD \$ 80,000,000. We should also add the national counterpart funds, totaling USD \$ 21,000,000, making a total available to address the situation of USD \$ 231,000,000.

From the CAF loan, USD \$24.5 million were used for the prevention phase, through a transfer to the Coordinating Unit of the Emergency Program to Confront the El Niño Phenomenon (COPEFEN) and subsequent reimbursement to the Ministry of Finance, which had advanced that amount while the external loans were arranged.

As an institution-building measure, the Coordinating Unit, on behalf of the National Government, signed an agreement (26 December 1997) with the United Nations

Development Program (UNDP) to implement the project called "Mitigation and Preparedness to Confront the El Niño Phenomenon" under which UNDP will contribute USD \$ 250,000, with a national counterpart contribution of USD \$ 67,800.

This project has enabled institution-building for INAMHI and COPEFEN; mapping of the impact of the 1982-83 El Niño phenomenon; and satellite imagery, scale 1:50,000, for the entire coastal region, which is the best available information in this field, for a wide range of uses and applications, e.g. land use and occupation planning, hazard mapping, irrigation zones, etc.

2.4. Emergency Phase:

This phase started on 10 November 1997, when several rivers rose and flooded the town of Santa Rosa, in a banana-growing zone on the coast, which remains flooded to this day. The rainfall and related flooding have been heaviest during this past March and April. The flooding and large-scale landslides have caused the loss of human lives, housing, farming and ranching production, and physical infrastructure, especially roadways.

Once the loan agreements had been signed with the IDB and the IBERD, the Coordinating Unit of the Emergency Program to Confront the El Niño Phenomenon (COPEFEN) began a very dynamic, fast-moving program to deliver funds to co-implementing agencies. Municipalities and provincial councils, comprising the autonomous sub-national system of government, shouldered most of the responsibility for implementing emergency projects, especially the physical infrastructure part.

To address the response phase, 116 agreements have been signed, 90% for sub-national government bodies, to implement 1097 projects, for a total commitment of USD \$ 95.8 million. Other amounts have been reallocated for emergency projects, national counterpart contribution and operating costs of COPEFEN, leaving a balance of USD \$ 45.5 million dollars to undertake the reconstruction phase. This is a drop in the bucket, compared to the damages caused by this adverse phenomenon, estimated at nearly USD \$ 3 billion dollars.

3. LEGAL AND INSTITUTIONAL FRAMEWORK.

As already indicated, the National Government, in view of the announced El Niño phenomenon, which had already caused damage of some magnitude by early last year, declared a State of National Emergency on 2 July 1997.

3.1. Creation of the Coordinating Unit.

To provide an institution to coordinate implementation of activities and actions contemplated under the Contingency Plan to Confront the El Niño Phenomenon and ensure proper handling of the proceeds borrowed from multilateral financial bodies, on 13 October 1997 the President of Ecuador created the Coordinating Unit of the Emergency Program to Confront the El Niño Phenomenon (COPEFEN) as an agency under the Presidency. It became administratively and financially independent on April 20 of this year, so it would have sufficient operational and financial capacity.

COPEFEN must also coordinate its activities with the National Directorate of Civil Defense, in order to reinforce the National Civil Defense System.

The Coordinating Unit has a Board of Directors, chaired by the Contingency Plan Director, and comprising a delegate of the Ecuadorian President, a representative of the Ministry of Finance and Public Credit, a representative of the Ministry of Defense and the National Director of Civil Defense. The Board's basic function is to approve financing applications for emergency projects, submitted by different public entities.

Although the coordinating unit operated initially in Quito, as of February an office of this Unit was created in Guayaquil, to get closer to the problems generated by El Niño.

3.2. Standing Coordination Committee.

Although COPEFEN's Board is a top-level decision and coordination body, it was necessary to have a Standing Coordination Committee as a way of coordinating planning and implementation of the decisions made by the Board. This is an operational body, involving 12 institutions directly related to the El Niño phenomenon. Its membership includes under-secretariats or staff members who are responsible for sectoral units dealing with El Niño.

These two coordinating units have made it possible for the decisions made at higher levels to be passed on, in a timely fashion, to operational levels, thus preventing overlapping of functions and streamlining public service.

3.3. The Vice Presidency of Ecuador took responsibility for coordinating governmental actions to address the national emergency.

Once Mr. Pedro Aguayo-Cubillo was elected by the National Congress as Constitutional Vice President of Ecuador, the President issued Executive Decree No. 1344 (on 24 April 1998) to assign specific functions to the Vice President, including that of "coordinating

governmental actions to confront the national emergency and plan reconstruction of areas affected by the El Niño phenomenon". This gave the coordination process a higher profile and delegated reconstruction responsibility, which entails fund-raising and allocation from international and national sources, on the basis of priority-ranked actions and projects that will achieve the greatest economic and social impact.

4. DAMAGE CAUSED.

4.1. Summary of victims and shelter damage.

As of 29 May 1998, the following totals summarize victims and housing damage:

| | |
|--------------------------|--------|
| Persons seriously harmed | 28,086 |
| Persons affected | 57,791 |
| Casualties | 280 |
| Injured | 156 |
| Disappeared | 36 |
| Homes affected | 8,957 |
| Homes destroyed | 4,823 |

SOURCE: National Directorate of Civil Defense

4.2. Summary of damage by sectors

Damage generated by the El Niño phenomenon has impacted almost every area of Ecuadorian society, affecting the economic, social, human and environmental fields.

Economically, its effects include a higher inflation rate, lower investment, especially in production, lost physical, economic and social infrastructure, especially roadways, and decreased exports of crops grown on the coast.

Socially, the phenomenon has worsened poverty, eliminated jobs, destroyed homes and household property, and strongly accelerated rural-urban migration.

In the environmental and sanitation area, the consequences have included heightened incidence of infectious and contagious diseases (cholera, dengue fever and leptospirosis, among others) and contamination of human water supply, as well as serious landslides, changes in watercourses, and flooding with fresh and salt water in low-lying areas.

This brief description of the damage caused by this adverse phenomenon will set the stage for an analysis, below, of the major damage to the roadway, agricultural, shelter

and educational infrastructure, health, water supply and sanitation infrastructure sectors, as well as significant damage to the industry, fishing, and tourism sectors, among others.

CLARIFICATION: The figures presented below are partial and provisional. An ECLAC mission is currently performing a social and economic assessment in Ecuador of the impact of the El Niño phenomenon. The findings of this study will be delivered to me on the 19th of this month.

4.2.1. Roadway Sector.

Perhaps the destruction by El Niño is most obvious in the roadway system, especially on the coast..

The Ministry of Public Works estimates that the nation's roadway system (primary and secondary) comprises about 8000 km, of which 2500 km of asphalt-paved highways are seriously damaged. A significant number of secondary and tertiary roads are also destroyed wholly or partially. By April of this year 19 bridges had been washed out, and another 50 bridges have been damaged to varying degrees. All this damage is directly caused by El Niño.

The coastal region and low-lying parts of certain highlands provinces have been hit the hardest. A large percentage of the affected roadways are in the provinces of Guayas and Manabí, where some 900 km of asphalt highways have been practically destroyed.

An initial estimate of the damage indicates that the cost of rebuilding the roadway system will be about 1 billion dollars, 700 million for asphalt-paved roadways and 300 million to repair feeder roads.

One billion dollars is quite a difficult goal for the national government to achieve, and collaboration by the International Community will be required.

4.2.2. Agricultural sector.

The Ministry of Agriculture and Livestock estimated, by the end of April, that the damage caused to the agricultural sector comes to about 1.5 billion dollars, broken down as follows:

ESTIMATE OF AGRICULTURAL LOSSES GENERATED BY THE EL NIÑO PHENOMENON

(November 97 - March 1998)

| ITEM | COST OF LOSSES (thousands of dollars) |
|--------------------------------|--|
| Direct losses | 700,000 |
| Losses because of not planting | 295,000 |
| Losses from not exporting | 200,000 |
| Production deficit | 300,000 |
| Losses of stock and poultry | 5,000 |
| TOTAL | 1,500,000 |

Source: Ministry of Agriculture and Livestock (MAG).

Prepared by: COPEFEN

The cropland lost totals some 555,000 hectares, which means some four or five years' setback in Ecuador's agricultural production.

The evaluation by the Ministry of Agriculture and Livestock indicates that the greatest losses have been in rice, corn, soybean, sugarcane, banana, coffee and cacao crops, with the worst damage in the provinces of Manabí, Guayas and Los Ríos. This is the region with the greatest agricultural production, including bananas, coffee, rice, corn and soybeans. The provinces of El Oro and Esmeraldas have also been affected to a lesser degree. The low-altitude areas of some highlands provinces have also been seriously affected agriculturally.

The damage caused by the El Niño phenomenon has affected both export crops (banana) and domestic consumption crops, e.g. rice, which is a basic staple of most Ecuadorians, especially the lower-income sectors.

4.2.3. Educational Infrastructure.

Research by the National Directorate of School Construction (DINACE), a dependency of the Ministry of Public Education, estimated as of this April that 300 schools are being used as shelters, and that some 600 basic education schools have been affected. The expenses caused by the phenomenon total about USD \$ 15,000,000.

4.2.4. Housing.

According to information provided by the National Directorate of Civil Defense as of 29 May of this year, the number of homes destroyed is 4823 and another 8957 have been

affected to some degree. It is estimated that the homes destroyed and affected are fundamentally located in the rural and urban marginal areas. Therefore, for the purposes of calculation, the cost of a basic home is estimated at an average of US\$ 3000 for building and US\$ 1000 for repairs. Consequently, housing damages are on the order of US\$ 23 million.

4.2.5. Water Supply and Sanitation Infrastructure.

Although there were already great deficits in water supply and sewerage, El Niño has worsened these deficiencies and, in some cases, has destroyed supply systems. Water supply systems and rainwater and sewerage systems have been plugged by landslides and flooding, and have been affected in other ways as well by these landslides.

4.2.6. Health.

According to Pan-American Health Organization (PAHO) information as of 30 April of this year, the following statistics have been reported: cholera 455, leptospirosis 246 positive out of a total of 421 clinically suspected, malaria 6591 cases. In shelters and rural zones, respiratory infections have increased, largely due to poor water supply quality.

Although these figures are higher than during a "normal" rainy season, they have not reached alarming levels. This is largely due to the immunization and preventive health campaigns that the Ministry of Health has conducted.

As for physical infrastructure, by this past April damage had been reported in 26 hospitals and health centers and subcenters.

4.2.7. Preliminary and Partial Summary of Damage

| | Millions of dollars |
|----------------------------|---------------------|
| Roadways | 1,000 |
| Agriculture | 1,500 |
| Educational infrastructure | 15 |
| Housing | 23 |
| TOTAL | 2,538 |

5. FROM DISASTER TO RECONSTRUCTION AND SUSTAINABLE DEVELOPMENT

From a conceptual standpoint, reconstruction aims to establish safer and qualitatively improved living conditions, compared to the situation prior to the disaster, revitalizing economic activities and restoring social and cultural life in affected communities. Most of the victims of El Niño belong to lower-middle and lower-class socioeconomic strata, located in rural and urban marginal areas. Their living conditions prior to the disaster involved extreme poverty and very high levels of vulnerability to natural hazards of this type.

We want to tie the concept of sustainable development in with reconstruction. In this field, certain physical, social and economic conditions must be established to make it possible to guarantee that the achievements of reconstruction will not be destroyed again when a disaster of similar characteristics or intensity happens again, or some other disaster that could threaten these communities. Some 15 years ago, Ecuador had a similar problem, which caused serious destruction. Through a lengthy, painful and costly process of reconstruction, infrastructure was rebuilt, only to be destroyed again. This should lead us to reflect: we should learn the lessons that this phenomenon has brought, and change our traditional reconstruction approach, so that we will reduce the country's vulnerability to similar phenomena, which will doubtlessly recur in the future.

Accordingly, if we analyze the causes of the main disastrous effects caused by El Niño, we find that they are largely due to a failure to have considered the risk variable regarding natural hazards, during development planning processes. In fact, disorderly, rapid growth of urban centers and production activities have created the conditions that have led to an alarming increase in vulnerability levels.

In reality, as you all know, disasters such as the one that Ecuador and other countries have been suffering from due to El Niño are categorized by risk management experts as socio-natural disasters, i.e. those in which human misuse of natural resources becomes an aggravating factor which, combined with Nature's own phenomena, leads to the disaster. Some clear examples of this relationship include deforestation of watersheds, erosion and buildup of sediments on riverbeds, clearing of mangroves, destabilization of slopes, formation of artificial dikes, over-exploitation of natural resources, and so on.

With this background, the Government of Ecuador proposes to design a Reconstruction Plan covering these criteria and working to achieve rational, efficient, effective utilization of available resources, and integrating reconstruction actions with long-term development plans. The following steps are proposed:

1. Thorough sectoral assessment of damage and analysis of its main causes. This is already underway. As already indicated, a mission of ECLAC experts is now working in Ecuador. At the request of the Government that I represent and thanks to UNDP support, they are making a socio-economic evaluation of the 1997-98 El Niño phenomenon in the sectors of roads and transport, health, agriculture, energy, housing, economics and social sectors. One output of this evaluation will be a group of project profiles to orient the reconstruction phase.
2. Priority-ranking of investments as a function of the needs defined at the local, provincial and national levels on the basis of consensus among various social stakeholders. Criteria for priority-ranking will be defined by the following considerations:
 - Project impact on reconstruction to help reactivate the means of production;
 - Labor employed from members of affected communities;
 - Possibilities of financing through private-sector concessions;
 - Qualitative and substantive improvement of the community's living conditions in terms of sanitation, health, education and vital services;
3. Establishment of design standards and technical specifications to ensure projects' durability and resilience, taking the risk of natural disasters into account as an indispensable design factor.
4. Establishment of territorial ordering (zoning) policies and guidelines for urban development to determine the most appropriate land use as a function of existing natural hazards and land potential.
5. Financing and implementation of projects, requiring a joint effort by the National Government and private enterprise, with financial cooperation by International Agencies.

Establishment of a standing system to reduce risks.

Ecuador proposes to establish, under the Vice Presidency, a National System for Risk Management, headed by a technical body that will promote, drive, support, orient and coordinate all actions that may be undertaken through different governmental agencies, technical and scientific institutions and by civil society, so that the risk variable will be incorporated into development planning of infrastructure projects, in territorial ordering (zoning) policies, in building standards and codes, and in urban zone development planning.

This System will be of a permanent nature and will also endeavor to develop a geographic information system covering the country's existing hazards, as well as

reinforcing the monitoring networks and early warning systems for each hazard, and strengthening the National Civil Defense System and enhancing its capacity for preparedness and response activities to future emergencies and disasters in Ecuador.

This effort by the Government of Ecuador cannot materialize without the technical and financial support of international organizations, multilateral financial institutions and bilateral development agencies, many of whom are represented here at this meeting. Accordingly, I would like to take this opportunity to most cordially formulate this request.