

the production of fuel; second, whether it really improves environmental conditions, specifically the effects of climate change; and third, whether it will translate into socio-economic development or the creation and distribution of wealth.

A vast body of literature focuses on these dilemmas and some countries' potential for producing biofuels. North America has become the object of innumerable research projects that indicate that, due to its agricultural capacity, it has enormous potential for generating biofuels. Favorable climatic conditions, the availability of good cultivable land, and the low labor costs have increased interest in developing biofuel production projects in some Latin American countries.

Biofuel production markets have been established today in Brazil, Colombia, and Argentina, while in other countries this is still very limited. In the case of Mexico, debate on the issue has intensified, mainly due to pressure from the world's two main bio-ethanol producers: the United States and Brazil, who represent 52 and 37 percent of production, respectively. However, these countries have become the main example of intensified competition between agriculture for human consumption and agriculture for producing biofuels, or agri-energy.

The demand for biofuels and their production illustrates the clash between the need to adapt to climate change (producing alternative forms of energy like biofuel) and increasing local communities' resilience in the face of the effects of

climate change (by protecting local agri-food systems). We can see in this discussion that North American public policies waver between these two positions that at times become polarized.

On the one hand, the international trend of producing biofuels is based on crops with the potential to solve food problems in the countries producing them (particularly maize and sugar cane); and on the other hand, we know that public policies and the strategies for protecting the local agri-food system require including climate change mitigation and adaptation measures.

In the case of biofuel production, given the enormous social and territorial diversity in North America, where the spatial structure of natural resources is complex and population distribution is highly polarized, it is necessary to take into account local conditions for designing appropriate research strategies and technologies.

A successful adaptation to the effects of climate change must include a willingness to learn how to develop coherent principles that can provide new focuses for public policy for handling its effects. Generally speaking, climate change policy and economic policy are closely linked, but if public policy only focuses on the parameters for adaptation and mitigation, leaving to one side the notion of resilience, climate change policy will be skewed. A position that takes into account the three aspects will result in more effective action. ■■

Territorial Risks and Climate Change

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INTRODUCTION

Territorial risks can be defined as processes that pose foreseeable threats to society and the environment due to a combination of political decisions, unregulated economic processes, and an absence of strategies to strengthen the resilience of

local communities to cope with structural vulnerability. Thus the occurrence and persistence of climate-change-related disasters cannot be explained through a technocratic ideology that assigns an active role to climate processes and hydro-meteorological events.

This article sets out to reflect on the social and human implications of climate change. Such a complex subject cannot be understood solely through the prism of technology and science; analyzing it is difficult when using the time-based,

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measurable reference points that conform to short-term-oriented business and government interests, given their overriding concern with investment performance and immediate electoral results.

The convergence of environmental, territorial, and social factors establishes the need to identify the interrelationships between territory and climate, mediated by dominant political systems and economic processes, because the current stage of dangerous anthropogenic climate change derives from the repercussions of various territorial activities. For example, the massive deforestation of tropical jungles went from being a problem of conserving natural resources to one of carbon dioxide (CO₂) emissions; environmental pollution from industrial processes also produces greenhouse gases (GHG) as well as damaging public health; transport is no longer just a matter of mobility and traffic, but one of the most climate-damaging activities due to the massive amounts of CO₂ released into the atmosphere as a result; in particular, private cars are the main cause of the use of fossil fuels, without forgetting other sources of emission as mentioned above. This gas accounts for almost 60 percent of gases emitted globally.¹ We should remember

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Environmental pollution from industrial processes also produces greenhouse gases (GHG) as well as damaging public health.

that risk levels are not explained by GHG emissions and concentrations, but by regional and social inequalities and the location of human settlements, and this requires the state and society to develop new development options.²

FOCUSING ON DISASTERS

Disasters associated with climate change have been conceptualized from different epistemological angles. One is the technological-natural approach. This offers explanations based on the monitoring of geophysical, particularly hydro-meteorological processes, disaggregated from social considerations. It does not recognize the impact of economic processes, except in relation to GHG emissions, which can be regulated by the market itself. Socio-environmentalists approach argue for examining both social and environmental factors, not solely the ecological aspect. This theoretical approach suggests linking diagnostics and solutions with sustainable development and the democratic management of the territory, questioning the viability of solving anthropogenic climate change through financial and free-trade mechanisms.

The technological-natural approach reconsiders the conclusions drawn by the Intergovernmental Panel on Climate Change (IPCC), whose fourth report in 2007 claimed that evidence exists that humans have influenced the current global warming process, based on the study of GHG emissions and various effects, including those related to increases in temperature, rising sea levels, and the melting of the ice caps and snow in the Northern Hemisphere.³

From an ideological standpoint, this approach ascribes climate change to external factors, understood as unconnected to society's activities. This is the prevailing argument in discussions and programs of some international organizations, as well as among most national governments. In the past few years, the importance of understanding "extreme" climate processes and hydro-meteorological events has been stressed, rather than fundamentally questioning contemporary social reality.⁴

The socio-environmental approach recognizes territorial vulnerability as a multi-dimensional process comprised of various

aspects such as environmental degradation, the fragility of the technological-manufacturing structure, the inappropriate model for territorial distribution, the inability to respond given the population's progressive impoverishment, the poor quality of regional infrastructure and housing, and a lack of foresight.⁵

The socio-environmental approach is therefore both aspirational and practical: it challenges emergency response policies that do not address the causes of climate-related disasters. Therefore, it also questions physical-spatial diagnostics, since it takes a holistic approach to various aspects of socio-natural reality, recognizing the differences between climate processes and hydro-meteorological events.⁶ The former are slow evolving, cumulative cycles that generally have devastating effects, especially on underdeveloped countries, due to situations linked to rising sea levels, the salinization of agricultural land, desertification, water shortages, and food insecurity.

Hydro-meteorological events, on the other hand, are sudden disasters such as during hurricane seasons. For example, Mexico is suffering from the devastating consequences of rising river levels, storms, tropical cyclones, and flooding. These require damage-reduction measures for post-disaster recovery in the medium term.

THE QUESTION OF ADAPTATION

Adaptation was not considered a strategic issue by the United Nations Framework Convention on Climate Change (UNFCCC) from 1992 until 2007, when it was incorporated into the Bali Action Plan at the Conference of the Parties 13 (COP 13) in Indonesia. No significant progress has been made in its implementation, although its importance was restated at COP 16 (Cancún), where there were arguments in favor of assigning greater importance to adaptation as a required strategy for least-developed countries to reduce foreseeable disasters, through international cooperation and financing, specifically the Green Climate Fund (GCF). However, mitigation, in terms of reducing GHG emissions, remains the prime concern.

Socio-environmentalists approach argue for examining both social and environmental factors, not solely the ecological aspect, linking diagnostics and solutions with sustainable development and the democratic management of the territory.

Adaptation has not been given the same priority in the international debate. This can be explained by the technocratic approach to the problem that focuses on piecemeal, superficial solutions based on supposedly dispassionate science in order to avoid examining the root causes of the problem—an examination that would inevitably lead to a discussion of capitalism as the predatory mode of production, recycled with ecologist discourses but lacking alternative proposals that would impact the current logic of profit and speculation.

Adaptation presupposes reducing the risks of disaster through a preventive approach, over and above the idea of adapting self-sufficient ecosystems. In the case of human societies, explicit intervention is required by the state and by society; policies, projects, and specific measures are needed to reduce the inequality that creates different levels of vulnerability and situations of permanent risk facing most of humankind. Mexico, in particular, has seen an increase in disasters related to extreme hydro-meteorological dangers in recent years.⁷

PUBLIC POLICIES

When defining public policy options, it is relevant to move beyond the mechanistic methodology based on climate scenarios, including GHG emissions and estimations of concentrations of these gases in the Earth's atmosphere. These are designed in an isolated way, as a variable disaggregated from society in order to then define dangers or threats as the equivalent of disasters, and on that basis propose a vulnerability diagnostic. If we do not modify this analytical model, we will see a failure of adaptation strategies and policies since vulnerability is a core factor that helps explain climate change and climate variability as the result of society's own dynamic and not vice-versa. Countries, regions, and communities are highly vulnerable to dangers such as coastal and river flooding, prolonged droughts, intense rainfall and the resulting losses of biodiversity, farm land, and food sovereignty, and greater risks to health, deterioration of quality of life, and even the increase of migration from rural areas to cities and from poor countries to rich ones.

It is important to note that climate scenarios, modeled with analytical rigor from a nature-based approach, do not always consider root causes. This has made it possible to view climate change and the resulting climate instability as something unrelated to socioeconomic and territorial processes, to the point that when climate change is mentioned in poli-

Vulnerability is a core factor that helps explain climate change and climate variability as the result of society's own dynamic and not vice-versa.

tical discourses, it is argued that possible damage needs to be reduced given the inevitability of the disasters.

This argument enables a rhetoric that gives climate change the role of the active agent affecting a “passive” society, reminiscent of the discourse on inevitability, a term coined by institutions to describe disasters related to geological or hydro-meteorological events as a synonym of “nature’s fury,” thus shifting the ultimate responsibility for disasters created by society onto nature itself by referring to “natural disasters.” Evidence of this can be found in various government programs and funds, particularly the National Disaster Fund (Fonden), a financial instrument mainly used to repair or reconstruct damaged public infrastructure.

Therefore, developing capacities to combat climate change must not restrict the resilience to strengthening exclusively institutional capacities as happens with civil protection.⁸

Any exclusion of social resilience runs counter to the international agreements adopted by the Mexican government, such as the Hyogo Framework for Action, the axis of the United Nations International Strategy for Disaster Reduction. This capacity to recover and reduce harmful impacts must be a component of national and local development; therefore, civil society must take a more active role in prevention and adaptation strategies, instead of being dependent on bureaucratic decisions.⁹

CONCLUSIONS

Not magnifying climate change when designing public policies and in how the media handle the problem becomes important, since people are prone to be influenced by the sensationalism often found in news reports and by political manipulation of disasters. It is important to know the conditions prior to climate change and about socio-territorial vulnerability. These conditions, in addition to global warming and other problems like environmental devastation and the privatization of public goods, which reduce nation states’ ability to offer comprehensive responses for preventing, adapting, and reducing

GHGs, have led to the implementation of partial responses that lack a long-term vision. These responses are based on political uncertainty that seeks to maintain the status quo in terms of governance and social control mechanisms, in order to avoid taking responsibility, both domestically and internationally, where the principle of common but differentiated responsibilities is only partly applied.

We must go back to the socio-environmental approach. This will help reduce the risk of disasters that are expected to impact cities and rural communities in various regions across the country—either through lack of water or due to flooding—with effects that could worsen the difficult living conditions facing the majority of the population. Taking this approach would involve democratizing the management of public policies, considering development and fairness as the programmatic principles that affect daily life, that have the territory as the basis for social action to build up resilience and quality of life. ■■■

NOTES

¹ Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Synthesis Report. Summary for Policymakers*, 2007, http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf, accessed January 23, 2013.

² Gian Carlo Delgado, “Introducción,” Gian Carlo Delgado Ramos, comp., *Transporte, ciudad y cambio climático* (Mexico City: CEIICH/PINCC, UNAM, 2011), pp. 9-15.

³ IPCC, op. cit.

⁴ Intergovernmental Panel on Climate Change (IPCC), *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. Summary for Policymakers* (Cambridge, UK, and New York: Cambridge University Press, 2012).

⁵ Héctor Escobar Rosas, “La construcción social del riesgo en Chiapas,” *Ciudades* no. 52, October-December 2001, Red Nacional de Investigación Urbana, Mexico City, pp. 38-39.

⁶ Oli Brown, *Migration and Climate Change* no. 31, International Organization for Migration (Geneva), 2008, pp. 17-18.

⁷ Inter-ministerial Commission on Climate Change (CICC), *Mexico. Fifth National Communication to the United Nations Framework Convention on Climate Change. Executive Summary*, Mexico City, 2012, p. 14.

⁸ Daniel Rodríguez Velázquez, “Adaptación y prevención de desastres en el contexto nacional de inseguridad,” Simone Lucatello and Daniel Rodríguez Velázquez, comps., *Las dimensiones sociales del cambio climático: un panorama desde México. ¿Cambio social o crisis ambiental?* (Mexico City: Instituto Mora/Escuela Nacional de Trabajo Social, UNAM, 2011), pp. 143-144.

⁹ Daniel Rodríguez Velázquez, “Social Resilience, Disaster Prevention, and Climate Change: Challenges from Mexico,” *Journal of Disasters Research* vol. 5, no. 2, April 2010 (Tokyo), pp. 160-161.