

Mainstreaming Climate Change in Nicaragua

Screening for risks and opportunities



Project: 'Integrating climate change risks and opportunities into national development processes and United Nations country programming' (RIOCPNU)

Nicaragua is vulnerable to climate change due to the increase in frequency and intensity of extreme climate events, including floods, landslides, drought, and tides. These events have contributed to the degradation of the economic, social and natural bases of the country.

Climate change is one of the greatest challenges the world will face this century. It threatens the attainment of the Millennium Development Goals (MDGs) and may significantly reverse the progress made to date in human development, especially in poorest and most vulnerable communities. Development planning processes must therefore take pains to fully address the diverse and complex impacts of climate change.

Climate Change in Nicaragua

Climate change, both its risk and opportunity implications, is highly important to Nicaragua due to the social, economic and environmental (or natural) conditions of country as well as its geographic position, all of which make the country highly vulnerable to the impacts of climate change. Therefore, it is urgent that measures are taken to adapt to climate change (and its variability) and to reduce the impacts of climate change.

Its vulnerability

In Nicaragua the projected impacts of temperature alteration, anomalies in the precipitation patterns, increase of sea level and increased intensity and frequency of extreme events, may decrease agricultural productivity, cause insecurity in water resources, increase exposure to coastal flooding, bring about the collapse of ecosystems, and increase health risks. At the level of human development, each of these changes poses a significant threat in the fight against poverty and inequalities in the country.

Despite its intrinsic climatic vulnerability, Nicaragua has thus far made progress in the achievement of the MDGs. This advance, however, is still insufficient to decrease social gaps, regional inequities and existing extreme poverty. Current climatic pressures generate further impediments to the attainment of the MDGs.



Nicaragua's geographical position leaves it prone to extreme climatic events (storms, hurricanes, floods, droughts, etc.). One sixth of its surface (21,470 km²)—primarily in the North and West of the country—is located in zones with high or very high sensitivity to climatic events (MARENA 2008). Nicaragua's economy depends on activities that are highly sensitive to climate conditions, namely agriculture, cattle raising and fishing (CCA 2007).

The relationship between poverty and adaptive capacity is inversely proportional, with vulnerability intensifying as poverty increases. Nicaragua's poverty indicators are high, with over half the population (2.3 million people) affected, touching approximately 66.8% of urban homes and 80.2% of rural homes (MARENA 2008). The spread of urban centers has also been mostly disorganized, which increases the natural vulnerability of the areas. In addition, the country's high population density in the urban centers of the Pacific and Center regions, which are extremely vulnerable areas, threatens to cause significant setbacks in human development with climate change.

Expected impacts

Climate impact is defined as the combination of the *exposure* to climate conditions (physical element) and the internal *sensitivity* of a population (human element). Nicaragua is already exposed to a high recurrence of extreme events, and it is expected that these events will occur more frequently with the change and the variability of future climate.

In Nicaragua, increases of between 1 and 2°C in the average temperature are projected for 2020-50, and between 3 or 4°C by the end of the century, where the Pacific coast is likely to suffer the largest increase. Likewise, more intense precipitation on the Atlantic coast has been projected. However, most of the models project a reduction of precipitation at a national level, and a slight increase for the Pacific South region (MARENA 2008).

These changes would directly affect poverty levels, food security, jobs, economy, social structure and the overall development of the country.

Example of expected climate change impacts in Nicaragua

<p>Health</p>	<ul style="list-style-type: none"> • An increase in temperature would cause an increase in cases of malaria and other diseases. • Alteration of the territorial patterns and epidemiologic behavior of hydric, vectorial, allergic and respiratory diseases. • Greater expenses in the public health sector and in services to the most vulnerable population (children and senior citizens) due to an increase in viral and bacterial diseases.
<p>Agriculture</p>	<ul style="list-style-type: none"> • Recurrent droughts, heat waves and extension of summers would result in a decrease of agricultural production and the loss of crops within the Pacific and Central regions. • Severe impacts in areas that are currently suitable and safe for the production of basic grains. • Severe falls in the productivity of the Chinandega, León, Managua and Masaya departments, which could create greater social conflicts since these departments are home to more than 65% of the rural population. • Scarcity of food in the cities; loss of crops in the country; drop in the national food security. • Greater displacement of population from the countryside to the city, due to the lack of economic opportunities in the agricultural and fishing sectors.
<p>Water resources</p>	<ul style="list-style-type: none"> • An increase in conflicts due to the use and distribution of water resources. • A decrease in drinking water availability in urban centers. • Sustained reduction of water recharges due to an unsustainable use of freshwater resources. • Diminished aquifer levels of up to 2 m and a decrease in the flow rate caused by recurrent droughts and the overuse and contamination of underground water sources. • Increased competition for water resources, especially during drought seasons, which would seriously affect the productivity of hydroelectric plants.

<p>Coastal systems</p>	<ul style="list-style-type: none"> • Loss in the fishery sector due to floods, coastal sinking and sedimentation (i.e., scarcity of products such as shrimp and fish, decrease in productivity and exports). • Threats to ecosystems such as wetlands (RAMSAR sites), mangroves, coastal lagoons and coral reefs due to coastal erosion. • Socio-economic losses for coastal populations due to floods, sea level increase and coastal erosion (leading to displacement of populations settled within the Pacific and Caribbean Coasts). • An increase in the vulnerability of the tourism sector—the second most important income-generating sector—and real estate in coastal zones due to erosion, coastal sedimentation and greater frequency of extreme events. • An increase in the vulnerability to extreme events and a decrease in income from tourism activities for indigenous and African descent communities in the Atlantic, who promote and rely on community tourism for income generation.
<p>Ecosystems</p>	<ul style="list-style-type: none"> • Disappearance of very humid sub-tropical and pre-mountainous sub-tropical forest areas, which would affect the species of flora and fauna that depend on these ecosystems.
<p>Housing and settlements</p>	<ul style="list-style-type: none"> • Substantial damage to the infrastructure and to the unstable settlements in high-risk areas, due to the increased frequency of extreme events (floods, tropical storms and landslides), which would negatively affect living conditions of the vulnerable communities established in these areas. • Increase in permanently displaced populations. • Increased sensitivity and vulnerability of human settlements and land use practice due to changes in the usual supply and demand of water.

Integrating Climate Change Considerations in Development

Climate change forces us to think about development differently; it is not possible to continue the same current development practices without taking into account the risks of climate change and the necessary adjustments to reduce the impacts. To this end, significant and systematic changes are necessary to foster more sustainable lifestyles and consumption habits (both in the countryside and the city). These changes are: 1) the promotion of low-carbon development (**mitigation**); and 2) a more resilient development tied to a capacity to adapt to the risks and opportunities of climate change, which imply a more harmonious relationship between human activities and the land (**adaptation**).

Climate change requires a new way to think about development; significant and systematic changes in Nicaraguan consumption and living habits must be made.

One way to address adaptation is to 'mainstream', or integrate, its considerations into planning and decision-making processes. This involves taking into account the risks and opportunities and putting in place adaptation measures that have a long-term vision of development. The integration of climate change considerations into policies, plans and development projects contributes to:



1. Decrease people's vulnerability to negative impacts of climate change and climate variability;
2. Increase community resilience and tolerance to extreme climate change;
3. Increase the *adaptive capacity* of communities and national activities faced with climate change impacts.
4. Avoid making decisions that are not sustainable within the climate change context and that generate *maladaptation*¹ (processes and activities which will increase vulnerability in the long run); and,
5. Reduce greenhouse gas (GHG) emissions.

¹ Maladaptation is defined by the OECD (2008, p.30) as 'business as usual' development, which by overlooking climate change impacts, inadvertently increases exposure and/or vulnerability to climate change.

Experience of the Climate Change Mainstreaming Project

Current UN development assistance frameworks have yet to incorporate climate change risks. Nonetheless, their impact could considerably affect the attainment of the MDGs and the sustainability of present and future UN development actions. In addition, there are wasted opportunities in certain programmes and projects, which could contribute to the adaptation of the country to climate change.



In this sense, UNDP has turned climate change into an institutional priority at the global level. With funds from the Spanish Government, UNDP is implementing the project **Integrating Climate Change Risk and Opportunity into National Development Processes and UN Country Programming (RIOCPNU Project)** in five countries (Cape Verde, Malawi, Colombia, El Salvador, and Nicaragua).



The goal of the Project is to develop the capacity of the country teams and national decision-makers to integrate the risks and opportunities of climate change in UN System programming, as well as in national development policies.

This project puts into practice a tool to perform climate screenings and integrate climate change in development programs and projects. Climate screenings are used to determine the nature and extent of risk by analyzing potential impacts caused by climate change and evaluating existing conditions of vulnerability (given the sensitivity, exposition and adaptive capacity).

The Project in Nicaragua

The Project was implemented between April 2009 and May 2010, with a budget of 100,000 US dollars and a team of four people². The project worked with two types of stakeholder: (1) the United Nations Country Team (UNCT) in Nicaragua; and (2) the national institutions associated with country development, including ministries, national institutions, private entities, local governments and NGOs.

The RIOCPNU Project was part of the collaboration process between the Government of Nicaragua and the UNDP to strengthen staff's knowledge on climate change.

At the initial stage, the project team prepared a **climate profile** based on the national information available, including the main vulnerabilities of the country to climate change; in addition, the team produced a **map of stakeholders** related to the discussion of this topic in Nicaragua.

In the second stage, the team coordinated **capacity development workshops** in June and October, 2009, and April, 2010, to strengthen the knowledge and awareness of representatives from both institutional groups regarding climate change and to provide information on climate risk screenings. At the first workshop, several documents of national interest were proposed for risk screening and two documents were chosen:

1. The United Nations Development Assistance Framework Nicaragua (UNDAF) 2008-2012; and
2. The National Plan for Human Development (PNDH) 2008-2012, in four sections: the Agricultural and Forestry Strategy, the Food Strategy, Health Strategies and Policies, and Water and Sanitation Strategies and Policies.

² The team included a Project Coordinator in New York; a focal point and Project officer in UNDP Nicaragua; an international advisor and a national advisor.

In the third stage, the project team performed two **climate screenings**. This was followed by a consultation process with UNCT staff members to obtain feedback and discuss the UNDAF assessment: four technical meetings were held, which were also part of the UNDAF Mid-Term Review process. Hence the resulting suggestions from the climate risk screening were crucial in the improvement of the next UNDAF.

A national workshop was held on April 15, 2010 in which the results from the climate risk screening of the four sections of the PNDH were presented before representatives of Government institutions. This final project workshop became the first stage of a collaboration process between the Government and the UNDP, which aimed to design climate change adaptation project profiles on the prioritized sectors of the PNDH to be presented later to the international donors.

In the final phase of the project all efforts were concentrated on the systematization of activities, the finalization of the risk screening reports, and the publication of project products, including a **final report** on lessons learned.

Risk Screening Methodology

UNDP drafted a methodology to evaluate climate change risks and opportunities, entitled **Quality Standards for the Integration of Adaptation to Climate Change into Development Programming**, following an analysis of the best practices in the field. The methodology is being piloted as part of this Project, with the intention to improve it based on the lessons learned. The methodology is oriented towards climate change experts so they can screen, in a qualitative manner, for climate change implications over expected results or deliverables of an existing project, policy or strategy. The methodology is summarized in four standards (see box).

The product of this screening is a document that summarizes the risks and opportunities associated with climate change and which can then be used to reformulate or adjust the project, policy or strategy screened. The screening is then delivered to the decision makers and experts of the involved institutions so they can take into account the suggestions during the revision of the document itself.

The UNDP methodology has proven to be a useful tool for climate screenings hence taking into account the impacts of climate change, thereby decreasing vulnerability to risks, as well as identifying and taking advantage of possible opportunities.

Quality Standards:

1. Identification of climate change risks;
2. Identification of the probability that these risks could result in maladaptation;
3. Identification of opportunities for adaptation and synergies with the development process; and
4. Identification and assessment of potential measures for adaptation, and proposals for changes in planning.

Results of the climate risk screenings in Nicaragua

The climate risk screenings performed under the context of the RIOCPNU Project allowed the identification of important risks that would seriously hinder or set back the development of the country, as well as current practices that will unleash maladaptation processes.

The objective of the climate screening of the UNDAF and the PNDH was to begin a transformative process, so that both strategic documents would become more resilient or tolerant to the potential climate change impacts. In this sense, the adjustments and adaptation measures suggested were

classified in seven categories: a) generation and systematization of data, b) technical measures, c) citizen participation, d) diffusion and sensitization of information, e) capacity development, f) planning and policy-making, and g) financial measures.



I. Climate risk screening of the PNDH

The sections evaluated by the PNDH were: the Agricultural and Forestry Strategy, the Food Strategy, Health Strategies and Policies, and Water and Sanitation Strategies and Policies. Of all the adaptation measures suggested, 21 were recommended as priorities and are key to reducing the climate change impacts. Samples of these adaptation measures are:

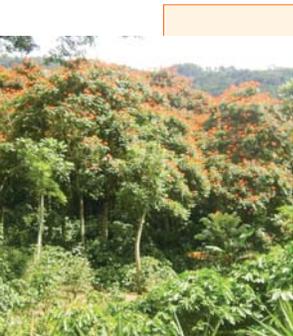
- Favor incentives measures (credits, tax exemptions, grants, etc.) or **joint adaptation projects** (placement of live barriers, construction of dams, etc.) that are conducive to associations and cooperation.
- Guarantee that farming technology and technical assistance programs consider **climate vulnerability maps**, as well as scenarios, projections and suitable adaptation measures.
- Identify **sensitive agricultural zones** that are prone to food insecurity, in order to foresee actions and budget to introduce prevention and risk management plans.
- Verify the **viability of improved seeds** to avoid creating a dependency of farmers on seeds that not regenerative.
- Reinforce the **Roll Back Malaria Strategy** as well as efforts to monitoring and control vectors to eliminate malaria and reduce other diseases transmitted by vectors (dengue fever, leishmaniasis). Promote prevention campaigns for these diseases.
- Motivate the implementation of a **National Basin Management Plan** resilient to climate change, including a prioritization plan that involves the National Water Authority and the Nicaraguan Institute of Territorial Studies as well as the municipal administrations, in the effective management of hydrographic basins.
- Develop studies on **projected sea level increase and ground water salinization** to calculate future water availability.

II. Climate risk screening of the United Nations Development Assistance Framework (UNDAF) of Nicaragua

The project team performed a climate risk screening of the five areas of cooperation of the UNDAF:

1. Democratic governance and rule of law for the exercise of human rights and the construction of citizenship;
2. Reduction of inequalities, poverty, hunger and malnutrition to achieve sustainable human development (MDG 1);
3. Guarantee of social rights for the achievement of the MDGs and other international instruments (MDG 2 to 6);
4. Environment protection and risk management for sustainable human development (MDG 7); and,
5. Strengthening institutional capacities for the establishment of a national information system that ensures the monitoring and evaluation of the MDGs.

From the list of adaptation measures proposed under the risk screening, 13 priority adaptation measures were identified, including:



- **Involving public and private institutions from academia and civil society** experienced in climate scenarios and projections to take part in the process of designing and implementing public policies for the fight against poverty and inequality.
- **Promoting the development of financial programs and insurance instruments** that are accessible to the most vulnerable populations (small farmers, rural producers, artisanal fishermen, etc.). Coordinating with the private sector to invest in technological and infrastructure measures to prevent and adapt to climate change as well as to remedy or reduce the damage caused by climate change impacts.
- **Promoting the consideration of climate scenarios, projections and vulnerability maps** in the allocation of budgets and financing pertaining to social rights, MDGs, and the attention to women in cases of emergency.
- **Supporting the identification of zones and regions at greater climate risk** where indigenous populations and populations of African descent are concentrated, and monitor climate changes and alterations, with the purpose of proposing anticipatory measures.
- **Promoting the training of authorities and legislators in the matter of climate change**, so they have the capacity to include adaptation and mitigation measures in sustainable development policies and to prioritize the different needs of vulnerable groups (women, children, senior citizens, indigenous and African descendants).
- **Proposing key indicators for the evaluation of current and future climate vulnerability** with a gender approach that can be measured and monitored from the existing institutional structures and that can be reported systematically by the National System of Environmental Information of MARENA and by the INIDE.

Advances and challenges in Nicaragua

National environmental management has had important progress with regards to climate change, such as the National Action Plan on Climate Change (NAPCC), The First National Communication, and the Second National Communication (presently in the final approval stage). These achievements have allowed the promotion of adaptation and mitigation of climate change in the country through studies, projections and local projects. In addition, the National Strategy for Adaptation to Climate Change will incorporate multi-sector elements, governance, inter-institutional coordination, citizen participation, and communication.

In Nicaragua, numerous national initiatives have been developed with the intention of promoting the management and conservation of natural resources in a sustainable manner, and which involved adaptation and mitigation to climate change.

Numerous national initiatives have been developed with the intention of promoting the management and conservation of natural resources in a sustainable manner, including adaptation and mitigation to climate change, for example: nationwide reforestation projects (private and public), national risk management projects, and projects promoted by MARENA in research and adaptation, such as Basin 64 and the coffee growing sector at the northern part of the country.

Overall, there is an increasing array of economic and project-based efforts from national and international NGOs, as well as from the UN and governmental institutions, to support the development of climate change adaptation and mitigation initiatives in the country. Many of the efforts have been dedicated to the strengthening of strategic alliances, inter-institutional committees, community participation, and organizational structures.

Drawing on this broad experience, Nicaragua can focus on strengthening environmental management and on mainstreaming climate change in numerous initiatives of national interest, taking as a starting point the different efforts implemented to date and the lessons learned from them.

In spite of the progress made in managing climate change, numerous national challenges persist that must be taken into account, such as the need to:

1. Integrate climate change into development programs, projects and plans in government institutions as well as in agencies from the United Nations System;
2. Decentralize resources to develop local adaptation and mitigation initiatives;
3. Improve management efficiency inter-institutionally and inter-sectorally;
4. Build capacity in the area of adaptation and mitigation to complement environmental management;
5. Improve basic knowledge on climate change, national greenhouse gas inventory and key national research; and
6. Channel financial resources to implement local projects oriented towards adaptation and mitigation.



Sources

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Available Project Products

1. Nicaragua Climate Profile
2. Nicaragua Climate Fact Sheet
3. Institutional mapping: Stakeholders addressing issues of climate change in Nicaragua
4. Presentations and workshop materials
5. Glossary of terms
6. Climate Risk Screening of the UNDAF Nicaragua 2008-2012
7. Climate Risks Screening of four sectors of the PNDH
8. CD with reference material related to climate change at national and international levels

Most products are available on the UNDP Nicaragua web page: www.adpatationlearning.net/country-profiles/ni.



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