CARE CASE STUDY: Application of Climate Vulnerability and Capacity Assessment (CVCA) Methodology in Ecuador, Peru and Bolivia[1]

Regional Project for Adaptation to the Impact of Rapid Glacier Retreat in the Tropical Andes – PRAA

Two local women from Tapacaya, Bolivia, work together in November 2010 on a participatory exercise as part of CARE's Climate Vulnerability Capacity Anaylsis (CVCA).

1. Introduction

This case study analyzes the results, lessons learned and recommendations emerging from the application of the Climate Vulnerability and Capacity Assessment (CVCA) methodology in the context of the PRAA project. First, it presents an overview of the project, the areas of intervention by country, the results of the analysis itself, and lastly, the main lessons learned and recommendations that arose from the application of the tools contained in the CVCA Handbook in Ecuador, Peru and Bolivia.

The CVCA methodology is a tool developed by CARE to delineate the socio-economic aspects of vulnerability to climate change, particularly those factors that make women and other marginalized groups especially vulnerable. The results of the analysis provide a solid foundation for identifying practical strategies to enable community-based adaptation to climate change.

2. PRAA overview

Andean countries produce 10 percent of the planet's freshwater, mainly from high Andean ecosystems (high plains) and glaciers. Glacier retreat, however, is increasingly limiting this vital water availability. Glaciers located in the Andean region account for 95 percent of all tropical glaciers on the globe.[2] Yet, the glaciers are retreating at ever increasing rates. It is quite likely that several of them will disappear entirely in the next 15 years, seriously affecting the availability of water resources for human consumption, agriculture and energy generation. A particular concern is how the melting of glaciers increases many poor and vulnerable communities' risk of and exposure to disasters, such as landslides, mudslides and lake outbursts, which often result in both material loss and the loss of human life.

In response, the Andean region *Project of Adaptation to the Impact of Rapid Glacier Retreat in the Tropical Andes (PRAA)* seeks to strengthen the resilience of local ecosystems and economies in relation to the impact caused by rapid glacier retreat in the tropical Andes. This initiative is lead by the Ministries of Environment of Ecuador, Peru and Bolivia and implemented – on behalf of the Governments - by the *Andean Community General Secretariat*, in cooperation with several partnership arrangements, in which CARE is included. The project is mainly funded by the Global Environment Facility (GEF), which channels project funds through the World Bank in its capacity as the GEF Implementing Agency. The project began in July 2008 and will conclude in September 2012.

To achieve the project goal, a crucial component of the project is to implement specific pilot measures that illustrate the costs and benefits of adaptation and generate knowledge that could be used to design projects in other vulnerable communities and relevant sectors. CARE plays a key role in the PRAA by implementing these pilot projects in the priority basins as well as working directly with selected communities in all three countries to build their capacities to adapt to climate change. To accomplish this, CARE partners with universities, research institutes and meteorological services, as well as with local and regional governments and civil society organisations. With the support of the United Kingdom's Department for International Development (DFID), Canadian International Development Agency (CIDA), United Nations (UN) Habitat and other private donors, CARE contributes more than USD 1.2 million to the PRAA. The specific objectives of the project are:

- The effective integration of the implications of glacier retreat into the regional and local planning in glacierized basins;
- The inclusion of glacier retreat impacts in local, sector development projects; and
- Generation of data on glacier dynamics.

In Phase I, the PRAA defined areas of intervention concern basins or micro-basins that, among other things:

- Have information available on glaciers retreat and meteorological data; poverty levels, extreme weather events (e.g. frosts); increasing occurrence of disasters; biodiversity status and current soil use;
- Have identifiable and quantifiable climate change impacts (environmental and socio-economic);
- Are part of a glacier-fed basin;
- Provide water supply to cities with high amount of population (like La Paz, Quito and Huancayo); and
- Have the support of local actors and institutional capacities.

3. Pilot areas and pilot projects

The objective of the PRAA is to strengthen the resilience of local ecosystems and economies through the implementation of pilot climate change adaptation measures, especially in regard to glacial retreat. In that regard, CARE is working on several lines of action/ adaptation strategies, as part of component 2 of the PRAA project:

Adaptation Strategies

Implement pilot measures – based on the integrated management of the target water basins – that include:

- Conservation of prairies and forestation to recharge aquifers;
- Drip irrigation;
- Validation of drought- and temperature-resistant crops;
- *Paramos* management plans;
- Validation of soil conservation practices; and
- Development of activities other than agriculture that exert less pressure on water and other natural resources, and are less sensitive to climate change.

Design and implement a capacity building plan with communities, local leaders, and local and sub-national government authorities for the incorporation of adaptation into local planning, and increasing public investment in adaptation measures.

Develop a communication plan in order to raise awareness and social commitment for the adoption of adaptation practices in rural and sub-urban areas as well as for making meteorological information more available to non-expert users (producers and municipal/institutional technicians).

PRAA pilot areas in Peru

In **Peru**, the pilot areas concern two sub-basins. The first sub-basin of the Shullcas River is part of the Mantaro River basin, whose waters come from lagoons located in the high altitudes and from the Huaytapallana glacier. The Shullcas River is the main source of water for rural settlements along its banks (10 settlements that have 15,117 inhabitants), as well as for the city of Huancayo, with a population of around 500,000. Its waters are used for human consumption, agriculture (mainly potatoes, peas, fava beans, maize, wheat, barley and the tubers oca and olluco), livestock, fish farms and energy generation. In addition, this sub-basin is part of the larger Mantaro basin, which is also known as the food basket of Lima.

The second area selected is the district of Santa Teresa, which is drained by a number of micro-basins. These, in turn, are fed by the Salkantay and Sacsara glaciers that flow into the Urubamba – Vilcanota river in the region of Cusco. The poverty-stricken district has a population of approximately 7,000 inhabitants, of whom 47 percent are women, 7 percent are under five years of age, and 70 percent are living in poverty. In addition, 42 percent of children under age five are chronically undernourished.

The district is dominated by subsistence agriculture, with crops such as coffee, plantain, maize, avocado and passion fruit. The entire area is of great natural and cultural importance, as it is adjacent to the historic sanctuary of Machu Picchu, and is therefore an area with tourism potential. Nevertheless, Santa Teresa is located in a vulnerable zone with a history of landslides, mainly due to debuttressing of the Salkantay glacier.

As part of an income-generating activity through the PRAA project, CARE is supporting this trout farm in Santa Teresa. The fish farm is operated by a local women's association.

Two pilot projects have been defined for both areas:

- Promotion of integrated, participatory management of water resources in the Río Shullcas sub-basin.
- Promotion of integrated, participatory management of water resources in the Santa Teresa micro-basins (Ahobamba, Sacsara and Salkantay, Chaupimayo and Vilcanota).

PRAA pilot areas in Bolivia

In **Bolivia** PRAA's area of operation involves the La Paz and El Alto sub-basins. The first La Paz River sub-basin whose waters drain into the Amazon basin and the second that corresponds to Lake Titicaca whose waters drains into the Highland enclosed basin, which may be considered ecosystems that are sensitive to climate change due their social, economic and environmental characteristics and their location in arid and semiarid zones of the Altiplano. The impacts and vulnerabilities to climate change have been identified for these two sub-basins and used to identify measures of adaptation to variations in the climate.

CARE is implementing adaptation measures under the Pilot Project 2 in the municipalities of Batallas and Palca and considering three micro basins. The micro-basin of Cullucachi corresponds to Lake Titicaca sub-basin and is located in the municipality of Batallas in La Paz department, near the Huayna Potosí glacier. It is made up of 10 communities located at different altitude levels and has a population of nearly 1,350 families of Aymara origin. The main activities are farming of potatoes, quinoa, fava beans, barley and oats, and raising cattle, camelids and sheep.

A woman from Tapacaya, Bolivia, takes part in a CARE-led CVCA workhop in her village.

Most produce grown is for domestic consumption, while a portion of livestock raised is sold at market. Most crops are dry-farmed; and irrigation – when it can be employed – is basic, with "acequias" (dirt irrigation canals). The challenge with these canals is that are inefficient due to water seepage. In communities without potable water, the residents use semi-deep wells or obtain water from rivers, canals and/or springs. There is a cohesive community organisation that maintains these ancestral Andean structures.

A group of women learn and implement new agriculture techniques as part of the PRAA project in Bolivia.

The microbasins of Amachuma Grande and Tapacaya within the municipality of Palca, which is located 20 km southeast of the city of La Paz, and the glacier of influence here is Mururata, which has already lost 20.13 percent of its area between 1956 and 2008. In Palca the glacier's contribution may not be as important for the basin's hydrological response as in other parts of the country because the glacier coverage represents just 1.4 percent of the total basin area, and that the current rate of loss is stabilising.[3] In this basin, the wetlands regulate the outflow of the basin and play a crucial role in the process of storing moisture. The micro-basins of Amachuma and Tapacaya are home to more than 120 families who have very little land to support their livelihoods.

While farming and livestock activities remain important, mining (extraction of gold and the presence of a deposit of calcium carbonate) has recently become a complementary source of income for the families. However, these activities are carried out under precarious and not very healthy conditions, and often cause contamination of local water resources.[4] Most agricultural production is for subsistence and any surplus is sold at the market in La Paz. Some inhabitants also have salaried jobs in the city, which complements the family income. The settlements are not very cohesive owing to the fact that many residents are divided between two locations (Palca and La Paz). The municipal government also experiences low credibility due to high turnover rate among its members.

PRAA pilot areas in Ecuador

The sub-basin in **Ecuador** is that of the Antisana glacier. The basin of the Napo River corresponds to the Amazon division and includes the micro-basin of Papallacta (Quijos Canton). This sub-basin is strategically important for the country because it supplies water to the two million inhabitants of Quito. It has a population of 500 families. The *campesinos* communities are made up of colonists who mainly make a living from paid employment with private and public water, power and petroleum distribution companies. Secondary income sources are from tourism and dairy farming. Annual average precipitation for the area is 2,000 mm and there are abundant wetlands, rivers and waterfalls. The temperature ranges from 0-18C and 80 percent of the landscape is a highland plains or páramo ecosystem and highland cloud forest. For this reason, 80 percent of the area has been declared a National Park.

Public investment in education and health is limited;

Through the PRAA project in Ecuador, groups of women aged 19 to 70, belonging to the Valle del Tambo community, gain knowledge and skills. They work in a local green house for planting vegetables like lettuce, cauliflower, carrots, and beets. The farmers are mothers who did not previously have vegetable gardens.

there is only one primary and one secondary school. Nevertheless, the main highways are paved and water is piped in and available to all (although there is no potable water). There is no sewer system. Thus the dispersion of homesteads and low population density means that each household takes care of its own wastewater, which has become the main source of environmental contamination. The population has a low level of social organisation and requires strengthening of its local management plan, which necessitates agreements among communities and the local government.

Due to its proximity to Quito, there is an unchecked growth in the demand for thermal water for recreational activities and surface water for trout farming. The population has no farming or livestock culture and depends mainly on external markets to supply its produce. Dairy farming used to be one of the main sources of income in the community, and is one of the fundamental reasons that the highland plains soil is compacted (due to pressure from livestock activities above 3,000 metres). However, a regional monopoly in the dairy industry has caused this activity to decrease.

Through the PRAA project, Maria Elvira Azipuela and 40 other farmers in Papallacta, Ecuador, are using effective community-based adaptation to climate change to help improve food security. Many of the farmers were frustrated as their traditional knowledge failed due to unpredictable and more intense wind, frost and cold. In response, CARE is training farmers – many who are illiterate women – in how to use natural resources and new agroforestry techniques.

4. Methodology followed to apply CARE's Climate Vulnerability and Capacity Assessment (CVCA) and CRiSTAL[5]

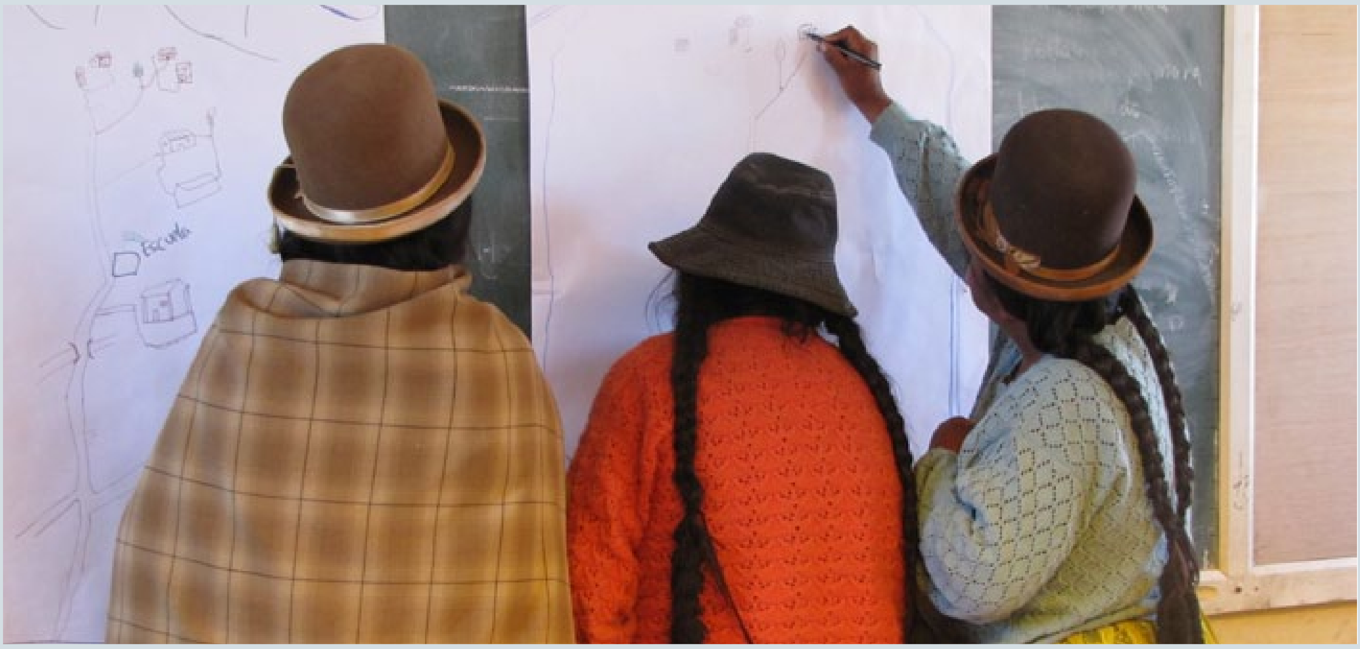
With slight context-specific differences among the three countries, the process for applying the CVCA was as follows:

- Step 1: Review secondary information.
- Step 2: Plan the field work.
- Step 3: Select the communities.
- Step 4: Raise awareness concerning climate change, risk management and a basin approach to territorial management.
- Step 5: Apply the field guides.
- Step 6: Systematize information and identify measures (by applying the Community-based Risk Screening Tool for Adaptation and Livelihoods [CRiSTAL] tool).[6]
- Step 7: Design community plans.
- Step 8: Validate the plans with local authorities.

So far, the PRAA process has focused on carrying out steps 1-6 in most pilot sites in Bolivia, Ecuador and Peru. The subsequent steps will be implemented during incoming months. On average, it took about six months to go through the first six steps in each pilot site. Participants included women, men, youth, children and older adults from the communities involved: 12 communities in Bolivia, 18 communities in Peru, and 3 in Ecuador. Municipal leaders and local community organisations also participated in the CVCA workshops. The information obtained in the workshops was complemented with interviews and focal groups that included leaders of different social and productive organisations and key informants. For reconstructing a relevant history of the community, interviews were conducted with older adults in the communities.

There is also a complementary process were experts from different scientific fields of expertise were "translating" into scientific language what the community was describing. The experts complement the views expressed by the local community members by providing technical information and a wide range of adaptation measures that the community could take into account for improving resilience.

The individual tools recommended in the CVCA Handbook, such as Hazard Mapping and Vulnerability Matrix, were evaluated and framed in accordance with how useful and possible it was to use them in formulating the community plans. This resulted in a set of context-specific tools for developing and implementing each community's Management/Action Plan. This methodology ensured that the analytical team shared a common understanding of how to proceed with all process stages, how and why the tools were adapted, and the specific purpose of their application.



A group of women from Batallas, Bolivia, identify and map out hazards in their village during a CARE-led CVCA workhop.

5. Analysis of vulnerability to climate change in the project pilot areas using CVCA tools

Interestingly the vulnerability analyses carried out in communities within all the PRAA pilot sites resulted in many common findings:

Community perceptions about changes in the climate
With regards to observed climate changes, in all three countries, the communities reported that they had mainly noticed an increase in temperature ("It is warmer") and changes in precipitation patterns. In particular, they experienced changes in when the rainy season began and ended, and/or having more intense rains. In Ecuador, for example, community members related that in the past it used to rain two or three weeks each month. Now people feel as though the amount from these two to three weeks of rain falls in a single day, which is an extreme change for them.

This instability in the rainfall has resulted in significant changes to the window of opportunity for when to plant and harvest crops. In the case of Bolivia, farmers have been forced to introduce short cycle crop varieties that are not always resistant to frost and/or drought. The rainfall pattern changes also affect the communities that depend on rainfed farming and do not have drip irrigation systems.

An interesting observation is that while most communities noted glacier size reductions, they did not refer to logical related changes (such as runoff or impact on water provision) as a current or possible future problems that could affect the resources upon which their livelihoods are based. This is important to note, as such a change in water availability could be a potential source of conflict in the future. There is also generally little awareness among the communities on the loss of wetlands. These observations were particularly noted in Peru and Bolivia.

Relation with scientific information
One limiting factor for carrying out the CVCA is that there are no local climate scenarios available for any of the micro-basins where the PRAA interventions are taking place, which makes historical analysis more difficult. However, for Peru, the teams were able to use basin-level information from SENAMHI.[7]

For example, in the case of Urubamba it is important to note that the testimonials from the communities of Santa Teresa agree with the results of SENAMHI, which indicate that there is an upward trend in the annual minimum temperature in a large portion of the basin. This trend is more accentuated in the zone of Quillabamba (the district adjacent to Santa Teresa). In regard to precipitation, the studies conclude that there is an upward trend in precipitation in different parts of the basin, mostly in the province of La Convención (where Santa Teresa is located). Here, the rates are increasing approximately 2.9 to 8.5 mm/year.[8] This demonstrates that the analysis of community perceptions of changes in climate will be useful as a local, qualitative complement to climatic trends observed by meteorological agencies.

Impacts on livelihoods
In terms of impacts on livelihoods, the workshop and focal group participants mainly indicated the following changes:

- More droughts, frost and hail, which lead to livestock losses, lower crop yields and changes in planting and harvesting cycles, which were well-managed in the past.

• Appearance of pests and diseases that affect crops and livestock – both those for domestic consumption and those for the market; for example, the appearance of pests in coffee crops and fungus attacks on potato and vegetable crops, which are important market crops and food security crops, respectively.

• Loss of crop biodiversity. Older people that were interviewed in the community testify that in the past they had more than two or three different types of potatoes, but with time this has changed. In addition, responding to unpredictable climate changes, many farmers are choosing to plant short-cycle varieties instead of other varieties.

• Displacement of crops to higher altitudes where there is more humidity. Changes in altitude zones makes it possible to grow certain crops where they could not be grown before, which can be seen as a positive thing, but often results in the degradation of habitats not suitable for agriculture.

• Disappearance of springs and water sources during the dry season, which leads to changes in seasonal water availability, altering community irrigation schedules and causing conflicts with other water users.

• More intense rainfall over shorter time periods leads to more frequent flooding and landslides that cause damage to infrastructure (dwellings, water systems and other structures) as well as loss of crops.

Another problem identified in Bolivia is that the changes and the reduction in the frost season make it impossible to carry out traditional agricultural activities, such as transforming potatoes to "chuño" (a food preservation process used by families living in the high Andes). As a result, the reduction in frost represents a threat to their food security.

Most vulnerable groups

One CVCA instrument that enabled the identification of at-risk groups was the Community Mapping tool. This tool has among its objectives to identify the location of vulnerable zones and/or the most vulnerable social groups. In Peru, for example, the most vulnerable groups identified were women responsible for families and older adults responsible for families (as they often have lower mobility). In Bolivia, it was observed that in places where most men do non-agricultural work – such as mining, for example, the women take responsibility for agricultural activities and caring for their families. This makes them more vulnerable to any negative impact on crop production. It was also women who most vocally expressed their concern for water quality, and threats to crops and health. Younger children were also mentioned as being vulnerable, because they are more likely to suffer from respiratory illness from low temperatures.

A woman in Shullcas, Peru, digs a canal to capture water from rain and glacial melt for irrigation purposes as part of CARE Peru's PRAA project.

Institutional context related to climate change

Generally the analyses in all three countries led to the realisation that in the project areas the institutional and political context tends to be either non-existent or incipient. There is a lack of governance over natural resources such as water and forests.

In the areas where more advances have been made and where a range of adaptation initiatives exist, the lack of a solid institutional structure makes these initiatives uncoordinated. It is still necessary to coordinate different initiatives related to adaptation to climate change. In most areas, the analyses revealed that no strategies are currently being envisioned to deal with new climate scenarios. In addition, among the population there is a lack of knowledge about planning processes that can be undertaken to respond to the impacts of climate change at different levels, or about policies for disaster risk management.

Additionally there is a general lack of information about climate scenarios and how this will impact water supplies, among other things, to back up decisions made by policymakers at different levels.

Organisational structures at the community and local levels also limit the capacity of families to respond to disasters or envision a collective adaptation response to climate change. For example, in Ecuador, the social-organisational level in the micro-basin of Papallacta is weak, as the inhabitants are mainly colonists. In Bolivia in contrast, there are indigenous communities with a strong organizational structure and social cohesion among their members, which enables a collective response to changes in the climate.[9]

In regard to climate information, generally meteorological stations do not disseminate much information to rural areas. Rather, the information tends to be directed to a more specialised audience, and presented in a complex way that does not lend itself to be easily understood or acted upon. Particular information gaps concern the impacts of climate change and glacier retreat on the high plains and wetlands, minimizing a much-needed understanding of how these ecosystems are vital for regulating water flow. There is also a lack of knowledge about the glacier's contribution to the water balance of the sub-basins and micro-basins selected.

Concerning risk management, in all three countries the local governments have limited capacity to respond to disasters, and early warning systems and local risk management systems are lacking. In addition, there is a general lack of identification of high risk and vulnerable zones at the district level. While some localities have a district civil defense committee, these do not carry out prevention activities. There are also no brigades or other organisations working on disaster risk reduction in the pilot areas. Despite the fact that regulations exist for risk management, these are not applied at the local level. Municipalities do not allocate resources for disaster risk management (although the regulations provide for this) and their actions in emergencies are more reactive.

6. Lessons learned and recommendations for how to improve the CVCA

Below are recommendations for improving the process of analyzing climate vulnerability and capacities, employing and/or adapting the tools contained in the handbook to a local context and applying them in a regional Andean project such as the PRAA.

Recommendations for how to improve the CVCA

Recommendation No. 1: Adapt the CVCA Handbook's tools to the local context and the circumstances in which it will be applied

An important lesson learnt was the need to first adapt or adjust CARE's CVCA Handbook, so that it provides more information on the specific natural resources with which a given project will address. In this way, the analysis would be more precise, which would facilitate the generation of more relevant information in support of the project objective. For example, if a project is focused on water resources, which the PRAA is, then how water resources are used for human consumption and/or agricultural activities is being affected must be addressed. In Bolivia, for example, it was discovered that it is not enough for technicians to apply the different CVCA tools and exercises and in some cases a more in depth analysis has been carried out. Given that many of the climate change concepts are new; these must first be explained in relation to the context in which they are going to be applied.

Recommendation No. 2: Build capacities within the project team to understand and facilitate learning about key climate change and adaptation concepts and the different CVCA tools

It is necessary to build capacities at the institutional level among teams who will be involved in applying the CVCA and its related set of tools. Agreements must be reached about how to define and convey key concepts, especially those related to the tools and field guides. At the same time, it should be taken into account that the different stages of the CVCA's application are closely linked. There will, therefore, be a constant need to return to previous stages to further define and elaborate on a proposed adaptation measure.

Recommendation No. 3: Carry out a specific induction for the project team on the expected results of the CVCA and on the four strategies outlined in CARE's Community-based Adaptation (CBA) framework[10] to ensure the analysis is carried out on these and at different levels

In hindsight, some project teams did not carry out the CVCA analysis to depth at all three levels recommended in the Handbook. The main reason for this was a lack of understanding of CARE's CBA framework, which provides the analytical framework for the CVCA Handbook.

Recommendations for how to improve the CVCA

As a result, while the teams generally managed to generate a solid analysis at the community level, they did not have sufficient understanding and capacity to carry out the same in-depth analysis of the local/ municipal and subnational levels.

It is, therefore, recommended that project field teams are provided a specific induction on the CARE CBA Framework and the compilation, analysis of information and documentation, as well as what the application of the individual tools is expected to yield in terms of results. The clearer the expected results, the better attention the team can pay to valuable information that emerges during meetings with the communities. Knowing this would also be helpful during the review and provision of information/documentation that are key to the analysis. In addition, during the tools application, the project teams found that the CVCA Handbook encourages that the analysis is carried out more at the community level, while only in a tentative way at the local government level. Finally, sub-national and national applications remain pending and/or require more depth.

Recommendation No. 4: Improve the analysis through alliances with specialised institutions and foster better coordination among different stakeholders

In some cases, it would be convenient to foster coordination among different stakeholders to apply the methodology at different levels. At present there are various institutions that are collecting and systematising information on climate change and legal provisions in force, which could be occurring in other countries where CARE operates. This information could be used to complement the analysis of the CVCA and validate it with some key informants from expert institutions.

Recommendation No. 5: Include technical experts on the CVCA field survey team who are aligned with the project scope

Another lesson learnt was the importance of including the right mix of technical experts on the CVCA field survey team. In the case of Peru, in one pilot area the initial survey led to the conclusion that crop pests and diseases are occurring more frequently. In hindsight, it would have, therefore been highly beneficial to include a professional with experience in this area from the start. This would allow us to build more precise matrices for identifying which pests and which diseases are attacking the most important crops (both those used for subsistence and those destined for the market), as well as understand associations with climate events, and to what degree. More specifically, in this pilot site, it was discovered that one of the most vulnerable crops is the passion fruit, of which about 60 percent are attacked by a disease called “chiru.” The project team learned that it would have been highly beneficial to include guiding questions in some of the CVCA tools that would have enabled them to collect perceptions about the climate with an intercultural focus, articulating scientific knowledge with local knowledge. The historic chronology (Field Guide No. 4) and interviews of key informants could contain such questions.

Recommendation No. 6: Strengthen the comprehensive analysis of results related to climate threats

To more accurately interpret what is actually happening at the local level and then design the most appropriate adaptation and response measures, it is necessary to carry out a detailed reading of the results generated from the field survey work. Where possible, the teams should be trained in research methodologies and effective techniques for collecting qualitative information through interviews. The information collected in the field should be sufficiently clear to allow the team to understand whether what the community members mention is a phenomenon that did not occur before and now does occur (and with what frequency) or whether the phenomenon existed before and now lasts longer, and what are the consequences of this longer duration.[11]

Recommendation No. 7: Schedule the workshops at times that are the most suitable for the involved communities to make it possible to collect the perceptions of vulnerable groups

To facilitate the collection of participants’ different perceptions, the community-level workshops should be scheduled at a time when it is possible to ensure a balanced participation of men and women, to enable a gender-sensitive analysis and reflection. Often, this will mean scheduling additional meetings at times when women will be more available.

Recommendations

For example, in Peru it was found that women are more likely to attend meetings held in the morning, as most of the men work in the city and return to their homes at night. In contrast, the men were more willing to participate in meetings that began after 6 p.m. In Bolivia, at the CVCA training workshop – which involved working with focal groups divided into men, women and youth groups – it has been verified that the information obtained shows that, in some cases, different perceptions of climate change exist from each group. This is important to take into consideration when defining adaptation measures. For example, there is a noticeable loss of traditional knowledge among the younger generation, especially in places close to cities. In contrast, with older adults it is possible to survey changes, for example, in the uses of bio-indicators.

7. Conclusions and next steps in the PRAA pilot sites

The application of the CVCA Handbook tools has been advantageous for addressing the issue of climate change, including vulnerability and hazards being faced by the communities where PRAA is being implemented. It has also been useful for making a preliminary identification of adaptation actions to be implemented in the field after proper design. The application process has been a collective learning experience in how to use the tools and distinguish between broad poverty-related vulnerability and vulnerability to the impacts of climate change. The tools were also found to be helpful in how to help communities better coordinate their resources to increase their resilience in the face of climate change.

The analysis also allows to better understand which community responses are more related to short-term coping strategies and are causing environmental degradation and thus are not sustainable in the long term. This led to a collective reflection between project team and community members. In the areas where adaptation measures had been pre-designed before applying the CVCA tools in the field, the exercise has allowed the design of these measures to be evaluated and modified as needed, and interventions validated.

The CVCA analysis carried out by CARE has allowed the PRAA project teams in Bolivia, Peru and Ecuador to establish a qualitative baseline and identify community-based adaptation components/strategies that were not considered within the initial project designs. These changes will need to be taken into account in the upcoming project stages.

It is important to validate the results obtained from the application of the tools with the communities.

As part of the PRAA project, students aged 7-8 years old from the Quisquis school in Papallacta, Ecuador, are learning how to do maintenance on their school garden. They are weeding the lettuce, acelga and papa nabo crops. These vegetables are used to improve the nutrition of the school children by adding these vegetables to the lunches provided by the school.

For those participating in the application of the tools, the technical teams and community members, the main strengths and weaknesses of the tool were identified as follows:

Strengths	Weaknesses
• Provides an excellent conceptual framework for implementing adaptation projects; • Supports regional offices in the work of adaptation; • Helps in the understanding of climate change • Associates climate change impacts with livelihoods that are important to the individuals living in the project areas; • Helps to identify specific problems associated with climate vulnerability; • Facilitates the participation of communities. As a result,, the proposed adaptation measures are more likely to directly and more accurately respond to community realities; • Builds capacities not only of the project team, but also of local governments and communities.	• Some concepts are very complex. So it is necessary to express them in everyday terms using simple examples. • It collects information related mainly to current climate vulnerability. • Does not help in building process and impact indicators. • Does not provide guidance in working with a base of projects with multiple pilot sites and countries.

For more information on PRAA, visit www.careclimatechange.org/adaptation-initiatives/praa.

1 This note was prepared by Gabriela Fontenla, Silvia Aguilar and Carolina Mancheno with inputs from Tine Rossing and Tamara Plush.
2 SCCA, 2008. El cambio climático no tiene fronteras. Impacto del cambio climático en la Comunidad Andina.
3 Ramirez, E. "Deshielo del nevado Mururata y su impacto sobre los recursos hídricos de la cuenca de Palca."
4 Water pollution is not affecting all local water resources of the Palca municipality but all those resources located in the mining areas.
5 www.careclimatechange.org/cvca
6 www.iisd.org/cristaltool
7 SENAMHI, 2010. Escenarios Climáticos para la Cuenca del Urubamba al año 2100. Technical Summary. Ministry of the Environment.
8 SENAMHI, 2010. Escenarios Climáticos para la Cuenca del Urubamba al año 2100. Technical Summary. Ministry of the Environment.
9 During the investigation conducted by CARE for the World Bank in 2 areas of the PRAA project, it was observed that an organized community has a greater capacity to respond to extreme weather events that a community with a weak organization.
10 www.careclimatechange.org/files/adaptation/Adaptation_Framework_Diagram.pdf
11 For example, many people call the dry season from May to August, "drought" (sequía)," when frost is more likely to occur. Then they mention that one of the main threats is drought, because "it increases the presence of frost." They do not refer to the lack of rainfall per se, as this situation is something that could be considered "normal" for this time of year.

Local residents from Tapacaya, Bolivia, work together on CARE's Climate Vulnerability Capacity Anaylsis (CVCA).