

**NATURAL DISASTERS AND DEVELOPMENT**<sup>1</sup>

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Disasters are clearly a development problem. First, because certain natural phenomena, tend to have greater effects on developing countries than on developed countries. Second, because several structural factors associated with a low level of development exacerbate such effects. Third, because the negative impact of natural phenomena on the prospects for long-term development is considerably greater in less developed countries.<sup>2</sup>

Thus, confronting them in a systematic and coherent fashion must be an explicit objective of development strategies. It was no coincidence that 95% of the deaths due to natural disasters in 1998 were in developing countries, nor that, for some of these countries, certain natural phenomena had a devastating on their populations, welfare and development prospects, while in developed countries the effects on economic activity and population are marginal, even though their total material impact is very high.

More precisely, it is the vulnerability of a country that is associated with the level of development. Vulnerability, in general terms, may be defined as the probability of a community suffering human and material damages when exposed to a natural hazard, given the degree of fragility of its infrastructure, housing, productive activities, the degree of organization, warning systems, political and institutional development.

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<sup>1</sup> Presentation at the Annual World Bank Conference on Development Economics – Europe: Development thinking at the Millennium, Paris, 26-28 June 2000

<sup>2</sup> A broader consideration of disasters as a development problem should include the repercussions that the policies followed by developed countries have had on some threats, such as climate change and the processing of radioactive waste.

Developing countries in general have a higher degree of vulnerability as has been recently and very dramatically shown in Africa, Asia and Latin America and the Caribbean. Additionally, statistics indicate that the world in general is affected by a high and growing number of natural disasters.<sup>3</sup>

The reasons for the high vulnerability of developing countries in general are varied and complex. There is no doubt that the development pattern followed by most countries, with high rates of poverty, socio-economic exclusion and environmental damage, is a leading factor. In these countries, the poor, and among these, women, children and ethnic minorities, are the most fragile and vulnerable population groups. The poor live in the greatest risk areas, use environmentally damaging farming techniques or work marginal land, have less access to information, basic services and pre and post disaster protection. This greater vulnerability of poor population groups is also related, where democratic political systems are limited or precarious, to their scarce possibilities of participation in public politics. In many ways, poverty closes and exacerbates the vicious circle of disasters.

My experience, as well as ECLAC, is based on our work in Latin America and the Caribbean. From that experience we can affirm that scale of human and economic damages caused by natural disasters in Latin America and the Caribbean is staggering by any set of measurements. Some estimates put the affected (directly and indirectly) population at 150 million. And according to the figures compiled by the Economic Commission for Latin America and the Caribbean (ECLAC), between 1972 and 1999 alone the number of dead reached 108,000 and the total of those directly affected exceeded 12 million. million. The total damages covered by the assessments made by ECLAC between 1972 and 1999 amounts to more than 50 billion

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<sup>3</sup> See International Federation of Red Cross and Red Crescent Societies, *World Disaster Report 1999*, Geneva, and Annual Review and Munich Re Group, *Topics 2000. Natural Disasters – The Current Position*, De-

dollars. The true figure for human and material damages is much greater because ECLAC has only assessed damages when governments have asked it to, and because such assessments only cover a fraction of the disasters faced by the region, namely the larger ones. The full image should include the recurrent “small” disasters that don’t make the headlines but have a cumulative negative effect that is more pervasive and damaging to the development process since its economic, social, psychological and political impact is hardly perceived.

There is no one given behavior or pattern in the effects and scale of the damages caused by different disasters. Rather, the resulting pattern is determined by a combination of factors including the size of the economy and its situation before the event, the structure of production, the nature and scale of the phenomenon, the moment (time and duration) at which the disaster takes place, the degree of social organization and participation, political and institutional capacity, and the way in which the government, society and the international community face the problem. countries. Thus, assessments of damages caused by natural disasters should include their highly disturbing effects on the emotional stability of affected populations and the dislocation of large population groups, with important impacts on social and political stability.

The long-term impact manifests in different ways (damages in economic and social infrastructure, changes of priorities, environmental changes, external or fiscal imbalances, inflationary processes, negative income redistribution, changes in demographic structure, etc.). The long-term macroeconomic effects are reflected in a large number of variables and may be summarized as a downtrend in per capita income. The experience of Latin America and the Caribbean confirms the hypothesis that there is a high correlation between gross domestic product (GDP) growth and the annual number of disasters. <sup>4</sup>

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<sup>4</sup> See Ken Sudo (1994), review *Disasters No. 17*, January-February.

One of the most important effects of a disaster is the immediate worsening of national living standards. This effect, albeit mostly concentrated in the directly affected population living in the area where the disaster was most violent, generally affects a country's entire population in one way or another. In some cases irradiation even reaches neighbouring countries (migrations, vector transmission, increased risk due to deterioration in watersheds, reduced demand for imports, interrupted communications, etc.).

Major political and social crises have arisen from these catastrophes and as a result of the quality of the governmental response, highlighting the importance of political and institutional factors when considering this subject, both from the perspective of vulnerability prevention and reduction and that of the effects of the natural phenomena themselves.

All things considered, the long-term effects of disasters call into question at least two aspects related to a country's development strategy: first, understanding that resources earmarked for preventing and mitigating the impact of natural phenomena are a very high-yield investment, both in economic and social and political terms, in line with long-term growth. Second, the spending actions and decisions that are taken once a phenomenon has arisen, must be seen from the perspective of reducing vulnerability, in other words, in a combined reconstruction and transformation approach aimed at positively and increasingly reducing the degree of vulnerability and, therefore, improving the prospects for future development.

Vulnerability reduction is a key investment, not only to reduce the human and material costs of natural disasters, but also to achieve sustainable development. To put it another way, such investment is highly profitable in social, economic and political terms. Therefore, vulnerability reduction must be a fundamental part of a systemic and comprehensive vision of development.

Such a comprehensive vision of development strategy must be based on four pillars: economic competitiveness, and social equity, political governance and physical vulnerability reduction.<sup>5</sup> Although this document does not deal with equity in itself, reducing poverty and degrees of socioeconomic exclusion are a priority of any vulnerability reduction strategy.

Linking vulnerability reduction and governance seems justified not only because “there is a direct relationship between economic development and the quality of the process of government”,<sup>7</sup> but also because in the past too little attention has been paid to political and institutional vulnerability, except when those agencies specifically responsible for catastrophe management are under examination (civil defense, emergency commissions, etc.).

However, political and institutional vulnerability, understood as institutional weakness as a whole, and more specifically the weakness of the democratic system, has often been seen as one of the major causes of vulnerability where natural phenomena are concerned and, in turn, even as a cause underlying other forms of vulnerability.

Indeed, the weakness of the democratic system has negative consequences for the efficiency of public policies, the legitimacy of government action, participation by citizens and the private sector in national efforts, linkage with local governments and civil organizations, the handling and management of emergencies, the processing of citizens’ demands and needs, and the ability to meet them. There is a close relationship between the need to reduce vulnerability and the increase in the organizational and participatory capacity of communities, the private sector and government.

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<sup>5</sup> The Inter-American Development Bank (IDB) and ECLAC for many years have been researching the relationship between equity and development, and the conditions for a competitive international insertion of the countries of Latin America and the Caribbean.

<sup>7</sup> IDB (1996), *A frame of reference for Bank action in Programs for modernization of the state and strengthening of civil society* (GN-1883-5), March 13.

It seems equally necessary that the international community bring its policies into line with this vision of vulnerability reduction as a basis for sustainable development. The limited vision of institutional capacity that has prevailed until now, has often led to the creation of institutions guided and managed with criteria that are not participatory, with centralized procedures, limited to emergency response with neither prevention nor foresight, with vertical structures and very low budgets. Moreover, in some cases legislation does not even explicitly define the concepts of prevention and mitigation.

However, the process of democratization, including greater mass media penetration and the resulting sensitivity to these problems, is giving rise to more comprehensive risk management efforts, that increasingly include the necessary linkage among central governments, local governments and civil organizations, together with a more co-ordinated and effective international aid effort.

A vulnerability reduction strategy as a basis for sustainable development as proposed should follow several basic action lines, the most important of which are comprehensive risk management, strengthening of macroeconomic capacity, active policies to reduce the most acute distortions, co-ordination of regional policies, strengthening of the democratic system and increased, reoriented international aid, managed in closer co-ordination with local authorities and the affected or potentially affected communities themselves.

The natural phenomena capable of causing damages to the populations and economies of countries, and by extension to their social and political systems, are part of the processes of the life of our planet. The same cannot be said of their effects, which can be avoided or reduced substantially.

## **1. Threat, vulnerability and risk**

Vulnerability may be analyzed from different perspectives (physical, social, political, technological, ideological, cultural and educational, environmental, institutional), although in one way or another all are actually related. It is a direct result of factors related to the interaction between man and nature. Risk arises as a product of the a priori function linking threat and vulnerability, and is intrinsic and latent within society, although its level, degree of perception and means used to confront it, depend on the guidelines laid down by that society. All in all, vulnerability and risks are related to the political decisions a society has taken over time and, therefore, depend on a country's or region's development.

Vulnerability is, therefore, a precondition that reveals itself during a disaster, when not enough has been invested in prevention and mitigation, and an excessively high risk level has been accepted. This shows that when defining a preventive policy, before all else vulnerability must be reduced, since the forces of nature cannot themselves be eliminated. Nevertheless, it must be made clear that an analysis of the vulnerability of structures is not enough, and the structure of vulnerability must also be understood: what or who is vulnerable and why?

There is, on the other hand, a relationship between the characteristics of the phenomenon and its macroeconomic impact. A disaster may have high costs in absolute terms but, in view of the size of the country's economy, it had relatively modest macroeconomic effects. Attention must also be paid to the fact that what may be small effects in overall terms may mask huge losses for the affected population in material terms, changes to sources of employment, disruption to family and social relationships; victims are not capable of overcoming such effects on their own and moreover such losses cannot be transformed into projects that attract finance from institutions or the interest in general of international aid. Many of these events remain largely unnoticed, concentrated in rural areas and affecting poor population groups, with low levels of

income, organizational capacity and political representation, both in terms of national governments and the international community.

The time frame in which disasters occur also influences the nature and seriousness of the damage. In predominantly agricultural economies, disasters that come at a certain stage of the growing cycle or season can make production losses greater or last for several months.

In a broader sense, the consequences of a disaster may also depend on the situation facing the affected country. In some cases, the urgency of undertaking reconstruction tasks comes into conflict with other social plans or economic commitments. After some large-scale disasters, or when the amount of the assets damaged and lost is large in proportion to the size of the economy, reconstruction efforts can bring about important changes in the medium and long-term with repercussions for an entire country. When reconstruction depends directly on access to foreign resources, execution will be also limited by domestic productive capacity and institutional organization for operational management. In other cases, changes in priorities as a result of reconstruction needs can lead to social tension and conflict arising from competition for resources among the reconstruction program and previously existing plans that are postponed; they may also come into conflict with stabilization goals or it may be impossible to obtain the necessary resources.

In all of the aforementioned patterns the ability of institutions to cope with emergencies—it is often the case that a late or inappropriate reaction can exacerbate the consequences of the phenomenon—and undertake reconstruction is of utmost importance.

## **2. The consequences of natural disasters in the long term**

Disasters have significant effects, normally negative ones, on the prospects for long-term development . The considerable growth of these effects in the most recent period seems to be linked to the seriousness and increased frequency of the phenomena and the existence of a greater



concentration of infrastructure and growth of human activity as the process of development advances, in addition to improvements in the methodology and systems to record damages. A specific examination of the most important long-term economic effects of natural disasters would include:

**a) Destruction of economic and social infrastructure.** Although damage is due to direct destruction during a disaster, or immediately thereafter, with serious short-term implications, replacement almost always takes place over relatively long periods. This has impacts on the social fabric and functional linkages that are difficult to measure, both spatially and socially. The effects of disasters are not equitable: they normally affect the poorer populations who by definition have a greater degree of vulnerability; in the same way, progressive reconstruction tends to reach those social strata that are most isolated or least capable of bringing pressure to bear. During this time, the economy as a whole and the most affected sectors in particular operate under abnormal conditions.

**b) Environmental change.** Losses of environmental assets and services with measurable economic consequences. It must be remembered that the environmental impacts of some phenomena are transnational, affecting zones shared by neighbouring countries.

**c) External imbalances.** As short-term imbalances lead to increased indebtedness, an additional service burden emerges that alters the debt profile and reduces the ability to obtain access to new loans or commit the investment resources that in other circumstances could increase productive capacity or be directed toward long-term social spending.

**d) Extraordinary fiscal imbalances.** Short-term fiscal imbalances are a result of the need to make emergency budget allocations and to make immediate repairs after a disaster. These alterations may continue into the medium-term due to a fall in tax revenue as a result of the direct and indirect effects of the disaster. As time passes, the government's capacity to maintain or

improve certain public services or maintain certain activities is gradually affected. This has been observed in social services, such as education and health. These imbalances, together with external ones, reduce the room for maneuver of countries when it comes to international sources of finance.

e) **Inflationary processes.** The immediate effects on prices of market changes are complicated by the monetary effects of reconstruction, even when it is carried out with donated resources or external finance. Moreover, fiscal deficits can lead to inflation when fiscal and monetary policies do not take this potential problem into account. Beyond the short and medium-term effects, damage to infrastructure can change production costs and unleash a rise in prices in the economy as a whole. Therefore, when reconstruction includes all economic sectors, it can affect its operation and produce overheating incompatible with stabilization and structural adjustment goals. Such inflationary processes weaken growth and investment capacity and can further worsen income distribution profiles, with a resulting increase in poverty rates.

f) **Negative income redistribution.** Natural disasters often have a dramatic negative impact on income distribution. In addition to the reasons mentioned above —loss of employment, destruction of goods and services networks, inflation, greater fiscal burden, etc.— in developing countries insurance coverage against such events is limited, and insurance companies normally only offer coverage to the largest and most modern economic sectors and wealthiest social strata. Therefore, the economic reactivation that occurs after these catastrophes —as a result of the investment opportunities generated by the replacement of destroyed assets, finance flows from insurance payments and other additional forms of finance— tend to sketch an income and wealth profile that is much more inequitable than the situation prior to the event. Added to this, public economic and social infrastructure lacks insurance coverage..

To sum up, the long-term effects of natural disasters tend to be substantial and diverse, with serious impacts on countries' prospects for development. This calls into question at least two aspects related to a country's development strategy: first, understanding that resources put into preventing and mitigating the impact of natural phenomena are a very high-yield investment, both in economic terms and in terms of the social and political environment favourable for long-term growth. Second, the spending actions and decisions taken, once a phenomenon has arisen, must be seen from the perspective of reducing vulnerability, in other words, in a combined reconstruction and transformation approach aimed at positively and progressively modifying the degree of vulnerability and, therefore, the prospects for development.

### **3. Vulnerability reduction**

Therefore the emphasis on vulnerability reduction as a development policy that must increasingly be explicit. Some of what are considered the basic elements required to incorporate vulnerability reduction in a sustainable development strategy are presented below.

**1. Comprehensive risk management.** Each country must define a comprehensive risk management plan based on certain basic elements such as: the consideration and provision of resources for preventive investment, with a special emphasis on the principles, strategies and processes of land regulation to reduce vulnerability; the incorporation of vulnerability and risk factors in development project and program preparation and assessment cycles; steps to ensure repair and reconstruction programs are not a simple reconstruction of vulnerability; creation and strengthening of information, observation, forecasting, research, oversight and early warning systems; development of institutional facilities, with the allocation of appropriate resources, to manage emergencies and disasters; design of permanent linkage and cooperation facilities with the private sector, civil organizations especially in the affected communities, and specialized

agencies from the international community; execution of permanent population education programs.

**2. Strengthening macroeconomic capacity.** As was mentioned before, the scale of the effects of certain natural phenomena is related to the condition of the economy and the structure of production. Against this background, actions must be increased to strengthen macroeconomic capacity, especially fiscal capacity, so that countries can better absorb the shocks resulting from natural phenomena (availability of resources to confront the emergency and reconstruction without generating inflationary pressures; foreign debt margin, etc.). In turn, fiscal and foreign debt capacity is essential to be able to make the preventive investments whose importance has been highlighted throughout this document.

In addition, a solid macroeconomic situation and a policy of strengthening the financial system (normally low penetration, especially in less developed countries), together with feasible risk management plans, will help to expand the insurance market, whose importance in mitigating the effects of natural phenomena and making reconstruction possible has also been highlighted above.

**3. Active policies to reduce distortions.** Each country can identify specific distortions, such as for example constant migratory flows from rural areas and small towns, and define active policies to reduce and eliminate such problems. In the aforementioned example, rural development programs that ensure conditions of greater productivity and living standards for the rural population are indispensable. Likewise, regional development policies and programs are required to eliminate serious geographic and demographic distortions. Finally, the relocation of populations away from high-risk areas and strategies to reduce urban overcrowding are other examples of active policies aimed at reducing the distortions that aggravate vulnerability.

**4. Co-ordination of regional policies.** Many of the watersheds and regions that require comprehensive management in terms of their economic exploitation and vulnerability reduction are shared by two or more countries. The co-ordination of policies and programs among countries with regard to such watersheds and regions, including the active participation of the private sector, is essential to vulnerability reduction for sustainable development; this is a new field for finance and international aid and, as has been mentioned above, for private investment. This approach, in turn, will strengthen regional and Subregional integration processes.

**5. Strengthening the democratic system.** It must be emphasized that the strengthening of the democratic system is essential to vulnerability reduction, in turn a prerequisite for sustainable development.

**6. Increase in and co-ordination of international aid.** The international aid that to date has played such an important part in catastrophes and whose aggregate value is decisive, especially in the smallest and least developed countries, must be increased and reconsidered in line with some of the ideas discussed herein in order to make vulnerability reduction the basis for sustainable development, an objective shared by the international community. So far most international efforts have concentrated on the response to the disaster: emergency relief, humanitarian aid, relief and rehabilitation. The new focus should move to prevention, vulnerability reduction and structural strengthening not only in physical terms but, more emphatically, in social, organizational and political ones.