CLIMATE CHANGE IMPACTS ON SOCIO-ENVIRONMENTAL CONFLICTS:

Diagnosis and Challenges of the Argentinean Situation

Pablo Lumerman, Jimena Psathakis
and María de los Ángeles Ortiz

April 2011

PDCI

INITIATIVE FOR PEACEBUILDING
EARLY WARNING

THIS INITIATIVE IS FUNDED
BY THE EUROPEAN UNION

ABOUT IFP-EW

The Initiative for Peacebuilding – Early Warning Analysis to Action (IfP-EW) is a consortium led by International Alert and funded by the European Commission. It draws on the expertise of 10 members with offices across the EU and in conflict-affected countries. It aims to develop and harness international knowledge and expertise in the field of conflict prevention and peacebuilding to ensure that all stakeholders, including EU institutions, can access strong, independent, locally derived analysis in order to facilitate better informed and more evidence-based policy and programming decisions.

This document has been produced with financial assistance of the EU. The contents of this document are the sole responsibility of IfP-EW/FRIDE/International Alert and can under no circumstances be regarded as reflecting the position of the EU. To learn more, visit **http://www.ifp-ew.eu**

ABOUT PDCI

Partners for Democratic Change International (PDCI) is a global partnership of 20 independent, local organizations in Europe, Africa, the Americas and the Middle East that work to advance civil society, good governance and a culture of change and conflict management worldwide. The PDCI Secretariat was established in 2006 to enhance network communication and expand contacts with both EU institutions and the NGO community active in Brussels. To learn more, visit **http://www.pdci-network.org.**

ABOUT FUNDACIÓN CAMBIO DEMOCRÁTICO

The Argentinian member of PDCI, Fundación Cambio Democrático (FCD) is a non-governmental, non-partisan and non-profit organisation. It has a vision to contribute to build a peaceful, respectful of diversity, democratic, just and sustainable global society. The mission is to enhance the capacity of communities for the prevention and democratic transformation of public conflicts to achieve sustainable human development. FCD has three main objectives:

1) to produce knowledge in the field of conflict transformation to promote a culture of collaboration;
2) to impact on the design and implementation of public policies by introducing tools and mechanisms for democratic transformation of public conflicts; and
3) to train social, private, academic and government stakeholders in consensus-building tools.

Cover image: © William Braik. flickr

CLIMATE CHANGE IMPACTS ON SOCIO-ENVIRONMENTAL CONFLICTS:

Diagnosis and Challenges of the Argentinean Situation

AUTHOR PROFILES

Pablo Lumerman
Pablo Lumerman is the Executive Director of the Partners for Democratic Change Center in Argentina (FCD). As Executive Director, Mr Lumerman leads multiple national and regional projects for social and institutional capacity-building for democratic governance, conflict prevention and resolution, and respect for human rights. He is part of the Steering Committee for Partners for Democratic Change International (PDCI), which is based in Brussels, Belgium.

Mr Lumerman holds a Masters in Local Economic Development from the Universidad Autonoma de Madrid and a Bachelor in Political Science from the University of Buenos Aires. Additionally, Mr Lumerman has extensive experience in developing curricula for university and adult training on issues associated with democratic dialogue, conflict analysis and resolution, policy consultation and mediation of public disputes in Latin America. Mr Lumerman has worked as a consultant, trainer and facilitator for UNDP, GTZ, IAF, USAID, the European Union, AECI, NED and government agencies. Mr Lumerman is a member of the Conflict Transformation Collaborative network (founded by Mark Gerzon) and the Peacebuilding Apprenticeship Initiative led by John Paul Lederach. He also belongs to the Regional Community of Practice and Learning and UNDP's Democratic Dialogue Project, an international network of specialists in dialogue from Latin America and the Caribbean. He is also part of the Research Network on Deliberative Democracy for the Kettering Foundation. He has facilitated numerous dialogues among civil society actors for the generation of public policy on issues such as human rights, sustainable development and democratic governance employed by various public bodies.

Jimena Psathakis
Jimena Psathakis is currently the Coordinator of the Sustainable Development Area in FCD. Since 2005 she has developed different skills in the design and facilitation of dialogue and public consultation processes in different themes (mining, climate change, sustainable development, gender and media, among others). She has also developed tasks related to strategic planning of the area and programmes, team leading and project management. Ms Psathakis is an active member of the Peacebuilding Apprenticeship Initiative, funded by the Fetzer Institute, which connects promising young peacebuilders with mentors working in conflict zones around the world. From 2007 to 2009 she collaborated with the UNDP Democratic Dialogue Regional Project, and has assisted the Carter Center Representative in Latin America. She has been part of exploratory and electoral observation missions with the Carter Center and the OAS in Bolivia, Colombia, Venezuela and Panama. She has contributed to numerous papers and publications on the topic of socio-environmental conflict.

María de los Ángeles Ortiz
María de los Ángeles Ortiz holds a Masters in Administration and Management of Social Economy Nonprofit Organisations from the University of Valencia, Spain (2009–10), and a Bachelor in Political Science from the University of Buenos Aires (2008). She has been working for FCD since 2008, and currently works as the Coordinator of the Climate Change and Eco-regions Programmes.

Ms Ortiz has participated in the international internship programme "Continental network of co-production of knowledge, research and training", studying the social economy in Quebec. The programme was sponsored by Concordia University, the National Institute for Scientific Research (INRS-Urbanization, culture and society) and the International Development Research Centre (IDRC) of Canada in 2008. She has contributed to various papers and publications.

ACKNOWLEDGMENTS

The authors would like to thank the members of the Advisory Board of FCD's Climate Change Programme for their permanent support, advice, and constant assistance in all the initiatives related to this subject, namely: Soledad Aguilar, Fabricio Brodziak, Inés Camilloni, Juan Casavelos, Lucas Di Pietro, Miguel Pellerano, Alcira Perlini, Eduardo Piacentini and Pedro Tarak.

Special thanks are extended to the technical advice of Pablo Canziani (Catholic University of Argentina), Edward Hogg (British Embassy), Sergio Elguezabal (TN Ecology), Raúl Estrada Oyuela (former Argentinean member of the Diplomatic Body), Gabriel Meconi (Research Programme in Natural Resources and Environment), Pablo Andrés Bruno (Red Cross Argentina) and Roberto Ñancucheo (Native Peoples Directorate – Environment and Sustainable Development National Secretariat). PDC would also like to thank Maria Eugenia Di Paola (Fundación Ambiente y Recursos Naturales), and through her the Plataforma Climática Latinoamericana; Nazareno Castillo Marín, Gabriel Blanco and staff of the Directorate of Climate Change of the Department of Environment and Sustainable Development National Secretariat.

In addition, special thanks to Maria Baron and Noel Alonso Murray, Executive and General Directors of Fundación Directorio Legislativo for their support in an initiative to include the topic of climate change in the parliamentary agenda in Argentina.

Finally, the authors would like to recognise the work of FCD technical staff and volunteers, whose professionalism and human qualities helped to shape and give meaning to this initiative.

CONTENTS

ACRONYMS

CONICET	National Council of Scientific and Technical Research
FCD	Fundación Cambio Democrático
FCEN	Department of Atmospheric and Ocean Sciences
HPS	Southern Ice Field
INTA	National Institute of Agropecuarian Technology
NEA	North East Area
PEPACG	Interdisciplinary Team for the Study of Atmospheric Processes in Global Change
UBA	University of Buenos Aires

EXECUTIVE SUMMARY[1]

This report addresses how climate change impacts, enhances and creates new socio-environmental conflicts. It argues that a conflict-sensitive approach in the development and implementation of public policies on climate change issues and the promotion of early-warning systems in this field will allow us to deal more constructively with present conflicts and to prevent future ones. It is divided into two sections: the first section analyses the links between climate change impacts and socio-environmental conflicts, and the second includes suggestions on reducing the impacts of climate change, by using a comprehensive, cross-sector and interdisciplinary approach.

1 This is a short version of the report. To download the complete version, please visit www.cambiodemocratico.org/sitio2011/wp-content/uploads/2011/03/EWS.pdf

INTRODUCTION

Climate change is increasingly becoming the most important political issue and the toughest challenge for mankind in the 21st century. The impact caused by climate change on earth is unique in that it affects all territories and people alike, without acknowledging political barriers or boundaries of any kind. Damage caused in a particular part of the globe can have far-reaching repercussions for other distant and even unrelated areas.

The climate change phenomenon has radically altered the way humans relate to nature. The complexity of the situation makes it imperative to create mechanisms for cohesive action at a global society level. Such cohesiveness may at first seem "artificial", given the urgent need to provide systemic answers to this global concern, but it could also be viewed as an incentive for building new bridges and relationships between societies, resulting in the creation of a new paradigm for human development.

Debates have, at times, focused on the *nature* of climate change, divided between those who explain global warming on the basis of the greenhouse effect caused by the activities of human beings and those who refuse to accept the theory of manmade global warming.[2] Other debates have focused on curves describing global warming (rise of temperatures) and global cooling (decrease of temperatures). These debates have provided a basis for us to analyse climate change from a political, economic, social and environmental standpoint with the aim of gaining clearer insight into its causes and of providing solutions to its consequences.

However, in the quest for individual and collective responses to the possible impacts of climate change on humankind, there has been no review of the situation from a conflict-sensitive perspective. This paper seeks to establish the way in which the effects of climate change can cause or further intensify socio-environmental conflicts. Our proposal is that public policies should be designed and implemented using a multidisciplinary, cross-sector approach, while also including a socio-environmental conflict-management approach. This will more effectively address the impacts of climate change in Argentina.

This paper has been prepared on the basis of a survey carried out using primary and secondary sources (i.e. interviews with selected key stakeholders and documentation including legislation, projects, press articles, official statistics, etc.). In addition, major sources of conflict and respective conclusions were analysed and reviewed with various key stakeholders in a multidisciplinary, cross-sector workshop specifically organised to deal with the issue of climate change in Argentina.

This report analyses the link between the impacts of climate change and the country's most significant socio-environmental conflicts. Two major conflict areas arising from and aggravated by climate change were identified as a result of the conducted research: soil and water. With these two resources in mind, an attempt is made to examine the complexity of this issue and highlight the importance of designing and planning government policies to tackle areas such as agricultural production, energy production, migration, claims by indigenous people and the consequences of mass loss of glaciers, among others.

The final section of this report includes suggestions on reducing the impacts of climate change, using a comprehensive, cross-sector and interdisciplinary approach. Through this approach, we seek to avoid the emergence of destructive conflict situations and strengthen democracy and sustainability in our country and region.

2 For theories supporting the hypothesis that climate change is the result of human actions on earth, and theories refuting this hypothesis, see www.climatedebatedaily.com

IMPACTS OF CLIMATE CHANGE ON SOCIO-ENVIRONMENTAL CONFLICTS IN ARGENTINA

SOCIO-ENVIRONMENTAL CONFLICTS

Argentina is one of the few countries in the world that stretches from the tropic to the pole, and is home to a broad range of ecosystems. The diversity of the country's territory will therefore be affected by climate change in different ways, creating a variety of scenarios across its length and breadth. It is increasingly clear that climate change has the potential to either intensify existing socio-environmental conflicts or create new conflicts in each of the various ecological regions.

Conflicts between people and their environment are known as **socio-environmental conflicts**, and they have increased considerably in recent decades, including in Argentina. A socio-environmental conflict happens when 'two or more interdependent actors disagree as to the distribution of certain material or symbolic elements related to the control, use of, and access to natural resources and act on the basis of these perceived inconsistencies'.[3]

These conflicts are social events, and due to the impact they cause in the public arena they contain not only social and environmental aspects, but also economic, cultural and political dimensions. There are multiple factors contributing either directly or indirectly to the emergence of this situation, such as the overexploitation of resources, disproportionate consumption, population explosion, the unequal distribution of wealth and the lack of appropriate public policies.

In Argentina, an increase in socio-environmental conflicts is likely to result from overuse of natural resources. Socio-environmental conflicts are complex and influenced by a number of factors, such as diversity of actors, including actors whose interests are underrepresented, multiple jurisdictions and emergent social movements pushing an environmental agenda. Consequently, there is a need to strengthen governance and build consensus both with respect to situations requiring immediate action and in processes requiring longer-term public policy.

An **eco-regional approach** is essential when considering the way in which climate change affects existing socio-environmental conflicts or leads to new types of conflicts. An **eco-region** is a recurring pattern of ecosystems associated with specific combinations of soil and landform that characterise the region. In Argentina, these regions have little or no human population (they are often referred to as "**core areas**"), a rich biodiversity and a variety of environmental goods and services that the local population depend on. Multiple jurisdictional entities claim responsibility over the development of core areas.

Many traditional planning tools in existing eco-regions have serious weaknesses. This can be to some extent blamed on the nature of the management plans put in place for all protected areas, as these plans tend to be too

3 This definition integrates the various elements that make up the defining characteristics of socio-environmental conflicts: *a) Transformation*: The statements inherently involve change; conflicts are dynamic and have an inherent energy that can emerge in negative or positive ways. The form energy takes will depend on the decisions and courses of action the players choose to take, in connection with the elements linked to it; *b) Power*: There are power struggles between players in the public, private and social development of various sectors, and strategies involve lobbying, forming alliances and coalitions, in order to strengthen the ability to access, use and control strategic resources. In this sense, the lack of symmetry in power is one of the explicit causes of the emergence of conflict; and *c) Culture*: Conflict is a social construction caused by the different meanings and interpretation that those involved give to actions and events. There is a growing rebirth and recovery of ancient traditions in the relationship between human beings and their environment, and there are visible contrasts between the different world views, ancient and modern, of indigenous people, rural communities and urban and modern societies. These differences in beliefs and principles that build a particular worldview are an important factor in the dynamics of escalating socio-environmental conflict.

technical and scientific, often leaving out or only barely addressing democratic and socio-political participation tools. For example, traditional models of soil usage are usually based on this technocratic approach, which ignores regional environmental concerns in favour of more traditional production models.

The complexity of these issues makes the planning of sustainable development for these territories difficult because of the existence of multiple latent and evident conflicts between the different interest groups involved.

It is therefore necessary to adopt a **conflict-sensitive approach**, while promoting the implementation of collaborative planning methodologies (based on tools which involve dialogue and building up cross-sector consensus) and the use of relevant governance tools. This approach will facilitate efficient, professional and democratically managed collective decision-making processes required for the sustainable management of these areas. It will merge the technical and scientific standards needed for precise socio-environmental diagnosis, digital mapping and strategic planning (e.g. the logical framework) with the capacity to promote social consensus on the basis of participatory and conflict-resolution tools.

The geographic spread of Argentina and its broad variety of climates and biomass give rise to a large number of heterogeneous scenarios in the different regions. Hence, the impacts of climate change in Argentina are not uniform. It should be noted that, while several studies have been carried out and some progress has been made in the field, there is still a great deal of uncertainty about the true impacts and their magnitude in the country, given the lack of sufficient information and data collected. However, the research conducted so far provides the means to move ahead in the design of certain likely future scenarios.

The following table provides an explanation of the main impacts of climate change in Argentina and a few examples of the conflicts deriving from them.

Table 1: Major Impacts of Climate Change and their Consequent Conflicts in Argentina by Ecological Region

ECOLOGICAL REGION	MAIN EXPECTED IMPACTS
NOA (Northwest)	▪ High hydro-geological risk. ▪ Floods caused by heavy summer storms. ▪ Increasing temperature levels resulting in more severe droughts and growing desertification. ▪ Severe storms.
NEA (Northeast)	▪ Increase in sea level and floods by increasing rainfall during the autumn. ▪ Severe storms. ▪ Decrease of river flows/levels of water. ▪ Droughts caused by reduced rainfall and rising temperatures in spring and summer. ▪ Periods of extreme heat. ▪ Tornados.
Cuyo	▪ Reduced water supply due to decreased rainfall and increased regional temperatures. ▪ Retreat of river flows of Andean origin. ▪ Change in the temperature range (the gap between the usual highest and lowest temperatures in the region has grown). ▪ Risk of mudslides caused by intense summer storms. ▪ Desertification/droughts. ▪ Retreat of glaciers.
Pampean Region	▪ Floods caused by storm surges and rainfall. ▪ Severe storms. ▪ Increase in temperature/periods of extreme heat. ▪ Tornados. ▪ Rising sea level.
Patagonia	▪ General increase in temperature. ▪ Decrease in rainfall. ▪ Rivers with less flow capacity. ▪ Desertification. ▪ Retreat of glaciers.

Source: Own compilation based on data from the Red Cross and the Second National Communication from Argentina to the United Nations Framework Convention on Climate Change

Table 2 lists potential conflicts associated with climate change impacts in Argentina. The main conflict is linked to the absence of strong governmental leadership in the design and implementation of a state policy on climate change integrating a conflict-sensitive approach for the prevention and constructive management of conflict, and for tackling climate change impacts and related socio-environmental conflicts. The latter also tend to deepen the poverty crisis among the most vulnerable sectors of society, while causing deterioration in the life quality of the communities involved.

Table 2: Potential Conflicts Associated with Climate Change Impacts in Argentina

Political and institutional conflicts	Socio-economic conflicts	Socio-environmental conflicts
General Conflicts that arise due to the lack of a comprehensive approach to the problem. Insufficient efforts of the government to include the issue of climate change on the public agenda. Various sectors address the problem individually or in networks but fail to articulate a comprehensive approach to such a complex challenge. International (between countries of the region) and inter-jurisdictional (within the country) tensions relating to the use of natural resources. **Specific** Lack of citizen awareness about the problem and inadequate access to public information. Deficiency in the design of public policies due to lack of legitimate information and limited inter-agency, cross-sector and multilevel coordination.	**General** Conflicts over the definition of local/regional development policies in terms of current and expected impacts of climate change. **Specific** Productive activities Social conflicts arising from the extension of the agricultural border that generates population displacements and changes in local development policies modifying productive traditions. Increased pressure on state agencies due to the need to introduce new eco-friendly technologies and overcome initial resistance in affected sectors. Conflicts generated from the impacts on food security. Rising food prices due to decreasing supplies as a result of drought, floods, etc. This affects primary production with consequent effects throughout the production chain. Conflicts over the use of water resources among different economic sectors. Energy The hydroelectric power supply will be affected. Conflicts over resource use: consumption/ production activities/generation of hydroelectricity.	**General** Conflicts over the use and management of natural, social and identity resources. **Specific** Climate change impacts directly on local communities, especially on vulnerable parts of society. Conflicts associated with poverty are thus enhanced by climate change impacts. This influences the access to basic resources to meet needs of housing, health, education, access to jobs, food, security, etc. All this impacts negatively on the quality of life of these communities. Conflicts arising from population movements due to the alteration of areas suitable for cultivation because of floods and natural disasters. This increases urban migration and will lead to greater pressures on resources and allocation systems in the cities. Conflicts with indigenous people relating to their displacement, changes to their natural habitat (deforestation, pollution, etc.), and influences on their ancestral customs and modes of economic production. Conflicts may also demand greater participation in decisions that affect the population directly.

	Tourism Tourism is often a key economic driver for the development of local communities. The impacts of climate change may affect areas of high tourist value and therefore impact directly on local development strategies that rely on tourism. This could result in social conflicts in the labour market through an increased pressure to find new livelihoods (e.g. migrating to another town or developing other means of economic production at the local level). **Infrastructure** The high economic cost of post-disaster reconstruction creates tensions between different sectors, all of which are guaranteed a certain percentage of the annual budget for the reconstruction of the infrastructure needed for human development and local production. Disasters have a direct impact on local infrastructure and indirectly produce social conflicts affecting the access to basic needs of food, housing and health. This can also lead to situations of anomie and looting, violent protests, collapses in the primary health system, etc.	

Source: Own compilation based on data from the Red Cross and the Second National Communication from Argentina to the United Nations Framework Convention on Climate Change

USE OF SOIL AND WATER RESOURCES: STRUCTURING PRINCIPLES OF SOCIO-ENVIRONMENTAL CONFLICT

Conflict arising from the impact of climate change is expressed mainly over the use of soil and water resources. These two issues impact virtually all conflicts that can be identified in the country.

Soil use is related to a particular economic model consisting of the division of space for settlement and conservation. The use of soil reflects and influences the social dynamics of a culture, depending on who decides how soil is to be used, and who is granted access to it. Similarly, water is a vital resource on which our survival and economic activities depend. Both soil and water are finite resources whose allocation can create tensions between community interests and those of farmers, ranchers, the industry sector and indigenous people.

An analysis of the impact of climate change and the usage of soil and water is vital when planning policies to adapt to this phenomenon. Any changes in the quality or availability of these two resources will have a lasting

impact on local communities and generations to come. The following sections identify the major impacts of climate change and potential resulting conflicts with respect to water and soil.

WATER CONSUMPTION AND PRODUCTIVE ACTIVITIES

The impact of climate change on water resources and socio-environmental conflict is not uniform across the country. While annual rainfall is normally expected to increase in central and eastern regions, major periods of drought are anticipated in the regions of Patagonia and Cuyo. Furthermore, some regions will suffer from both drought in summer and flooding in winter, as already happens in the northeast (NEA) region.

With regard to rising sea levels, 'climate scenario projections estimate that most of the Argentine coastline will not suffer permanent flooding in this century. The exception would be some tidal islands off the coast south of Bahia Blanca and the southern shores of the Samborombón Bay'.[4] The rising sea level will likewise result in frequent flooding from storm surges on the metropolitan coast of Buenos Aires which will mainly affect areas less than five metres above sea level. Scientific uncertainty still exists as to whether this increase in the sea level will affect the salinity levels of water in the province of Buenos Aires.

This scenario presents *great challenges in adapting to the new conditions for the development of productive activities and new economic opportunities for others.* For example, lower water availability for agricultural development will affect productivity levels, particularly for crops requiring large quantities of irrigation, or in areas where water is already naturally scarce. This will require the use of groundwater, the development of new technologies, and/or changes in the population's production and consumption patterns in favour of a more efficient use of this resource.

The Cuyo region, for example, already suffers from water shortages because of its geographic and specific climate characteristics.[5] Existing allocation problems in these regions will be aggravated by the decline of water resources caused by climate change. Mendoza is one of the provinces that are expected to suffer the most from climate change, in particular with respect to a shortage of water resources. Wine production, one of its main economic activities, depends not only on water availability but also on the natural temperature range, two aspects that will be affected by global warming, with consequent impacts on productivity levels.

However, not all predictions are negative. In some regions such as Chaco, increased rainfall has led to a shift in the agricultural boundary in areas formerly labelled as marginal. But this scenario also presents a series of negative impacts that, if not anticipated or addressed in time, could increase the number of existing conflicts as well as the risk of arising/latent conflicts in the area. The shift in the agricultural boundary, along with a trend towards monoculture of soybean, the decomposition of native forests and the consequent effects on the ecosystem, are increasing desertification in the area and reducing the capture of carbon dioxide. Juan Casavelos, a consultant specialised in climate change, argues that 'Argentina is becoming solely a carbon dioxide emitter given the changes in soil conditions and deforestation'.[6] While until recently there was a balance between what Argentina emitted and what was captured, currently, with the advance of deforestation, this process is tending to become negative. On the other hand, as far as the production chain is concerned, climate change will have a direct impact on the primary sector due to its close relationship to nature and to the variations in climate. An analysis made by Dr Pablo Canziani, Director of the Interdisciplinary Team for the Study of Atmospheric Processes in Global Change (PEPACG), notes that 'any climate disruption will affect national economy because most of the gross domestic product comes from agriculture and tourism'.[7] Because Argentina has a productive structure based mainly on primary activities, its primary production structure is considerably vulnerable to climate impacts.

The above serves to illustrate *the domino effect on other productive sectors.* If it is assumed that there is to be a reduction in agricultural productivity, it can also be inferred that there will be fewer inputs available for the agro-industrial sector which processes the raw materials. This will lead to lower production, or to the replacement of domestic supplies by imported ones, and in either case this will lead to a rise in consumer prices.

4 Second National Communication by Argentina to the United Nations Framework Convention on Climate Change. p.105. Translated from original.
5 The Cuyo region is largely arid with low rainfall and dry conditions.
6 Interview with Juan Casavelos. Translated from original.
7 Interview with Dr Pablo Canziani. Translated from original.

It should be noted that impacts on agricultural productivity will be most significant among the most vulnerable sectors of the population, for whom price increases will mean higher production costs and a lower supply caused by the lack of timely and effective adaptation measures. One particular condition worth mentioning is food security. The impacts on the agricultural sector will likewise affect food production, making existing vulnerabilities worsen. Moreover, malnutrition will affect health and the population's natural resistance to diseases.

This analysis should also highlight the *structural conflicts arising from the struggle for limited resources between existing productive activities and/or those wishing to enter production,* where a decrease in the amount of water available will accentuate allocation conflicts. The growth and development of mining in Argentina is a clear example of an activity that has intensified the conflict over water resources. Civil society and local producers fear that large-scale mining, which consumes considerable amounts of water, could reduce access to and availability of water for human consumption, for other non-mining productive use (agriculture and tourism) and for biodiversity. Further concerns include the use or release of toxic substances into the hydrographic network with consequent negative effects on the ecosystem, on public health, on the economy of the communities involved and on producers' economy when their crops are potentially affected. An even greater concern exists when mining projects are located in the surroundings of a river basin, as potential contamination could spread not only down the river where the water is extracted, but also across the entire basin. The National Environmental Management Programme coordinator at the National Institute of Agropecuarian Technology (INTA), Ernesto Viglizzo, explains that the fact that many of the open-pit mining projects are located in areas of pure water sources is an example of the lack of land-management policies.[8]

Adaptation measures are particularly significant when they concern the primary sector, as it will need to adapt to the new production conditions. In these cases, small and medium-size producers will be the most affected, as they will have to face the costs and difficulties of changing production conditions as well as economic losses.

IMPACTS ON INDIGENOUS PEOPLE

Indigenous people maintain a close relationship with the environment and with the resources it provides, making them more vulnerable to climate change impacts. Existing conflicts generated by the loss of land and natural resources are made even worse by the expansion of production areas, by desertification and by the indiscriminate felling of trees. Conflicts also derive from discrimination, unemployment and the historical marginalisation of indigenous people. Representatives of indigenous groups deserve to be heard and to promote inclusive changes where local communities are taken into account.[9]

MIGRATION, ENVIRONMENTAL REFUGEES AND PRESSURE ON NATURAL RESOURCES

There is a close relationship between changes in hydrological regimes and the shifting pattern of local populations. In Argentina, depending on the region involved, the following situations could occur:

- In some locations where production is affected due to a decrease in rainfall, people will move their production to more fertile soils with greater water availability. This will involve a change in human settlement patterns, as well as in production and food supply.

- Floods, whose occurrence may be increased by the lack of urban planning against extreme weather events as well as the rising sea level in some regions, will lead populations that are established on the shores of rivers and/or the sea to migrate inland.

- The growth of cities caused by these migration flows, together with the lack of urban and environmental planning policies, will inevitably increase the already extreme pressure on water resources and other general services such as education, health, housing and work. One should bear in mind that currently Argentinean citizens are not fully satisfied with service provision in these sectors.

8 'Water between mining and production', *National Journal*, 1st September 2007. Available at http://www.lanacion.com.ar/nota.asp?nota_id=939550. Translated from original.

9 Sources: 1) from general bibliography and general idea taken from an interview with Roberto Ñancucheo, Representative of Indigenous People at the Secretariat of Environment and Sustainable Development; 2) ILO Convention No. 169. The idea here is to refer to the possibility of including indigenous people in the decision-making process.

It should also be noted that *Argentina is considered a future recipient of environmental refugees* coming from other areas where the impacts of climate change are expected to be much worse due to their particular geographical features. This scenario leads to the following question: what consequences will growing migration have on socio-economic and political dynamics in Argentina?

WATER AND ENERGY

In Argentina, several significant areas of conflict revolve around the decline of water resources as a source of energy. The first of these concerns the decision whether to allocate water either to a productive activity or to the production of hydroelectricity.

A second concern is that water shortages will have an immediate effect on hydroelectric energy production in the country. In 2005 this type of power accounted for 5.2 percent of the domestic supply of primary energy.[10] As Argentina is currently suffering from water shortages, a reduction in water due to the impacts of climate change would seriously exacerbate the situation, affecting not only life but also economic activities that depend almost entirely on this energy source. Hydropower is also important as a renewable energy source, in contrast to natural gas or oil, which, although accounting for an important percentage of the country's current energy supply, are non-renewable resources. In addition, 'although the percentage of hydropower out of the total primary energy supply is low (5.2%), it continues to play an important role in electricity generation as it accounts for 35% and 45% depending on the year'.[11] The main areas which produce this type of energy are Cuyo, the Northwest and Patagonia. For instance, it is estimated that the river Comahue, which is responsible for generating 26 percent of the country's hydroelectricity, will lose 32 percent of its production capacity by 2020. This will have an impact of around 8 percent on the domestic supply, causing losses of about $200,000,000 a year.[12]

Thirdly, there is competition for this resource among different economic sectors. Areas such as mining have production processes that require large amounts of water and energy at all stages of their implementation. In other words, the higher the productive capacity of a project, the higher the pressure on both resources.

When it comes to this point, the question that arises is whether Argentina is capable of managing a reduction in hydroelectric power supply without having its normal domestic consumption and productive activities affected. Moreover, will the alternative energy development plans prepared by the government be efficient enough to offset the expected decline in hydropower?

LOSS IN GLACIER VOLUME

Glacier shrinkage affects water reservoirs, impacting human consumption and productive activities. Fresh water available for human consumption amounts to 3 percent of the total water on the planet, and a large part of this fresh water is found in the form of glaciers. In Argentina, 68 percent of fresh water is locked up in glaciers.[13] This figure shows the particular importance of protecting the glaciers in the Andes region.

Although the rain and snow of the winter season are the source of the river flow, there are some years and some regions where snowfall and rainfall are scarce and/or insufficient. In such cases, water is mainly collected from glaciers, which are large reservoirs of fresh water. Hence, the essential role of glaciers in supplying water when it is most needed – in addition to other important functions, such as their role as global temperature regulator – is worth highlighting.

Regarding their relationship to economic activities, glaciers are crucial as water providers, mainly for activities in the various oases of Cuyo. The glaciers from the Cordillera supply water to the oasis of fruit and wine in Argentina. Without them, in seasons of drought, rivers would lose their flow and plantations dry, with the subsequent negative impacts for the regional economy.[14] Likewise, glacier shrinkage will have *impacts on nature, landscape and tourism values* as a result of the changes in the original environment.

10 Second National Communication.
11 Second National Communication. p.43.
12 Universidad Torcuato Di Tella. 'Vulnerability of Patagonia and the southern provinces of Buenos Aires and La Pampa'. p.13.
13 '¿QUÉ ES UN GLACIAR?' [What is a glacier?], Andean Glaciers. Available at http://www.glaciaresandinos.org/glaciar.html
14 M. Maggio. 'Minería y glaciares: No proteger nuestras fuentes de agua es un acto criminal' [Mining and glaciers: Failure to protect our water sources is a criminal act], Biodiversidadla News Agency, July 2009.

According to the Second National Communication on Climate Change,[15] in the Southern Ice Field (HPS), 48 out of 50 glaciers are receding. In the Patagonia region, only two glaciers are not declining: Perito Moreno and Spegazzini.[16]

Deficiencies in the regulatory framework for the protection of glaciers and the areas surrounding them should be highlighted. Marta Maffei, author of the glacier protection law vetoed by the national executive, stated that 'Argentina has not yet declared the right to water as a human right. There is insufficient control over public resources such as water. What we know about the glaciers is that they are the best water reserve in Argentina: almost 70% of all drinking water comes from glaciers, which is obviously not a small share. They are also the best climate change tempering agent. However, worldwide, 87% of the glaciers are retracting. In Argentina there are no precise facts or figures in this connection, we can only work on the basis of assumptions. No country can handle a phenomenon such as this without any facts or figures.'[17]

IMPACTS ON SOCIAL HEALTH

While few studies have yet been carried out on the impacts of climate change on social health, there are several hypotheses in this regard. Dr Ines Camilloni, member of the Department of Atmospheric and Ocean Sciences (FCEN-UBA) and the Ocean and Atmosphere Research Center (UBA-CONICET), explains that, in the city of Buenos Aires, for example, it is known that *there is a relationship between the number of deaths and temperature.* When the temperature in winter is very low, the number of deaths increases considerably – especially among homeless people, as the necessary infrastructures needed for shelter have not been put in place. As the temperature increases, the number of deaths decreases. Nevertheless, if the temperature continues to rise, at some point a temperature threshold is reached, at which, if the temperature continues to increase, the number of deaths will again begin to increase associated to thermal stress because of the excessive heat. Consequently, as temperatures rise, the population is increasingly close to the threshold associated with a higher number of deaths.

Likewise, the increase in temperature has caused different disease vectors to migrate to new regions where previously the low temperatures had prevented them from surviving. This shows *a complete change in the vector-borne disease map.* Malaria, dengue and yellow fever are some of the diseases that are beginning to resurface in locations where they had previously been eradicated, or where weather conditions were unfavourable to their return. These impacts are also visible in the productive sector, with an increase in the number of certain plagues and diseases that affect crops.

Furthermore, an increase in the *frequency and intensity of extreme phenomena* and the occurrence of new disaster situations will increase vulnerability when it comes to health, mainly affecting the most vulnerable and poor populations.

IMPACTS ON THE LABOUR SECTOR

It is anticipated that the impacts of climate change will lead to an increase in unemployment rates. There are no public policies to prevent climate change impacts on the labour sector. There could be some changes in this sector due to three main factors:

- Firstly, internal and external migration flows will trigger the need for groups of people to adapt both to a new territory and to new labour conditions.
- Secondly, as a consequence of damaged infrastructure due to the recurrence of natural disasters, it is estimated that there will be a period of mass unemployment in those sectors that rely on this infrastructure, until it has been rebuilt.
- Finally, changes in production models will create new job profiles and bring about cross-sector labour movement.

15 Second National Communication. p.97.
16 Glaciers such as Alerce, Upsala, Frias, Lanin and Complejo Onelli Bolados are some of those that have suffered a significant decrease in size.
17 M. Maggio. Op. cit.

RECOMMENDATIONS

The research results are based on valuable inputs from experts in the field, and were validated in a participatory workshop with various institutions specialised in the issue of addressing climate change. In view of the above analysis, some preliminary conclusions and recommendations are proposed as input for the development of an appropriate climate change adaptation policy which includes a conflict-sensitive approach. This approach focuses, in particular, on conflicts arising from water-resource management and on the country's most vulnerable groups.

Promoting early-warning systems and policies for adapting to climate change, including a conflict-sensitive approach to environmental conflicts. Early-warning systems combine the rapid transmission of data with alarm-activation mechanisms for a population previously trained to react to certain events. A successful implementation of similar systems in different regions around the world should be used as a model for Argentina.

The design of adaptation measures to face climate change will be based on a forecast of future scenarios of the impacts of climate change in a given region These measures will be aimed at contributing to neutralising or mitigating the negative effects of these future climate change scenarios, while helping communities and their economic systems to adapt to the new conditions. Adaptation policies to climate change are a long-term strategy that all governments should take into account to promote peaceful and sustainable development scenarios and to safeguard future generations.

In both cases, the objective is to try to avoid highly conflictive scenarios that affect human safety and wellbeing adversely. As shown in the report, climate change may potentially contribute to the eruption of a multitude of conflicts that must be anticipated and considered in the design of public policies. This will contribute to preventing scenarios of turmoil and vulnerability in different areas and communities. Policies should therefore be designed taking into account any resistance they may come up against.

Strengthening information systems and public access to information. Promoting the effective enforcement of access to public information (general and environmental) and contributing to improved information systems across different ministries, sectors and levels of government will increase the quantity and quality of information on climate change. Improving access to information for citizens is essential to the development of public opinion and to place climate change higher up in the political agenda. To come up with and maintain reliable data, it is important to develop appropriate infrastructure and necessary human resources.

Raising awareness. Climate change is usually taken into account by the population only after the impact of a severe weather event. However, awareness must be achieved before such an event occurs and be sustained beyond a severe event. Citizens need to be aware that their actions can significantly generate impacts on the environment. In this sense, it is necessary to educate people both on mitigation (reducing the GHG emission level) and adaptation measures, considering that the latter are easier to implement through a change of behaviour in daily life. The media is essential for putting the issue on the public agenda and for promoting greater awareness on the need to develop climate change policies, both at the citizen and at the political level. Hence, it is important to engage the media in communicating and in addressing the issue. In this context, the strengthening of local media outlets would be an appropriate strategy to impact on local communities.

One must also bear in mind that changes in the economy and in life in general, which will result from the implementation of new policies and which are necessary to address the problems at hand, will sometimes face

resistance from the local population.[18] Some actors will negatively view the short-term cost that adaptation measures may involve. However, scientific evidence from around the world shows that the benefits of early and efficient action will outweigh the economic and social costs of inaction.

Inter-disciplinary participation and networking. Climate change policies should be designed in a participatory and coordinated way, involving a variety of social stakeholders, politicians, businesspeople, scientists, civil society organisations and the communities themselves. Likewise, there should be an appropriate interface at different jurisdictional levels (national, provincial and local). Given the complexity of these problems, policy success is linked to a cross-sector, inter-disciplinary and multilevel approach, with a strong focus on community contribution to the process.

Promoting schemes of land-use environmental planning. This will strengthen democracy in Argentina as it will strengthen the levels of cooperation among different stakeholders and reduce the risk that destructive conflicts between societal actors may emerge. A land-use environmental planning adapted to the contingencies of climate change can prevent a variety of conflicts, including economic conflicts arising from a loss of production from flood zones. Among other things, it can promote a proper settlement of the population in regions where climate change impacts are minor and can ensure the provision of water resources in regions where it is scarce.

Promoting reforms of the legal framework. Although, as previously mentioned, some draft bills have been drawn up to address the issue, climate change does not feature prominently on the parliamentary agenda. It is thus necessary to promote legislative reform and establish a policy framework for climate change. This includes the need for basic guidelines to address the issues (water, land use, glaciers, renewable energy, etc.) from a multidisciplinary, multisector and multi-jurisdictional standpoint.

Improving water-resource management systems. Because water is a key strategic resource for the prosperity of the country, the current shortcomings of water-resource management frameworks should be addressed with the aim of achieving efficient resource use and adaptation to new conditions of either scarcity or abundance of water. The challenges at hand require a comprehensive rather than a sectoral approach, encompassing strategies for consumption, irrigation, production and efficient resource use. In this vein, the Second National Communication acknowledges that 'management of water resource plans will require the strengthening of river basin authorities to resolve conflicts generated by the management of surplus or water stress, among other issues'.[19]

On risk management. There is a strong relationship between climate change adaptation and disaster-risk reduction. It is therefore imperative to strengthen both prevention and disaster-risk reduction systems. This can be achieved through land-use planning, as well as improving capacities and structures for responding to emergencies and natural disasters, in order to mitigate impact and accelerate reconstruction efforts. This should be facilitated by a comprehensive legal framework for disaster management.

On the role of the state. The strengthening of the role of the state as a facilitator and supervisor of actions directed to fight against climate change is the most important point to ensure. This first step facilitates the response to all the other recommendations. Indeed, the state should take the lead in all actions to prevent and act upon climate change. The government should coordinate its initiatives with a diversity of stakeholders at the national and local level, as well as within the government itself. However, the responsibility to address climate change is not only limited to the state. It should also be expanded to non-state actors (businesses, social organisations, academia and communities) with the purpose of tackling conflicts associated with climate change through the systemic use of democratic and participatory approaches. In this view, the process of designing public policy must incorporate mechanisms for consensus-building and public dialogue at all government levels, as well as coordination among different government branches. Therefore, it is important to identify urgent needs and to build adequate institutional capacity for conflict prevention. This will facilitate the establishment of policies and procedures for the prevention and management of conflicts, as well as an increase in the level of democratic governance in the country. The state should thus establish a common

18 For example, some private companies came up with adaptation programmes for their production procedures, incorporating sustainable technologies. This short-term procedure was seen as a hasty and costly investment by some. However, such investment could prove to be useful in the long term, as it could bring great benefits, which would overcome the costs that would have been generated by inaction.

19 Second National Communication. p.109.

language when designing conflict-sensitive policies and should put a greater emphasis on building consensus. Such an approach will increase the communication between state authorities and local actors when designing and implementing effective public policies, particularly those involving conflict prevention.

All in all, the complexity of the challenge at hand and the consequences that inaction may bring for future generations require targeted and meaningful efforts which need to be encouraged in particular by the government.

ADDITIONAL REFERENCES

BOOKS AND JOURNAL ARTICLES

W. N. Adger, J. Paavola et al. (Eds.) (2006). *Fairness in adaptation to climate change.* London: MIT Press.

S. Eriksen and J. Lind (2009). 'Adaptation as a political process: Adjusting to drought and conflict in Kenya's Drylands', *Environmental Management,* Vol. 43, No. 5, pp.817–35.

J. Hardoy and G. Pandiella (2009). 'Urban poverty and vulnerability to climate change and Latin America', *Environment and Urbanization,* Vol. 21, No. 1, pp.203–24.

O. Mertz, K. Halsnaes et al. (2009). 'Adaptation to climate change in developing countries', *Environmental Management,* Vol. 43, No. 5, pp.743–52.

REPORTS

'Failing to prepare for foreseeable floods', Inter Press Service (IPS), 2nd April 2007. Available at http://ipsnews.net/news.asp?idnews=37184

CapNet (2008). *Conflict resolution and negotiation skills for integrated water resources management.* CapNet International Network for Capacity Building in Integrated Water Resources Management. Training Manual, July.

CARE International (2009). *Climate vulnerability and capacity analysis handbook.* Available at http://www.careclimatechange.org/cvca/CARE_CVCAHandbook.pdf

CEPAL (2010). *Cambio climático: Una perspectiva regional* [Climate change: A regional perspective]. Available at http://www.eclac.org/publicaciones/xml/9/38539/2010-109-Cambio_climatico-una_perspectiva_regional.pdf

EACH-FOR (2009). *Environmental change and forced migration scenarios: Argentina case study report.* Available at http://www.each-for.eu/documents/CSR_Argentina_090126.pdf

El Cambio Climatico En Argentina [Climate change in Argentina]. Secretaría de Ambiente y Desarrollo Sustentable. Buenos Aires, 2009.

D. Smith and J. Vivekananda (2009). *Climate change, conflict and fragility: Understanding the linkages, shaping effective responses.* International Alert. Available at http://www.international-alert.org/sites/default/files/publications/Climate_change_conflict_and_fragility_Nov09.pdf

Plataforma Climática Latinoamericana. *Climate Change and COP15: Reflexions from and for Latin America.*

Segunda Comunicación Nacional de la Republica Argentina al Convención Marco de las Naciones Unidas Sobre Cambio Climatico [Second National Communication from Argentina to the United Nations Framework Convention on Climate Change]. Secretaría de Ambiente y Desarrollo Sustentable. 2007. Available at http://www.ambiente.gov.ar/?idarticulo=1124

Stern Review: The economy of climate change. United Kingdom Economics and Finance Ministry. Available at http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm

Vulnerabilidad de la Patagonia y del sur de las Provincias de Buenos Aires y la Pampa [Vulnerability of Patagonia and the southern provinces of Buenos Aires and La Pampa]. Executive Summary. Universidad Torcuato Di Tella; Segunda Comunicación Nacional del Gobierno de la República Argentina a las Partes de la CMNUCC.

Workshop on Climate Change, Humanitarian Disaster and International Development: Linking Vulnerability, Risk Reduction and Response Capacity. Center for International Climate and Environmental Research. Oslo, 2007.

INITIATIVE FOR PEACEBUILDING
EARLY WARNING

c/o International Alert
205 Rue Belliard, B-1040 Brussels Tel: +32 (0) 2 234 5792 Fax: +32 (0) 2 234 5799
ifp-ew@international-alert.org www.ifp-ew.eu

THIS INITIATIVE IS FUNDED BY THE EUROPEAN UNION

PARTNERS

adelphi

clingendael

ΕΛΙΑΜΕΠ ELIAMEP
ΕΛΛΗΝΙΚΟ ΙΔΡΥΜΑ ΕΥΡΩΠΑΪΚΗΣ & ΕΞΩΤΕΡΙΚΗΣ ΠΟΛΙΤΙΚΗΣ
HELLENIC FOUNDATION FOR EUROPEAN & FOREIGN POLICY

FRIDE

International Alert.

interpeace

ces NEP

PDCI

SAFERWORLD

Search for Common Ground