

Why Climate Change Adaptation is NOT just Good Development: Evidence from Building Adaption Coalitions in Five Latin American Countries

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Introduction

The purpose of this paper is to test of the conceptual underpinnings of the “Adaptation Coalition Framework.” The reason for developing this new framework was due to the belief that climate change presented different challenges that sustainable development frameworks did not completely address and in order to build social resilience to climate change four new perspectives had to be integrated. First, that planning needs to happen locally and across sectors due to the diversity of climate change impacts, second, that these impacts represent long-term and permanent change, third, that climate change impacts are unpredictable in nature and a framework must be developed with the appropriate flexibility to evolve, and, fourth, that adaptation must go beyond addressing just impacts to focus on reducing social vulnerability.

This paper will present results from a case study from five Latin American countries that included field investigations in Argentina, Bolivia, Dominican Republic, Paraguay and Peru. The paper argues that climate change adaptation is NOT just good development and will further make the case, based on evidence from the country case studies, that climate change adaptation strategies must be designed differently to take into account the diverse, unpredictable and long-term nature of climate change impacts and must focus on addressing social vulnerability.

The paper will begin by providing the rationale and background to this initiative and a description of the methodology. It will then discuss how vulnerability should be a focus of interventions and how to adapt the vulnerability framework to be more practically applicable in climate change adaptation strategies. The paper will continue by describing the three distinguishing characteristics of climate change impacts, e.g., their diversity, long-term nature and unpredictability. The paper will conclude with a brief discussion on the benefits of an Adaptation Coalition Framework.

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Rationale

The objective of this 5-country case study was to design a framework that would help strengthen community resilience to the social dimensions of climate change in Latin America and the Caribbean region. The work was meant to be a direct, operational follow-up to the conclusions of the edited volume *Reducing Poverty, Protecting Livelihoods, and Building Assets in a Changing Climate: Social Implications of Climate Change for Latin America and the Caribbean*. (WB 2010a)

“In particular, this volume recommends the use of community-specific social analysis focusing on improving livelihood outcomes, careful attention to building social assets within and between stakeholder groups, and strengthening resilience through asset-based adaptation at the local level.” The volume goes on to recommend a three-pronged approach to reducing social vulnerability to climate change: (1) Enhance good governance and the technical capacity of the public sector, (2) Develop social capital in local communities: voice, representation, and accountability, and (3) Build household resilience through asset-based adaptation: a “no-regrets” approach.

Further justification was provided by the *2010 World Development Report: Development and Climate Change*, (WB 2010b) the World Bank’s guiding document on these issues, which states, “Climate change adds an additional source of unknowns for decision makers to manage” and that, “Accepting uncertainty as inherent to the climate change problem and robustness as a decision criterion implies changing decision-making strategies for long-lived investment and long-term planning.” Further, the report recommends that priority should be given to investment and policy options that provide benefits even in the absence of climate change impacts; a “no-regrets” approach.

Another World Bank report (WB 2010c) based on a six-country case study develops a checklist for good adaptation practice that recommends, among other things, pursuing interventions that create co-benefits with sustainable development, anchors decision making mechanisms in inclusive and participatory processes and targets geographic regions where sensitivity to climate change is high.

Taking these recommendations into account and integrating them with the need to take into account the diverse, unpredictable and long-term nature of climate change impacts and designing an adaptation framework that focuses on addressing social vulnerability, led to the development of the Adaptation Coalition framework.

Adaptation Coalitions

The Adaptation Coalition Framework was based on the Advocacy Coalition Framework adapted to climate change scenarios and put into a practical model for intervention. The Advocacy Coalition Framework was selected as an approach to model after due to its emphasis on locally led, long-term and flexible methodology.

The principle of subsidiarity calls for action at the lowest feasible organizational level. The Advocacy Coalition Framework was a useful framework for incorporating social groups within a locality into a larger inter-institutional framework, and for increasing the efficacy of those groups. Forming coalitions that include marginalized social groups at the local level strengthens their bridging social capital – ties within an organization or community - and bonding social capital – ties that link the organization or community to others. Likewise, adaptation coalitions are formed within civil society with linkages to various state institutions and market firms with the intent to bring about positive change, or in certain instances to keep the status quo in place.

The Advocacy Coalition Framework, as argued by Sabatier and Jenkins-Smith (1993), is how certain groups form coalitions or alliances around concrete issues in order to achieve common desired futures. This takes the form of institutional acts at various geographic scales that share: (i) certain basic beliefs that anchor common desired futures (ends); (ii) the implicit or explicit means for reaching those futures (means); and (iii) rules of evidence that allow for members of the coalition to mutually ascertain progress towards the goals. By determining from institutions at various levels where they want to go (their declared and implicit missions) and how they will get there (the means they see as viable and effective), local groups can seek appropriate alliances for varying periods of time – adaptation coalitions – in order to work toward their desired future in light of the climate change threat.

It follows, then, that effective coalitions share common desired futures and the means to achieve them, but are also sufficiently diverse in their contacts and external linkages to garner a diversity of resources and knowledge. In other words, the most effective coalitions are those that combine bridging and bonding social capital.

In the Adaptation Coalition Framework, policy-making is contested and maneuvered by different sectors from different levels and is not linear (Münch et al., 2000). Furthermore, policymaking cannot be captured in a series of prescribed steps to be taken by decision makers, which if appropriately executed would almost automatically lead to optimum decisions. Such an overly rationalist element often creeps into decision-making models that take a technical rather than a socio-political approach.

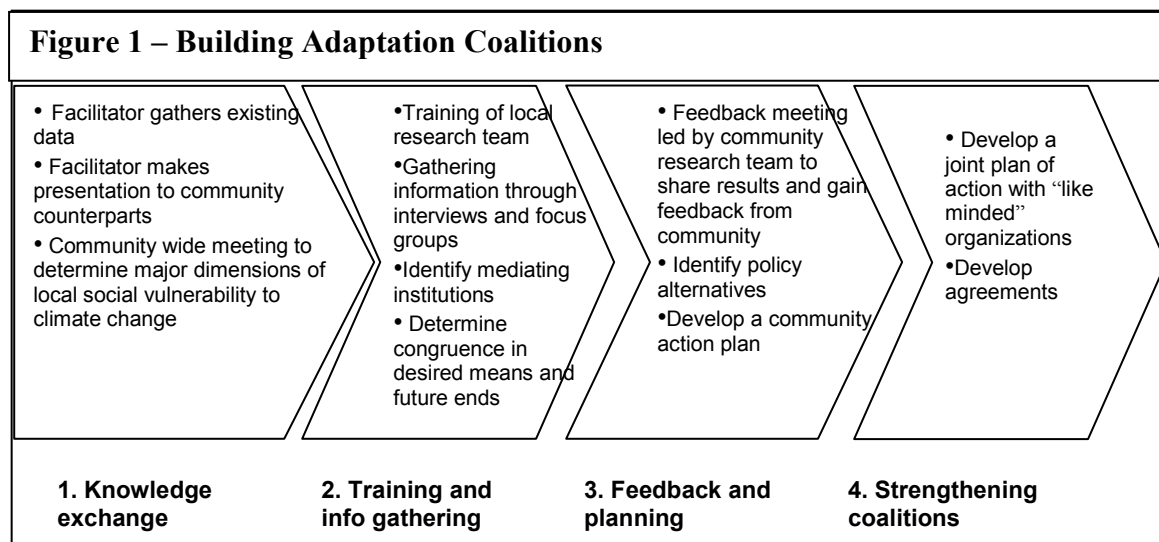
METHODOLOGY

In order to test the effectiveness of developing the *advocacy* coalition framework into a more practical *adaptation* coalition framework, a five-country case study was designed to create knowledge by doing. The action research built adaptation coalitions in the five case study countries under various social, political and climatic conditions in an effort to help local communities build social resilience to climate change. In the process of coalition formation and case study research, information was gathered on creating best practices in order to develop an adaptation coalition toolkit and improve the equity of adaptation. The purpose of this toolkit is to help the World Bank in working with local, state, and national governments to facilitate local adaptation through appropriate

networks to share material and social resources. Using the Adaptation Coalition Framework as an action research tool served as a way to strategically link the multiple resources of market, state and civil society groups at various levels to best facilitate the adaptation of vulnerable communities to climate change. The framework facilitates informed participation in the policy making process by which decisions on adaptation can be made in the selected countries. Building the capacity for informed participation is especially critical in adapting to climate change since its impacts are so highly variable, long-term and unpredictable and will be felt in a unique and highly specific way by disparate communities and groups in different areas and under different social, economic and environmental conditions.

Steps

The process for building adaptation coalitions follows four main steps or chronological sequences:



Field Investigations

This study looked at five country case studies – Argentina, Bolivia, the Dominican Republic, Paraguay and Peru – through the advocacy coalition framework as applied to climate change adaptation (referred to henceforth as the Adaptation Coalition Framework (ACF)). The methodology used in each country was generally the same but with some “wobble room” to modify locally when it was needed. Final methodologies for each country were produced after in-country consultations took place during the first methodological design stage, which ensured that the proposed methodology and case study approach was validated by in-country stakeholders (including researchers, government, civil society organizations and community participants). Then, after preliminary results become available, in-country training was organized to develop the capacity of local researchers to apply the methodology.

Site selection

Locations were selected using a nested research design based on country (5-countries), region/department/province (2 per country), municipality (at least 1 per department, with a total of 2 per country) and community/village (1-2 per municipality). Therefore, there were a total of between two and five research areas chosen in each country, selected by giving priority to areas, and the villages within, with particularly high social vulnerability to climate change as identified through existing databases or key informants. Measures were taken to assure community interest in building resilience to the social impacts of climate change, and to assure variation between sites in climate change hazards, livelihood impacts, wealth, and ecology, such as altitude differences between communities/villages (which may be related to remoteness/closeness to the local administrative headquarters). See Figure 2 for a list of the study sites.

Figure 2: Case study locations - Adaptation Coalition Framework				
Country	Region	Province	Municipality	Community
Argentina	North	Salta	Tartagal	Tartagal
				Salvador
				Mazza
				Aguaray
	Patagonia	Rio Negro	Los Menucos	Los Menucos
				Sierra Colorada
Ministro Ramos Mejía				
Bolivia	Altiplano	Los Andes	Pucarani	Chunavi
				Condoriri
	La Paz - Valles Alto Andino	Murillo	Palca	Amachuma Grande
				Huancapampa
				Pueblo de Palca
Dominican Republic	Santo Domingo	Santo Domingo	Santo Domingo Norte	La Zurza
				Guachupita
	Lago Enriquillo	Independencia	La Descubierta	La Descubierta
				Bartolome
Paraguay	South Western	Ñeembucú	Pilar	Pilar
			Paso de Patria	Paso de Patria
	Chaco	Presidente Hayes	Villa Hayes	Villa Hayes
			Benjamin Aceval	Benjamin Aceval
Peru	Amazon	Convencion	Echarati	Comunidad Nativa de Matoriato
				Comunidad Nativa de Timpia
	Altiplano	Huancané	Huancané	Huancané
		Moho	Huayrapata	Huayrapata

Data Collection

Local partners in each country carried out data collection and implementation. The five main vehicles for gathering data were:

1. Literature review of key documents and newspaper articles on institutions, governance and climate change.
2. Focus group discussions at the community/village level.
3. Interviews with key informants/knowledgeables at the national level.
4. Institutional interviews at the local and regional levels.
5. The building of adaptation coalitions.

Within the ACF, these data collection tools were used to examine:

- a. The interaction of competing coalitions within a policy subsystem. An adaptation coalition consists of actors from a variety of market, state and civil society institutions at all levels who share a set of basic beliefs (policy goals plus causal and other perceptions) and who seek to influence the rules, budgets and personnel of institutions in order to achieve these goals over time.
- b. Changes external to the subsystem in ecological patterns and climate changes, livelihood impacts, socio-economic conditions, system-wide governance coalitions, and outputs from other subsystems that provide opportunities and present obstacles to the competing coalitions. This included an examination of community vulnerability (exposure, sensitivity, adaptive capacity, current social impacts from climate change).
- c. The effects of stable system parameters, such as social structures, constitutional rules, institutional regulations and procedures, as constraints and on resources of various subsystem (institutional, communal, and social-category) actors.

A Focus on Vulnerability

Traditional strategies for climate change adaptation have become what is known as impact-specific, i.e. identify an impact of climate change on a sector such as water or infrastructure and specifically respond to that impact usually at the national level. While these responses have gone a long way in increasing national resilience to climate change, they are often top-down and do not go far enough in targeting the poorest and most vulnerable. For this reason, it is critical to transition from an impact-specific to a more crosscutting, social response. In practice this means two things for Latin America, (1) targeting interventions towards climate vulnerability and not solely impacts, and (2) building the capacity of communities to adapt autonomously.

The IPCC (2001) defines *vulnerability* as, “a function of the *sensitivity* of a system to changes in climate, *adaptive capacity*, and the degree of *exposure* of the system to climatic hazards.” (My italics)

We found through the field research that the vulnerability framework was a practical guide to identifying the problems and risks associated with climate change, but that it is also limited in certain respects, specifically, the definition of exposure is misleading to community groups, traditional definitions of sensitivity are incomplete and should be expanded to include social sensitivities like conflict and the definitions of adaptive capacity are theoretical and vague and need to be developed further.

Exposure

Exposure is defined as the character, magnitude, and rate of climate variation to which a system is exposed. (IPCC, 2001, Glossary) A World Bank (WB 2010c) report goes on to say that, “Populations will be vulnerable when exposed to extreme weather events; increased water insecurity; sea-level rise; reduced agricultural productivity; increased health risk; large-scale singularities and aggregate impacts that worsen over time (e.g., temperature rise).” However this definition groups together weather events, like temperature rise, with the eventual impacts from these events, like reduced agricultural productivity. In our development of the Adaptation Coalition Framework, which makes a point of integrating local with non-local knowledge, we found this grouping as misleading and problematic. For example, loss of agricultural productivity is a result of the interaction between exposures like drought with sensitivities like infertile soils. In other words, to use this broad definition of exposure is to group contributors to vulnerability with effects in determining vulnerability. Since we see one of the purposes of determining vulnerability as a way to understand how impacts might be felt and how coalitions could be formed, we separated the outcomes from the causes and created another “impact” category. See the example (Figure 3) of how these were arranged in the Argentina case study. Another reason to do this, is that the vulnerability framework is used to determine how a given system and population is vulnerable to climate change, and not to determine how communities are already impacted. However, since communities are already feeling climate impacts, we decided to include current “impacts” as another important indicator to measure due to its interrelation with vulnerability.

Figure 3 - Argentina Case Study Vulnerability Matrix

Municipality	Exposure	Sensitivity	Adaptive Capacity	Impacts
<u>Los Menucos (Patagonia)</u> <ul style="list-style-type: none"> ▪ Los Menucos ▪ Sierra Colorada ▪ Ministro Ramos Mejía 	<ul style="list-style-type: none"> ▪ Drought ▪ Infrequent but intense rains ▪ Flash flooding 	<ul style="list-style-type: none"> ▪ Extractive industries (mining) and natural resource livelihoods (livestock) ▪ Ag. expansion ▪ International livestock markets 	<ul style="list-style-type: none"> ▪ Traditional land management ▪ Sparsely populated ▪ History of working together to resolve conflicts ▪ Temporary internal migration 	<ul style="list-style-type: none"> ▪ Challenges to livestock raising (loss of grazing land) ▪ Health impacts ▪ Territorial movements by families
<u>Tartagal (North)</u> <ul style="list-style-type: none"> ▪ Tartagal ▪ Salvador ▪ Mazza ▪ Aguaray 	<ul style="list-style-type: none"> ▪ Increased precipitation and intensity ▪ River level rise ▪ Flooding ▪ Landslides ▪ Some drought 	<ul style="list-style-type: none"> ▪ Land use changes ▪ Deforestation ▪ Ag Expansion (soy) ▪ Gas exploration ▪ High levels of conflict (little trust in the State) ▪ Soil erosion ▪ Inequality (concentrated wealth) 	<ul style="list-style-type: none"> ▪ Natural resource wealth (oil and gas) ▪ Highly organized interests ▪ Extra regional migration ▪ Financial wealth 	<ul style="list-style-type: none"> ▪ Loss of productive lines like agriculture for others like gas exploration ▪ Resettlement/expulsion of peasant and indigenous communities and extra-regional migration ▪ Increased levels of conflict ▪ High levels of poverty ▪ Inequality ▪ Dengue and malaria

Sensitivity

The IPCC (2001) defines sensitivity as “the degree to which a system will respond to a given change in climate, including beneficial and harmful effects.” The importance of sensitivity in determining vulnerability cannot be overstated, and should include social factors, especially the existence of conflict. Much of the devastating impacts attributed to climate change are actually sensitivities that are not only exacerbated by the changing climate, but are also a cause of it. In Latin America and the Caribbean land use changes account for half of the region’s total global greenhouse gas emissions. (WRI 2005 and CAIT 2008) In the southern cone, it is impossible to say which consequences are the result of climate change and which result from land-use changes. The communities of Tartagal, as shown in Figure 3, were arguably the most at risk to climate change of the 24 communities involved in this study and the reason for this was simply: Tartagal suffers from high climate sensitivity. Specifically, the expansion of the soy frontier and exploration for gas and oil has contributed to rapid deforestation and the displacement of numerous peasants and indigenous groups. This has led to extremely high levels of conflict, where powerful and vested interests have moved to substitute subsistence agriculture, cattle raising and hunting and fishing with major extractive industries. This contributed to livelihood losses, and as a consequence, open-conflict between big business operating in the area and traditional inhabitants, many of which were forced to emigrate. With a changing climate these sensitivities were compounded to contribute to the further loss of livelihoods for locals, high levels of inequality and poverty, an uptick

in cases of malaria and dengue and additional conflict. In 1999 and again in 2002-2003, the city of Tartagal was the scene of violent conflict due to high unemployment. In 2006 there was an overflowing of the Tartagal River that led to wide spread flooding and landslides and caused serious damage to livelihoods and the city's infrastructure. In 2009, this happened again, but with several deaths and disappearances also as a result.

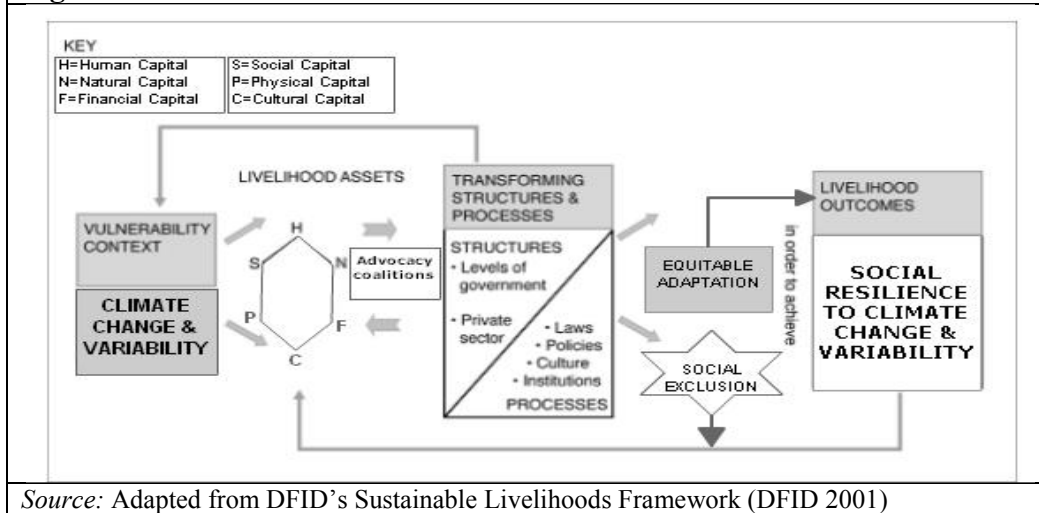
Trying to lead any adaptation efforts in this region with such high conflict levels would be a tremendous challenge. Even the central government's position has been compromised and they are mutually distrusted by a variety of stakeholders in the region, so trying to find an honest broker that can contribute to adaptation would be a monumental challenge under this scenario.

Adaptive Capacity

The IPCC (2001) defines adaptive capacity as “the degree to which adjustments in practices, processes, or structures can moderate or offset the potential for damage or take advantage of opportunities created by a given change in climate.” However, measuring such a thing can be challenging. The World Bank (2010c) elaborates that, “The climate change literature is filled with attempts to develop specific indices of adaptive capacity that take into account all the factors that may go into adaptation and enhancement of resilience to climate hazards, but it has proven difficult to develop simple typologies, especially when the data from the on-the-ground field studies remains lacking (Kates 2000; Yohe and Tol 2002; Smit and Wandel 2006).”

In developing the ADF on-the-ground, the typology of the sustainable livelihoods framework adapted from DfID, which uses the capitals approach to measuring assets, was used to measure adaptive capacity. The capitals that were measured in the case studies included **social capital** (bridging social capital, bonding social capital, history of working together for development and which includes **political capital** such as municipal support and local governing structures), **natural capital** (soil, climate change threats, timber, minerals, water), **cultural capital** (cohesion/ fractionalization/ conflict level, cosmology/ relation to nature, view of the state, religious institutions and rituals), **financial capital** (income, local wealth indicators, such number of cattle owned, acres of land, socio economic poverty levels), **physical capital** (roads, water/sewer, energy, dams/other means of water harvesting, levis and other means of water control), and **human capital** (levels of education, knowledge of local conditions, equity of education, ethnicities, language).

Figure 4 - Sustainable Livelihoods Framework



Using the Sustainable Livelihoods Framework was helpful in defining adaptive capacity, and identifying resources and assets that are often taken for granted or not considered valuable, even by locals. This framework also proved useful to the communities and research teams in identifying sensitivities.

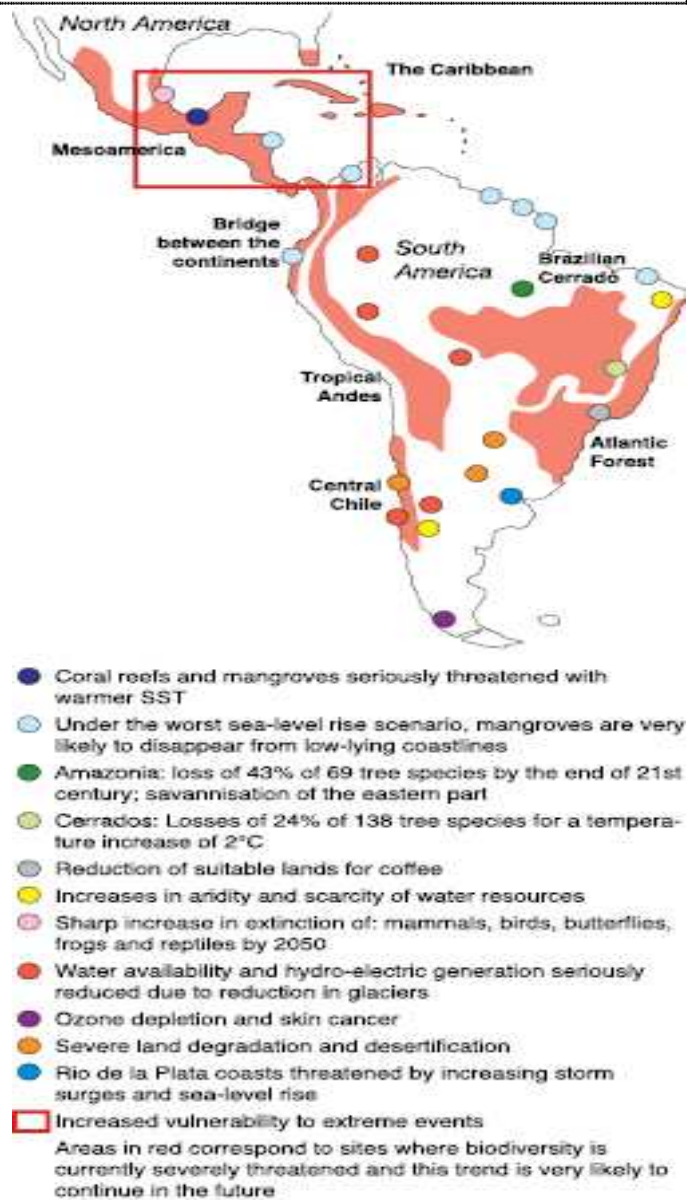
Diverse Impacts

The five case studies were designed with the aim of creating a set of best practices in building adaptation coalitions that could respond to highly diverse impacts of climate change. In addition to the interregional variability of the social impacts of climate change, there is also intra-national and even intra-communal variability. Due to these dramatic differences, a community driven response such as the Adaptation Coalition Framework is ideal in responding to climate change impacts as it provides both the agility necessary to respond to specific, different and changing community needs and the local voice and ownership needed to achieve sustainability.

The consequences of climate change are now well understood, the 2010 World Development Report (WB 2010b) states, “Left unmanaged, climate change will reverse development progress and compromise the well-being of current and future generations. It is certain that the earth will get warmer on average, at unprecedented speed. Impacts will be felt everywhere, but much of the damage will be in developing countries.”

To greatly simplify the dynamic atmospheric processes at work, these consequences of Climate Change and variability can be explained as follows; increased global temperatures will lead to increased water evaporation into the atmosphere and in turn greater precipitation when the moisture falls back to the earth. This simple mechanism of the water cycle will create greater aridity in regions with already scarce water supplies and more water in areas that already receive an overabundance. Furthermore, this moisture will increasingly concentrate into storm systems leading to a greater frequency of extreme weather events like torrential rains and even hurricanes.

Figure 5 – Climate Change hotspots (IPCC 2007)



Most of the countries in the Latin America and Caribbean region are significantly affected by the adverse consequences from climate variability and extremes. If no adaptation or mitigation takes place, estimates for damages due to warming in the region vary from 1.3 percent to 7 percent of GDP by 2050. (CAIT 2008) The greatest income effects are expected in the agricultural sector followed by energy and infrastructure. However, this only tells part of the story, as the social impacts and vulnerability to climate change are largely unquantifiable. According to the World Bank (2010c), “A major challenge in vulnerability studies is that capturing factors that researchers believe will impact vulnerability and adaptive capacity are often hard to measure with discrete quantitative indicators.”

The observed changes and projections show that climate change is taking place in Latin America and is gathering pace. The effects are expected to significantly impact human health, livelihood systems and social cohesion. Evidence suggests that under certain situations this leads to conflict over resources, migration, increased poverty, inequality and

vulnerability as impacts hinder the efforts of the region’s poorest people to build a better life for themselves, their children and grandchildren. Four examples from the four LCR regions covered in this study include:

- The Caribbean: Affected by the intensification of hurricanes as a result of climate change. Hurricanes have been shown to cause such disastrous social impacts as widespread migration and loss of land, property and life. In several cases, hurricanes, and the resulting costs, have exacerbated social and political tensions. (Smith and Vivekananda 2007)

- The Andean countries: The most momentous climate impacts include major warming, changes in rainfall patterns and rapid tropical glacier retreat. These factors will significantly affect water availability for human consumption, soil revitalization, agriculture, and energy generation. (IPCC 2007) This has a direct and deleterious impact on peoples' livelihoods and may lead to a greater risk of disputes, conflicts and migration.²
- The Amazon: This region, often referred to as the "lungs of the world" due to the concentration of tropical rainforest and biodiversity is facing land-use (deforestation) and climate changes that threaten the savannahization of the Eastern Amazon. This would have dramatic consequences on water resources and livelihoods for communities that rely on forest resources.
- The southern cone countries: These nations have seen dramatic changes in rainfall patterns leading to increased drought and flooding. This combined with temperature changes have led to many deleterious social impacts including involuntary changes in production means, assets and other livelihood issues.

These real and predicted changes to the region only tell part of the story however as climate change has very diverse sub-regional and local impacts that often contradict regional trends. For example, 15 of 24 communities in this case study reported being threatened by both floods AND droughts. In the Bolivian altiplano, located near tropical glaciers that supply water to the entire region, actually have an abundance of water resources. As warmer weather and rains melt the glaciers, these water resources flow through the communities, yet each them is still experiencing water shortages. One reason for this is that despite increased rainfall during the rainy season from increasingly intense rainfall, the dry season has actually become longer. So during the rainy season catchment has become more difficult, and during the dry season water is simply not as readily available. In the communities of Los Menucos in Argentina, drought has always been a challenge, and this continues to be the case, however with more intense rainfall, flash flooding is also increasingly an issue. In other words, the first example is a region that is threatened by increased precipitation yet faces serious water shortages and the second example is an arid region forced to confront an overabundance of water.

Additional layers of complexity compound these diverse impacts due to the fact that even communities exposed to similar climatic events will be affected in very different ways. In the Dominican Republic, both the urban areas of Northern Santo Domingo and the rural areas surrounding Lake Enriquillo are threatened by increased precipitation and rising water levels; the latter faces a rising lake and the former is confronted by a rising shore from the nearby Isabela and Ozama rivers. In the rural areas, the increased precipitation is having deleterious consequences on their traditional livelihoods of livestock management, fishing and agriculture. Santo Dominicans, however, do not depend as much on the natural environment for their livelihoods, and rely more on industry. However, in the city, several slums are located in the lowlands near the rivers

² For more on the relationship between environmental pressures and conflict see Homer-Dixon (1991) and Gleditsch et al. (2007 & 2002).

and these homes are threatened by flooding. To put simply, in the rural areas, climate change adaptation is a question of livelihoods; in the urban areas it is a question of housing. Furthermore, the livelihood problems related to natural resources often lead to rural to urban migration, as in the Dominican Republic. These migrants are often poor when they arrive in the cities and must find cheap housing; this cheap housing in turn tends to be located in lowland areas threatened by floods or on slopes threatened by landslides. These migrants ended up escaping one impact related to flooding only to be confronting another.

Long-Term Impacts

Another distinguishing characteristic of climate change impacts is they tend to be permanent. For example, the increased frequency of storms in the Caribbean is not a temporary rough spot that countries can withstand for a few years, before returning to normalcy and the droughts that wetland communities in the Paraguayan state of Ñeembucú are facing are not temporary, but are likely to be a permanent fixture of the seasons. The permanence of these changes means that communities that have traditionally adapted in the short-term must now adapt for the long-term. This change in thinking is a major challenge. In each of the five countries, communities tended to focus on present needs and found it more difficult to think in terms of years or decades, rather than weeks or months.

Long-term impacts can also be very different, or even contrary to short-term impacts. For example, in the Bolivian communities of Chunavi and Condoriri, increased rainfall and the building of dams has increased the availability of water resources for these communities. The communities have, in turn, begun adapting to these changes by maintaining potato harvests, and expanding irrigation systems and llama-grazing areas. However, increased temperatures and rainfall is leading to the disappearance of the mountaintop glaciers of Tuni, Condoriri and Mururata that supply water to the region and which the building of dams is a response to. These communities, situated on the front lines of threatened water availability, do not feel threatened, in fact, they feel emboldened. However, as these water resources continue to be diminished, these communities will be faced with water shortfalls too. Adaptation efforts in these areas must therefore focus on the long-term prospect of water scarcity, and not just short- and medium-term conditions.

Unpredictable Impacts

In any venture, it is important to plan for the unknown. Unforeseen events transpire that force individuals and communities to evolve with shifting circumstances. However, climate change makes this unpredictability more of a threat, especially for communities that have come to rely on the predictability of the weather for their livelihoods. The Machiguenga indigenous people of the Peruvian Amazon are traditional hunters, fishers and gatherers who have developed hundreds of years of knowledge on how and where to find food. These techniques and practices are tried and true, that is, so long as the natural environment is predictable and understood.

However, climate change is full of uncertainty. Scientists are unable to agree on the impact that humans are having on global warming, climate models cannot account for all of the relevant factors to accurately predict weather changes, data collection is woefully behind and mother nature seems to have a mind of her own these.

The present day Machiguenga are faced with fewer fish in the river and fewer animals in the jungle and are finding their very way of live threatened. The combined changes to the climate and the degradation of parts of the Amazon ecosystem, has led to an unpredictability that has reduced the value of one of their greatest assets; their traditional knowledge.

Conclusions

The purpose of this paper was to provide evidence based on practical examples from communities being impacted by climate change and not based solely on theory. Through the testing of the Adaptation Coalition Framework we aimed to show that climate change adaptation is not just good development, but requires different focuses and consequently different techniques.

In emphasizing this approach the team was making four assumptions, first, that planning needs to happen locally due to the diversity of the social dimensions of climate change, second, that these impacts represent long-term and permanent change, third, that climate change impacts are unpredictable in nature and, fourth, that the focus needs to be on social vulnerability when adapting to climate change.

This approach was designed to strengthen the long-term engagement with this issue by local communities with the assumption that what makes climate change different is that it represents diverse, permanent and unpredictable change, therefore responding institutions need to also be local, long-term, flexible and focused on the vulnerable.

Why is the Adaptation Coalition Framework Different?

Most community based adaptation frameworks are just typically repackaged community development frameworks. These approaches while effective in developing adaptation projects that deal with pressing needs, lack the four combined traits of the coalition approach.

First, many of these community based adaptation frameworks are not locally led; some are high level government initiatives or major programs led by international financial institutions or transnational NGOs, while others, though managed by local institutions, are still often led by external development agents. These adaptation efforts typically involve a “hand-over” step where project management is handed over to community leaders after a certain amount of time, but without any sort of training in planning. To give a concrete example, CARE Bolivia, a partner of ours in this work, does a terrific job in engaging local communities to adapt to climate change and while these projects take local needs and knowledge into account in project design, they are not designed to build

the technical and social capacity of communities to plan themselves.³ The purpose of the coalitions approach is to not just use local knowledge to inform a project's design, but to actually mesh local with non-local knowledge during implementation to guarantee that adaptation is genuinely led locally.

Second, adaptation projects are typically designed to fix a current problem and may not be sustainable in the long-term. While adapting to any particular problem can be a difficult task, climate change exacerbates this because changes are often permanent and long-term. For example, while a given community may participate in a helpful reforestation or watershed regeneration project to protect the quality and quantity of community water resources, the problem has not gone away. To take from actual watershed management projects in the Bolivian *altiplano* (highlands), water supplies will in fact be cleaner and more plentiful as water disbursement systems are improved and vegetation is planted to act as a natural cleanser and cooler of the microclimate thus preventing rapid evaporation of these resources during dry spells. However, this project, while helpful, does not tackle the bigger and more permanent problem, which is that there is simply less and less water available and maintaining the same livelihoods may not be sustainable. Currently, in this same Andean community, locals are losing their traditional sources of water due to the melting of tropical, mountaintop glaciers. So while watershed management initiatives will improve water supplied in the short-term, they will not adapt to the longer-term problem of dwindling water resources. In this way, short-term responses may actually prolong the process of adapting in a permanent way. Once water supplies reach untenable levels these communities will be right back to where they started, but now with fewer options. The coalition approach builds bonding social capital so that long-term partnerships are fostered between internal community resources and external. It is these long-term partnerships that match the long-term and permanent nature of climate change.

Third, even if community development or adaptation frameworks plan for the long-term and are effective in tackling a particular development challenge that is either caused or aggravated by climate change, there is no way they can plan for the unplanable or predict the unpredictable. For example, if flooding and the consequent loss of crop productivity are currently affecting a particular community, this may be identified as a problem and solutions such as building flood controls or diversifying crops may be adopted locally. However, what if climate change then leads to drought? What if fires become a problem or hail or frost? About all that is known about climate change impacts is that they are unpredictable in nature. So while a community may in fact have periods of water abundance, that same community may also have periods of extended water scarcity and they may be unable to predict when they will be affected by which. This was the case for several communities from the case study, which found growing seasons to be shorter and harder to predict, making planning difficult and complicating traditional practices. In some cases, communities actually altered their traditional planting calendars from one to two times a season with the hope that if one crop failed, maybe the other would succeed. The coalitions approach deals with this challenge of unpredictability by focusing on

³ For examples of other adaptation approaches please refer in the bibliography to CARE 2010a and 2010b, ICLEI 2008 and World Bank 2009.

planning and process and by building bonding social capital. It strengthens the resiliency of communities and their ability to respond to whatever challenge climatic changes may pose, even if these challenges are contradictory and shifting.

Fourth, adaptation needs to focus on vulnerability and its components of exposure, sensitivity and adaptive capacity with an eye towards current impacts. The Adaptation Coalition Framework expands the IPCC's vulnerability framework by including an analysis of climate impacts and not just climate exposure, emphasizing social sensitivity especially conflict, and using a capital framework for measuring adaptive capacity. These changes were found to be practical and necessary in order to properly identify sources of vulnerability and respond effectively to the social impacts of climate change.

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