



United Nations Development Programme

ENVIRONMENT AND ENERGY

# ADAPTING LOCALLY TO SECURE SUSTAINABLE FUTURES

LESSONS LEARNED FROM SELECTED UNDP-GEF COMMUNITY-BASED ADAPTATION PROJECTS



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*Adapting locally to secure sustainable futures: Lessons learned from selected UNDP-GEF Community-Based Adaptation projects*

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*Development Programme.*

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*Cover photos: top-left: Fish harvesting in hand-dug fish ponds using saved flood water. An initiative that the community members came up with at the project's awareness-raising and capacity-building workshops. Credit: UNDP/ Marie Johansson, NGO CES for UNDP-GEF CBA Namibia; bottom-left: Global and Local staff members join community members to inspect the salinity-resilient onion varieties in farmlands benefitting from drip irrigation. Credit: UNDP/ Charles Nyandiga for UNDP-GEF CBA Project; top-right: Community plantations and nurseries located close to homes ease women's participation in the project while tending to their household obligations. Credit: UNDP/ Abu Sumon for UNDP-GEF CBA Bangladesh; bottom-right: Community members are trained in soil restoration techniques in Guatemala. Credit: UNDP/Liseth Martinez for UNDP-GEF CBA Guatemala*

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## ACRONYMS

AAP	African Adaptation Programme	MAWF	Ministry of Agriculture, Water and Forestry
CBA	Community-Based Adaptation		
CBO	Community-Based Organization	MDGs	Millennium Development Goals
CC	Climate Change	MoEF	Ministry of Environment and Forest
CCA	Climate Change Adaptation	NAPA	National Adaptation Programme of Action
CCPS	CBA Country Programme Strategy	NCC	National Coordinating Committee
CDM	Clean Development Mechanism	NGO	Non-governmental organization
CES	Creative Entrepreneurial Solutions	NGO	Non-governmental organization
CONTILL	Conservation Tillage	OP	Operational Program
CRAC-GRN	Cellulele Recherche Action Concertee en Gestion des Ressources Natureles	OVC	Orphan and Vulnerable Children
EMD	Environmental Management Division	PCN	Guatemalan First National Communication
ESSJ	Economic and Social Survey of Jamaica	PIA	Participatory Impact Assessment
FAO	Food and Agricultural Organization	RADA	Rural Agricultural Development Agency
GBSS	Gram Bikash, Shahayak Sangstha	SGP	Small Grants Programme
GEF	Global Environment Facility	SHG	Self Help Groups
GHG	Greenhouse Gas	SLM	Sustainable Land Management
IAS	Impact Assessment System	SPA	Strategic Priority to Adaptation
INSIVUMEH	Meteorological Institute of Guatemala	UN	United Nations
IPCC	Intergovernmental Panel on Climate Change	UNAM	University of Namibia
IUCN	International Union for Conservation of Nature	UNDP	United Nations Development Programme
JCDT	Jamaica Conservation and Development Trust	UNFCCC	United Nations Framework Convention on Climate Change
LDCF	Least Developed Countries Fund	UNV	United Nations Volunteers
MARN	Ministry of Environment and Natural Resources	VRA	Vulnerability Reduction Assessment
		WRC	Women's Resource Centres

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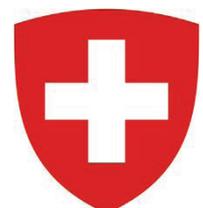
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# ADAPTING LOCALLY TO SECURE SUSTAINABLE FUTURES: LESSONS LEARNED FROM SELECTED UNDP-GEF COMMUNITY-BASED ADAPTATION PROJECTS

## INTRODUCTION

Poor communities in developing countries contribute the least to the greenhouse gas emissions that cause climate change, yet they are the most severely affected by their adverse impacts. These communities are in the front line and suffer disproportionately because of their lower adaptive capacity to cope with climate change-driven disasters and their direct reliance on climate-sensitive natural resources for food, shelter and livelihoods. The United Nations Development Programme (UNDP) recognizes adaptation as one of its top climate change priority areas. The Organization's efforts in this area focus on capacity and resilience building to address the unique situations of impacted regions. It does this by contextualizing adaptation strategies to meet local needs and conditions.

For the past five years (2008-2013), the UNDP-Global Environment Facility (GEF) [Community-Based Adaptation \(CBA\) Programme](#) has been championing local-level adaptation work by piloting small-scale project/policy laboratories in Bangladesh, Bolivia, Guatemala, Jamaica, Kazakhstan, Morocco, Namibia, Niger, Samoa and Viet Nam. The CBA Programme was a multi-partner initiative, which was designed, led and implemented by UNDP. It was largely funded by the GEF through its Strategic Priority to Adaptation (SPA) fund, with contributions from the Governments of Australia, Japan, Switzerland and the UN Volunteers (UNV).

The CBA Programme was delivered through the GEF Small Grants Programme (SGP), and benefitted from SGP's grassroots expertise and 20 years of experience, as well as its established operational modalities and mechanisms. In non-GEF SGP pilot countries, the same system of coordination was used but through the UNDP Country Offices. United Nations Volunteers (UNV) also had an important impact on the Programme via the on-the-ground assistance UNV was able to provide. This played a critical role in strengthening community mobilization, ameliorating volunteer contributions, ensuring inclusive participation, and facilitating the capacity-building of partner non-governmental organizations (NGOs) and community-based organizations (CBOs). The combination of expertise and participation from the various partners was mutually reinforcing and contributed to the CBA Programme's success; the strong presence and capacity at the local level bolstered the resiliency of the participating communities and their ecosystems.

## PURPOSE

This report illustrates examples of community transformations that can take place as a result of community efforts to sustainably adapt to climate change impacts. It also highlights the socio-economic and community mobilization benefits that can be achieved through community-based adaptation. These positive results are demonstrated through the adaptation measures implemented by the CBA pilot projects, which were aided by increased awareness, knowledge and capacities in 7 of the 10<sup>1</sup> participating countries of the SPA CBA project.

For many communities, existing problems associated with unsustainable development practices and frequent climate change-induced events provided a natural starting point for the pilot adaptation measures. It was through the implementation of the projects that communities improved their skills, increased their knowledge on climate change and its impacts, and improved their ability to adapt in a sustainable way. Incrementally, the web of activities surrounding the implementation of the measures developed indirect capacities such as community mobilization, financial management and entrepreneurship, gender mainstreaming and social inclusion. When combined, these increased capacities produced results and benefits in terms of natural resources (agriculture, biodiversity and water), socio-economic development, gender equality and community development.

<sup>1</sup> Due to earlier programming and finalization of projects, 7 out of 10 participating countries are featured in this report. The three remaining countries will be included in an upcoming CBA Report

Over a span of 12-20 months, communities learned how to integrate adaptation practices into their daily lives. The new habits that were formed protect them from climate change impacts today, but also lay a resilient foundation for future sustainable development. Ongoing analysis, monitoring and evaluation of the communities' social, cultural, economic and political conditions were undertaken throughout the duration of the project. It served as a continuous feedback that guided the knowledge-and experience-sharing sessions to ensure the successful implementation of the adaptive measures.

The seven case studies in this report were assembled and summarized to provide an overview of the CBA pilot project activities, and what local communities did to adapt to climate change. They are organized around six main topics.

1. Background (country and project sites) and the associated climate change risks;
2. Adaptation measures and environmental benefits;
3. Socio-economic impacts and the community mobilization effects on the transformation of communities and their sustainability;
4. Local Voices, which are interviews with the community members that capture their assessment of climate change and the benefits derived from adaptation practices introduced through the CBA Project;
5. Upscaling and Replication of results; and
6. Partnerships that accomplished the project/s. These stories are a reflection of strong partnerships with communities, consortium of NGOs/CBOs, government agencies, UN agencies and international agencies



## ADAPTATION MEASURES AND ENVIRONMENTAL BENEFITS

This project introduced seed banks<sup>2</sup> to protect climate-resilient crop genetic materials that would otherwise be washed out by storms and floods. This enabled the community members to maintain their self-sufficiency in food grain production. Concurrently, workshops on quality seedling management and nursery techniques were provided for the development of tree nurseries and plantations. The tree nurseries and plantations conserved plants used for wetland replanting programs and for establishing green protection belts that hold back cyclones and storm surges. As a result of the development of seed banks and tree nurseries, agricultural biodiversity product yields have increased in the project area. They provided many benefits: they produced local fruit plants to supplement the nutritional demand, provided food for birds and wildlife, and produced saline-tolerant saplings in response to increased saltwater intrusion in the area.



**Flooded lands in Dashmina Upazila**

*Photo: UNDP/Abu Sumon for UNDP-GEF CBA Bangladesh*

## COMMUNITY MOBILIZATION AND SOCIO-ECONOMIC BENEFITS

As previously stated in the climate change risks section above, the community members lack the knowledge and support to cope with climate change impacts in an adaptive and sustainable manner. The lack of, and access to, such knowledge and support is especially high among women in the project area. As a result, women are disproportionately more vulnerable to climate change. Women living in the project areas are responsible for securing fresh drinking water, food and firewood for their family members. These jobs make them almost entirely dependent on natural resources for their livelihood. Therefore, climate change impacts increase women's workload or make their jobs harder to achieve.



**Weekly meetings of WRC members.**

*Photo: UNDP/Abu Sumon for UNDP-GEF CBA Bangladesh*

Due to social norms, women and children are culturally excluded from government services: agriculture, livestock, and health, including maternal and child health (MCH). Despite government interventions to remove such barriers, the rural areas of Bangladesh, especially in remote areas such as the project site in Dashmina Upazila, are still affected. The centralization of power that governs relationships within small communities also works against the discriminated community members groups such as women. These groups tend to be less educated (project area average literacy rate for men is 36.5 percent and 22.7 percent for women, while national average is 32.4 percent), have less access to information, have restricted rights and fewer assets, and have no voice in the decision-making process. Inequality in the distribution of rights, resources and power hinder the discriminated groups' ability to take action, which in turn makes them more vulnerable to climate change.

2 Seed banks are storehouses for seed and plant genetic material in an effort to preserve crop seeds and biodiversity. They protect seeds from natural or man-made catastrophes, and are maintained in temperatures necessary for seed growth and production.

The CBA project in Bangladesh focused on climate change awareness-building activities, coping strategies and nutritional needs, and social mobilization of community members with a special focus on women. It established Women Resource Centres (WRC) designed to operate like a CBO.

Women Resource Centres are established at the village level, and are a unique platform for marginalized women to have access to, and control over, resources such as agriculture products, bargaining skills and negotiation power. They are made up of 20 marginalized women, are led by an elected female leader, and serve as a bridging mechanism to different service-providing organizations and CBOs that support women in other areas including livelihoods, health & sanitation, agriculture. The services that WRCs provide in CBA project areas apply a participatory approach and ensure that proper consultations with the targeted beneficiaries take place.

The WRCs in the CBA Bangladesh project areas managed the tree nurseries and seed banks that increased agricultural yields. Part of their function was to distribute the seeds of fruits propagated in the nurseries to the community members for home-based planting. This allowed women to generate income while taking care of their other household obligations. Adolescent girls and disabled persons from the marginalized community also participated in, and benefited from the WRCs. In addition to providing income-generating activities, the WRCs helped to increase leadership and organization capacities by tasking WRC members with the development of additional WRCs. This effort doubled the number of WRCs in the project area (from four to eight).

## LOCAL VOICES

### Rashida begum

Rashida was the youngest of seven children and lost her parents when she was a child; her mother died in a flood in 1970 and her father died before Rashida was married. Alone in the world, Rashida married Mr. Hatem Ali, a widower with three children from previous marriages. The couple had two children and was responsible for providing for a household of seven.

Rashida's husband was a farmer who cultivated crops on the family land. Sadly, he was in an accident that left him bed-ridden and unable to work. As a result, the family had to sell their land to support the household and to pay for Mr. Ali's medical needs. This left the family with no land to cultivate other than their small plot at home. To support her husband and five children, Rashida cultivated vegetable on the small plot. When asked, Rashida expressed sorrowfully that she had unfortunately been born into a poor family.

Rashida was a member of one of the WRC (Women Resource Centre) centers—formed as part of the CBA Project—that provided seed grants to members to cultivate homestead vegetables. Rashida was a recipient of such a grant, which helped her to meet household needs and bring economic solvency back to her family. Last winter, she cultivated various vegetables (gourd, balsam apple and others) around her home, and she was able to grow enough to meet her household needs and sell surplus production to earn household income.



*Photo: UNDP/Abu Sumon for UNDP-GEF CBA Bangladesh*



**Rashida begum with her family.**

*Photo: UNDP/Abu Sumon for UNDP-GEF CBA Bangladesh*

### Mariom begum

Mariom begum is a homestead vegetable farmer. She has been married since the age of 13 to a day worker, Mr. Nasir Hawladar. The couple owned no land to cultivate crops, so Mariom tried to achieve socio-economic sustainability by cultivating various vegetables around her house. Despite this effort, the couple spent their days in poverty and distress.

When Mr. Nasir's maternal grandmother died, he inherited 0.18 acres from her estate. The couple hoped that by growing Rabi and other crops on the land that they could improve their economic standing. Unfortunately, climate change-induced events brought drought, heavy rainfall, inundation and water stagnation, which caused devastation to crops in their community.

Mariom was an active member of the Lohalia WRC at Purbo Alipur village where she attended weekly workshops given by project personnel and Upazila assigned officials. In the workshops, she learned which climate-resilient crops to plant in her land, and she was also given support and training on advocacy, vegetable gardening, livestock, agriculture, maternal and child health and individual and family health.



**Before the CBA Project: Sesame and Chili damage due to heavy rainfall and water.**

*Photo: UNDP/Abu Sumon for UNDP-GEF  
CBA Bangladesh*



**With the CBA Project: Climate-resilient crops are cultivated in community tree nurseries and in local homes.**

*Photo: UNDP/Abu Sumon for UNDP-GEF  
CBA Bangladesh*



## UPSCALING AND REPLICATION STRATEGIES

The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) consists of six pillars for intervention mapping and results generation (food security, social protection and health; comprehensive disaster management; mitigation & low carbon development; research & knowledge management; infrastructure, especially in vulnerable regions; and adaptation capacity building and local institutional strengthening). The CBA Bangladesh projects contributed to two of the most important pillars: food security, social protection and health; and adaptation capacity building and local institutional strengthening.

As stated above, Women Resource Centres were established to create opportunities for marginalized women. The four WRCs established by the project were replicated by other local communities.

## PARTNERSHIPS

The CBA Bangladesh project brought together three key partners: UNDP, government and NGOs. It was implemented through the UNDP Country Office in Bangladesh within the UNDP-Ministry of Environment and Forest's (MoEF). The Project Coordinator and National Coordinating Committee (NCC) provided strategic guidance, while the Project Coordinator provided day-to-day oversight. Along with the grantee and NGO partner, Gram Bikash, Shahayak Sangstha (GBSS), the Project Coordinator provided guidance and support for all the project activities.

## LESSONS LEARNED

- 1. Equitable investment and egalitarian approach:** The needs of women and girls must be integrated into the climate change adaptation investments and promote outcomes that equally benefit men, women, boys and girls. An egalitarian approach must be employed to ensure the removal of power centralization and economic and social inequalities that is implicit at the community level.

## UNFCCC MOMENTUM OF CHANGE WINNING PROJECT

### CBA Namibia: A holistic approach to community-based adaptation

#### BACKGROUND AND CLIMATE CHANGE RISKS

Namibia is plagued with a dry climate and poor soils, and the country's small-scale farmers produce the lowest agricultural yields in the world. With an estimated population of around two million, Namibia has the world's second lowest population density. As global climate change impacts become more common, Namibia is likely to be one of the most severely affected areas.

The CBA Namibia project areas were located in Northern Namibia and consisted of five regions: Omusati, Ohangwena, Oshikoto, Oshana and Kavango. The majority of the community members were subsistence farmers who highly depended on rain-fed dry land crops and livestock rearing both for subsistence and income.

These areas were confronting significant climate change-related challenges, such as food and water security, which were jeopardizing the communities' livelihoods. The poor and marginalized communities in the project areas were particularly vulnerable, including orphaned children from families affected by HIV/AIDS.<sup>3</sup>

In this regard, the CBA project 'Approaching community adaptation to climate change holistically by using multiple coping strategies' designed and implemented adaptation measures responding to climate change to reduce the vulnerability of the communities and protect lives. This project was implemented by NGO Creative Entrepreneurs Solutions (CES), with the technical assistance from the GEF SGP National Coordinator and community mobilization support from the National UNV assigned to the project.

#### ENVIRONMENTAL ADAPTATION MEASURES AND RESULTS

This CBA project used six local and interlinked climate change coping strategies to create a holistic approach to community-based adaptation. The strategies included

1. ensuring water and food security through flood and rain harvesting for agricultural irrigation, livestock and fish farming;
2. using harvested flood and rain water to irrigate vegetable production and to support families affected HIV/AIDS;
3. improving dry land crop production through composting, biochar, crop rotation and conservation agriculture;
4. increasing use of improved drought-resistant pearl millet varieties (such as the national staple food Mahangu);



**Siya Group Chairperson, Teodora, with the pearl millet harvest.**

*Photo: UNDP/Marie Johansson/CES for UNDP-GEF CBA Namibia*

<sup>3</sup> 95 percent of CBA participants were families affected by HIV/AIDS

5. using rice, mushroom, and sweet stem for human nutrition and fodder security to boost availability of protein nutrition and incomes; and
6. using energy efficient stoves and agro-forestry combined with general reforestation techniques to help sustain food security and income generation with no adverse impacts to the land or to other natural resources.

These concepts were piloted in the majority of project sites, while some were site-specific.

The project focused primarily on the promotion and application of a distinct method of conservation tillage agriculture (CONTILL) specific to the Namibian agricultural circumstances. The CONTILL method practices minimum soil disturbance, maximum soil cover and crop rotations to reverse soil degradation. The ripping and furrowing of the soil allowed water retention and deep root penetration below the hard alkaline layer, and allowed the feeder roots to reach nutrients located below 30 cm depth<sup>4</sup> in the soil. At the same time, rainwater collected by furrows was channeled to the plants basal area. During flooding, excess water found its way to the ripped compaction layer, infiltrating deep into the soil and preventing water logging. As a result, plant roots became stronger, biomass increased and soil quality was improved leading to an increase in agricultural yields up to 500 percent in the project areas.

## COMMUNITY MOBILIZATION AND SOCIO-ECONOMIC BENEFITS

This project focused on mobilizing community members through the creation of Self Help Groups (SHG) and by building the communities' awareness on issues such as climate change, coping strategies and nutritional needs. The SHGs helped community members to take charge of their own development and financial well-being such as savings and lending.



**Siya Group members celebrate pearl millet harvest.**

**Other CBA groups are replicating the group's success.**

*Photo: UNDP/Marie Johansson/CES for UNDP-GEF CBA Namibia*

Community members used a project-developed toolkit<sup>5</sup> for training on climate change awareness. The toolkit focuses on the causes and impacts of climate change; the different adaptation measures that exist; and tools for mapping challenges and negative impacts, tailoring local solutions, and monitoring and evaluation. Overtime, and as they became available, the community members used nationally developed toolkits to build climate change adaptation strategies.

The Siya group, based in Kavango, is one of the communities that the CBA project funded. Throughout the years, the group had battled seasonal food security caused by insufficient production during the harvesting months. To help reduce the food security burden on the community, the CBA project introduced CONTILL to the region, along with multi-focal areas on adaptation, including water harvesting, crop rotation, improved soil nutrition, and use of energy efficient stoves. These combined approaches yielded positive results.

<sup>4</sup> In Namibia, soil is sandy and non-productive above 30 cm.

<sup>5</sup> UNDP (2010). Toolkit for Designing Climate Change Adaptation Initiatives. <http://www.undp-alm.org/resources/training-tools/designing-climate-change-adaptation-initiatives-toolkit-practitioners>

Namibia's baseline yield is lower than 300 kg per hectare, as recorded by the United Nations Joint Programme/Food and Agricultural Organization (FAO) baseline study in 2009. In June 2010, the first pearl millet harvest increased from an average of 70 kg per hectare to 570 kg per hectare. The community also grew other crops for income such as maize and sunflowers. The increase in the millet harvest guaranteed food for the community, which opened up income-generating options for the maize and sunflower harvests.

In April 2013, the Ministry of Agriculture, Water and Forestry (MAWF) recorded, despite drought conditions, a bumper crop of 4,550 kg per hectare of *Mahangu* at a farm in one of the CBA project sites (Oshikoto region). Because of the positive results being seen, conservation tillage increasingly replaced the traditional land preparation methods (disc harrowing and ploughing).<sup>6</sup>

## UPSCALING AND REPLICATION

This project received attention from the national government, which opened up opportunities to upscale the project activities. His Excellency Hifikepunye Pohamba, President of the Republic of Namibia, visited the project sites, and was impressed with the projects' outcomes and with the spirit of the project's local participants. He stated that the CBA projects were heading in the direction of being one of the most promising agriculture/adaptation projects in the country. Based on his site visit, he advocated the CBA measures in the National Assembly.

Training youth in the area—future farmers or heirs of land—on sustainable practices and improved farming methods is critical for food security and promoting enterprise creation. The CBA project was 'out-scaled' to local schools to foster integration of sustainable practices learned from the project into school curricula. Ninth and tenth graders at the Onamulunga Combined School worked with their Life Science and Agriculture teacher, Mr. Johannes T. Nelongo, to learn about climate change and its impacts, conservation agriculture (CONTILL) for dry land crops, soil improvement techniques, and micro-drip irrigation (for vegetables).

With HIV/AIDS on the rise, and affecting adults ages from 20 to 45, orphan statistics continue to rise in Namibia. The project worked with Oonte OVC (Orphan and Vulnerable Children) Organization, which integrated sustainable adaptation practices as they work with 440 OVCs and their guardians.

Due to its successful results, this project was replicated at the local and national levels. Neighboring communities, government institutions, and NGOs replicated the sustainable adaptive practices applied to this project and have benefited from the lessons learned by project participants. In these cases, external funding was sought and provided to cover costs associated with upscaling. An example is the 'EzyStove'



**Pupils at the Onamulunga Combined School learn how to thin carrots. The school is a cluster centre, and has the opportunity to share their climate change adaptation practices with other schools in the Oshigambo circuit.**

*Photo: UNDP/Marie Johansson/CES for UNDP-GEF CBA Namibia*

6 Johansson, Marie. Article on 'Bumper mahangu harvest for farmer Johannes Keshongo', *The Namibian*; 22 April 2013

pilot project in Katutura—the densely populated township on the outskirts of Namibia’s Capital Windhoek—that replicated the CBA project with aid from Namibia’s Environmental Investment Fund. This fund was useful in bringing fuel-efficient stoves (EzyStove) to areas in Windhoek that were not covered by the CBA projects. AAP-Namibia also provided funds to four communities to replicate CBA environmental solutions: rainwater harvesting methods in the Caprivi and Ohangwena regions; micro-drip irrigation concepts (usage of small poly bags) in the Karas region. Lastly, Namibia’s Country Pilot Partnership for Sustainable Land Management project provided funds to CES to replicate the micro-drip irrigation system in Oshikot region.

### PARTNERSHIPS

This project brought key partners together, including government entities (the Ministry of Agriculture, Water, and Forestry, and the Agronomic Board), the NGO community (NGO CES and NGO Hand in Hand (South Africa); and trust organizations (Green Life Trust); UN agencies (UNDP, UNV GEF SGP); the private sector (The Royal Institute of Technology [Sweden]); and academic institutions (University of Namibia’s (UNAM) Crop Science Department; Onamulunga Combined School, and Oonte Organization for Orphan and Vulnerable Children).

### LESSONS LEARNED

- 1. Analysis and measures need to be site-specific.** Problems tend to be site-specific, therefore, it is important that analysis and measures are also site-specific. Site-specific analysis and measures help to ensure that successful solutions to problems are found and that project results are provided at the macro and micro levels.
- 2. Having a landscape approach and projects with complimentary objectives fosters teamwork among communities and speeds up results and replication of sustainable adaptive practices.** The rate of replication is especially important when the practices result in socio-economic benefits. Experience has shown that having projects with complimentary objectives is more time efficient and effective, which benefits the NGO and other project staff and partners who oversee the projects.

## CBA Kazakhstan: Increasing crop yields and incomes by applying sustainable practices and knowledge gained on climate change and adaptation

### BACKGROUND AND CLIMATE CHANGE RISKS

In Northern Kazakhstan, the CBA project 'Adaptation of farmers' agricultural practices in response to intensified climate aridity in Akmola Oblast' was located in the Arnasai settlement, 50 kilometres away from the country's capital, and agricultural centre. The steppe ecosystem at the project site was fragile and subject to harsh weather conditions with increasing temperatures.

Arnasay winters are long, cold and characterized by heavy winds; and the summers are hot, with droughts and heavy rains. Due to climate variability, winter seasons have become shorter and summer seasons longer and dryer. This poses a significant problem for Kazakhstan and other Central Asian countries because only water from snow melt, and not summer rain, hydrates the soil. Additionally, the harsh climate conditions have increased soil erosion and land degradation, which has reduced farmers' production and incomes, thus hurting the local economy. In some cases, these conditions have forced local community members to migrate.

The long-term climate change projections for Kazakhstan project rising temperatures and declining average rainfall to continue. Overall, temperatures are expected to increase 1.4°C by 2030 and 2.7°C by 2050, with the greatest temperature increases occurring during the winter months. The arid climate that characterizes the southern part of the country is expected to expand northward into historically wetter areas, and rainfall is projected to decrease. The cumulative effect of these changes will be increased aridity across Kazakhstan.

The project area is threatened by increased summer evaporation and drying winds that weaken fragile soils, and diminish water resources. The winter snow is melting faster, which poses an additional risk when accompanied by strong winds that dehydrate soils and cause erosion, and make it increasingly difficult for farmers to preserve winter moisture for agricultural use. In addition, farmers are less able to rely on the nearby Astana Reservoir because the reservoir's reserves are shrinking.

At the start of the project, the negative impacts of climate change on farming productivity were already a reality for the community members. Therefore, the residents of Arnasay village began implementing adaptation measures as soon as possible to prevent climate change from further threatening their livelihoods. For example, the combination of greater precipitation and warmer winters, earlier snow melting, and spring night frosts impacted traditional farming practices and calendars. In this regard, changes in planting practices and schedule of activities were made to adapt and maintain agricultural activity in the region.



**Drip Irrigation systems being installed in local community backyards.**

*Photo: UNDP/Akbota Initiative group for UNDP-GEF CBA Kazakhstan*

This project was prepared through a participatory process carried out by the Akbota Public Foundation, a local NGO. It was implemented at community level to help residents improve the sustainability of their livelihoods. This project began in April 2009 and closed in August 2011.

## ADAPTATION MEASURES AND ENVIRONMENTAL BENEFITS

The development of the area's climate change adaptation strategies was done after careful consideration of the village's problems. The strategies focused on two areas: rational land resources management, and rational use of water resources. For crop and wheat production, planting of drought-resistant crops of winter wheat was implemented based on topography.



**Irrigation machineries with spaying nozzles for near-surface irrigation**

*Photo: UNDP/Akbota Initiative group for UNDP-GEF CBA Kazakhstan*

To address land resources management, the project introduced a new system of agriculture for summer grain crops and winter wheat production, which took into consideration the effects of climate change on the topography of the land. Three main activities were undertaken by the project.

1. Crops were selected based on their resistance to aridity;
2. A relief system was restored and used to retain water and prevent runoff in areas to maximize natural snow accumulation in the early spring season, which usually melts after 10-12 days; and
3. Phosphorous and nitrogen fertilizers were used to prepare the soil for the sowing of winter crops to provide soil moisture.

The results were positive, rendering the land less vulnerable to topsoil risks and soil erosion, and farmers were less dependent on other sources of water to maintain crops. To promote rational use of water resources, the project introduced a simple and cost-efficient method called drip irrigation, a technology that was transferred into the area that upgraded the district's irrigation system. Fifteen irrigation machines (i.e. 90 percent of the rural district's large-scale farmer's irrigation machines) were upgraded with a spray nozzle (sprinkler) for near-surface irrigation (1.5 meters to 2 meters above ground). This upgrade allowed 1200 hectares of plough land to be irrigated. The sprinklers helped reduce water loss and soil erosion, alleviate diseases, and reduce pest impacts. Water and electricity consumption reduction was doubled, and the crop yield (e.g. potato) increased by 30 percent. The improved water management activities also increased the total irrigated area to approximately 7,000 hectares.

## COMMUNITY MOBILIZATION AND SOCIO-ECONOMIC BENEFITS

The 2,100 participants (220 households) who embarked on the CBA project in Arnasai village did so with little knowledge of climate change adaptation. But with the help of knowledge-raising workshops and hands-on training provided by the CBA project, the community participants were transformed from 'passive actors' to 'actors of change'.

The project stimulated gardening development in the area, maintained the efficient natural resources management and ensured the basis for the district's sustainable development. The productivity of the simple and cost-efficient technologies was a driver to community member adaptability. Participants who had no knowledge on climate change and adaptation were empowered to adapt to the most severe climate change conditions (e.g. water deficit), and saw the benefits of their efforts.

The drip irrigation system ensured proper irrigation of the fields without intensive labor input. The technology was first introduced to, and tested by, the community youth, who then transferred their knowledge to community elders. The cooperation and knowledge sharing between the youth and the elderly was a big factor in the project's immediate success, and it should play a critical role in ensuring the sustainability of activities post-project. After installing drip irrigation systems in 12 demonstration plots, the community members installed units in their own backyards based on knowledge gained from the project. The results were exceptional: yield doubled in backyards that used the drip irrigation system, while water consumption decreased by half.

Other economic benefits from the new technology and expanded winter wheat and cereal crop varieties included increased crop yields (by 15 percent) and in producers' incomes (by 30 percent) compared to pre-CBA project income levels in 2008.



**Innovative water-saving irrigation technologies such as drip irrigation, installed in local communities' backyards have led to increased yields.**

*Photo: UNDP/Katerina Yushenko for UNDP-GEF CBA Kazakhstan*

## LOCAL VOICES

### **Rudolf Kekel, Dentist**

“We spend so much money on water. With drip irrigation, water consumption has dropped by 50 percent. We save water and money. The crop yield has doubled for some crops. Now, we can sell extra products. I believe the drip irrigation system has resulted in the improvement of our well-being.”

### **Mikhail Samokhotin, military retiree, Chernobyl clean-up veteran**

“It was a surprise for me that so many people have been involved in the project activities. The projects made labor easy for many people. Due to drip irrigation system, we have a good crop yield and are saving drinking water (which was short in supply).”

### **Almagul Kasenova, Nurse**

“The drip irrigation technology has substantially helped women in their labor and improved the crop yields. The drip irrigation system enables to save drinking water. It does not wash out the soil layer. I believe that such water saving technologies are very prospective.”



## UPSCALING AND REPLICATION

The CBA Kazakhstan project promoted its achievements at the national level via UNDP and other partnering organizations. Due to this cooperation, a National Adaptation Concept was developed and preliminary approved by the Council for Sustainable Development in 2011. This concept will be consolidated into the National Strategy on Green Economy, which has been under development since 2012. If the adaptation strategies are approved under the Green Economy Strategy, the state will fund many adaptation measures.

Proven methods and approaches from this CBA project have been promoted by, and included in, the frameworks of various state programs, including the National Remote Pastures Development Programme, the Green Strategy Development, the Zhasyl Damy Industry Program, the Law on Pastures, the National Action Plan to Combat Desertification and the National Biodiversity Action Plan.

For country-to-country knowledge exchange, a regional roundtable took place in Almaty, Kazakhstan in October 2010. A diverse group of over 70 participants from the Central Asia Region participated in the event (e.g. government representatives, NGOs, academics, community representatives, representatives from bilateral and regional initiatives) to discuss contemporary adaptation topics in their respective countries. The experiences from this project (and eight other CBA Kazakhstan projects) were shared. Ideas on possible adaptation measures in key areas (water efficient use, sustainable land management, climate risks, etc.) and location were discussed depending on at the local, national and regional level were widely discussed. The key take-away was the need for discussions on the regional aspects of climate change adaptation and the development of trans-boundary measures to be taken to all level of governments and within intergovernmental initiatives from the region.



**Members of community participating in a practical demonstration**

*Photo: UNDP/Akbota Initiative group for UNDP-GEF CBA Kazakhstan*



**The yield of cabbage grown by locals via drip irrigation system usage. Children help in yield gathering.**

*Photo: UNDP/Akbota Initiative group for UNDP-GEF CBA Kazakhstan*

At the local level, the number of community members involved in the project is growing yearly. The Akbota initiative group, originally composed of 25 members in one village, has grown to numerous members in five villages. All of the participants actively developed project ideas, organized workshops, field days and special meetings to disseminate successful project experiences, lessons learned and demonstrated project results to neighboring villages. The results in Arnasai village were so positive that external donors provided grants to fund the installation of the drip irrigation system in an additional 262 households in 5 villages.

The project was 'out-scaled' to schools through outreach activities, which focused on the new technologies actively students. Students from the Young Farmer School, ages 12 to 24 years old, were involved in the project as volunteers. In this role, they actively disseminated information on drip irrigation benefits to local inhabitants. They also gained valuable experience in project design, project implementation activities, such as farming, as well as the importance of volunteerism and 'outreach' skills, which should help them in the future as they pursue their careers.

### PARTNERSHIPS

This project has brought key partners together, including NGO Akbota Public Foundation; UN agencies (UNDP focal environmental points, GEF SGP); Government of Kazakhstan; Local Akimats (chiefs).

### LESSONS LEARNED

- 1. Transformation begins with new perceptions and attitudes.** New behaviours and systems cannot take hold until there is a shift in perception and attitude—it is about moving beyond current practices and realizing new possibilities.
- 2. Capacity building and knowledge-raising are critical in climate change adaptation.** Although people experience climate change, they do not always understand it. Most commonly, people associate 'climate change' with 'disasters' or simply, 'weather'. In this regard, knowledge-raising and capacity-building in climate change adaptation initiatives needs to be articulated in a systematic manner to allow efficient monitoring and assessment to capture lessons and replicate practices.

## CBA Jamaica: Partnerships are essential for project success and upscaling

### BACKGROUND AND CLIMATE CHANGE RISKS

Climate change predictions for Jamaica include higher intensity rainfall, longer droughts and increased temperatures. These changes are likely to increase soil erosion, particularly on steep mountain slopes, which can lead to devastating landslides. In addition, unsustainable land management practices have contributed to the degradation of the ecosystem, altering its traditionally cool, moist microclimate. As the temperature increases, farmers are forced to grow crops at higher altitudes, where conditions are more favorable. Agricultural encroachment is already a pressure on the bordering National Park, thus further infringement has the potential to cause increased deforestation to the internationally significant area.



**Community members participate in the construction of a greenhouse to be used for organic farming.**

*Photo: UNDP/JCDT for UNDP-GEF CBA Jamaica*

The Jamaica Conservation and Development Trust (JCDT) implemented the CBA project in Jamaica, **'Reducing erosion and landslide risk through sustainable agriculture'**, in communities of Woodford and Cascade. At the start of the project, Woodford and Cascade—located in close proximity to Jamaica's capital, Kingston, and the Blue and John Crow Mountains National Park—had populations of approximately 1,800 and 800 people, respectively. Both communities tended to rely on cash crops for income—primarily bananas and Blue Mountain coffee. Prior to the CBA initiative, many residents practiced unsustainable slash-and-burn agriculture as a way to clear and fertilize the steep mountain slopes where they farmed. Over time, this practice had reduced the soil quality and caused land degradation, which lowered agricultural productivity, which jeopardized the safety of the communities.

### ADAPTATION MEASURES AND ENVIRONMENTAL BENEFITS

Building on pre-existing JCDT activities, the CBA project promoted sustainable agricultural practices using cost-effective soil conservation techniques such as terracing. It also introduced alternative livelihood practices such as high-value organic farming and greenhouse farming. 4,500 indigenous fruit trees were planted on degraded steep slopes, which reduced soil erosion and landslides. The project also constructed two greenhouses, which significantly improved crop quality. It also minimized the impacts of decreased rainfall, because the crops were grown in a controlled environment. In general, the greenhouse technology provided yields up to three times more on crops produced by outdoor farming, while requiring less land to use.

The farmlands in Woodford and Cascade are more resilient to climate change impacts due to the project techniques implemented in the project area. The sustainable agro-ecosystem management systems led to reduced soil loss coverage not only during incidences of heavy rains, but also over long periods of drought after precipitation. To date, 10 hectares of land have been restored and another 40 hectares are sustainably managed. By using project-learned agricultural methods on existing

croplands, farmers increased profitability, improved crop turnover, and diversified their crops. As a result, the need to create new agricultural plots upslope was reduced and cultivation in protected areas was minimized. Another positive outcome was related to the use of organic farming. At the outset of the project, farmers did not see it as a viable option, but after using this approach as part of the CBA project, the farmers acknowledged that it is as effective as using chemical pesticides on the farms.

## COMMUNITY MOBILIZATION AND SOCIO-ECONOMIC IMPACT

Through participatory awareness-raising and capacity-building workshops, all 35 participants (men and women, including one individual with a disability) were trained in soil conservation techniques, the use of greenhouse technology, organic farming techniques and pest control.

As a direct result of the CBA grants, communities benefited from the construction of two greenhouses. The proceeds from crops grown in the new greenhouses were applied towards building additional greenhouses. The incremental income generated from the greenhouses (45,000 JMD or 530 USD), directly benefitted the 35 participants, and provided a steady flow of crops for the market, which improved food security in the area.

The community members were empowered to share the results of their work. As a result, they have shared experiences and knowledge and impacted approximately 250 additional people in neighboring communities. This figure is expected to increase as farmers continue to benefit from farmer-to-farmer knowledge, become better acquainted with the technology, and apply necessary adjustments to achieve full efficiency.



Participant tending to crops in greenhouse.

*Photo: UNDP/JCDT for UNDP-GEF CBA Jamaica*

## UPSCALING AND REPLICATION

The NGO JCDT sits on the Jamaica's Sustainable Land Management (SLM) Committee, and contributed to the SLM policy draft based on its experiences in the CBA project. JCDT has also influenced strategies and outputs with respect to sustainable agricultural practices on the steep mountain slopes located on the eastern end of the country.

Data gathered from CBA projects best practices and lessons learned were used in

1. the Economic and Social Survey of Jamaica (ESSJ), the main document of the Planning Institute of Jamaica;
2. addressing gaps outlined in the National Communications, especially at the community level, by working closely with the Meteorological Service (the organization who serves as UNFCCC focal point with responsibility for preparing Jamaica's National Communications to UNFCCC); and
3. development of policy, legislation and programmes for effective environmental management by the Ministry of Water, Land, Environment and Climate Change, the Environmental Management Division (EMD) who also has authority on Clean Development Mechanism (CDM)

The project out-scaled to reach youth who were traditionally least involved in climate change activities. The project sponsored a poster competition entitled 'Adapting to Climate Change: We're Ready. Are You?' in December 2011. The objective of the event was to build student awareness on climate change adaptation. The competition was opened to students in two age cohorts, 8-13 years old and 14-19 years old, who attended schools in the areas where the CBA projects were implemented: Bunkers Hill Trelawny, the Portland Bight Area of Clarendon, Woodford and Cascade in Rural St. Andrew, Portland and Glengoffe in

St. Catherine. The competition winners were selected on February 29, 2012. Shania Lawrence, 12 years old, from the Cassava River Primary and Infant School, was the first place winner for her poster entry titled 'Today's Effect... Tomorrow's Climate'.

## LOCAL VOICES

### Shania Lawrence, 12 years old

First place winner of the poster competition



**Clockwise from left: Tamara Pinnock, Teacher; Roogae Kirlew, Principal; and Shania Lawrence, Student**

*Photo: UNDP/Michelle Curling-Ludford for UNDP-GEF CBA Jamaica*

"I feel very happy knowing that I have accomplished something this big in life. Yes. There were some things I didn't understand about climate change, e.g. how deforestation affects rainfall, so with the help of my teachers I was better able to understand and acknowledge these things." "I will encourage other children and others not to burn garbage as it pollutes the air and causes the climate to be affected, and I would also encourage them to take care of the environment as it plays a big role in our survival." "We can do more recycling of our garbage and use the material instead of fertilizer to grow our food. We can plant more trees to hold the soil together so that it does not cause landslides that will affect farmers and cause houses to be washed away."

Interview by: UN Volunteer, Michelle Curling-Ludford

## PARTNERSHIPS

This project brought key partners together, including NGO Jamaica Conservation and Development Trust (JCdT); government (Forestry Department, under the Ministry of Agriculture; Ministry of Water, Land, Environment and Climate Change; the Environmental Management Division (EMD); Planning Institute of Jamaica, and the Meteorological Service of Jamaica, Social Development Commission (SDC); Rural Agricultural Development Agency (RADA); and UN agencies (UNDP; GEF SGP; UNV).

## LESSONS LEARNED

- 1. Planning for managing natural disasters will prevent project setbacks and failures.** Projects must take into consideration the impacts of natural disasters as an element of their development planning. In Jamaica, one of the greenhouses was partially damaged during a storm because the effects of natural disasters were not sufficiently addressed in the project plan. This is also a critical step because based on project experience, local communities understand and grasp 'climate change' when it is discussed in the context of disasters (floods, typhoons, cyclones, etc.), and are then able to respond on how to manage climate change-induced impacts.
- 2. Partnerships are vital for influencing policies, out-scaling to other sectors and replicating best practices.** Alliances with government agencies, civil society organizations, academic and research institutions, and donors allow the projects to achieve its goals and are beneficial to both parties. When communities make the right linkages, they are able to see the connection between underlying environmental problems that are at the root of their project measures. They are also able to adapt to the environmental problem by adopting alternative measures (i.e. change in farming activities, lifestyle, etc.) while finding and maintaining alternate/sustainable livelihoods. These partnerships allow for influencing policies, linking best practices into other initiatives (disaster risk reduction initiatives and other adaptation initiatives), as well as integrating best practices to other sectors (educational sector). Additionally, global partnerships contribute to mainstreaming community-based approaches and raising awareness globally on the critical roles communities play in climate change adaptation and sustainable development.

## TWO CBA PROJECTS ON ADAPTATION TO CLIMATE CHANGE IMPLEMENTED IN A SYMBIOTIC MANNER

### BACKGROUND AND CLIMATE CHANGE RISKS

Increased aridity and climate variation in Niger threaten local production systems and increase erosion and desertification risks. Thus climate change impacts pose serious risks to sustainable development, poverty reduction, and attainment of the Millennium Development Goals (MDGs) in the region. Rural agricultural and pastoral communities—the majority of Niger’s population—are reliant on climate-sensitive rangeland, woodland, and agricultural ecosystems for their livelihoods and subsistence. Repeated droughts, extreme temperatures and violent wind have negatively impacted agricultural production in many regions in Niger. Food insecurity is high, access to water is scarce and all valued wildlife and vegetation species are disappearing.

The project sites are located in Tamalolo, an area in Niger’s Sahelo-Saharan zone. This area was identified by the country’s National Adaptation Programme of Action (NAPA) as the most vulnerable area in the region to the effects of climate change. Water, which is increasingly scarce, is the key factor limiting development in the rural communities of Niger’s Tamalolo. As the aridity in the area increases, the survival of people, animals and agricultural production that rely on water are significantly threatened. Dry soils and intermittent rain prevent water from infiltrating the ground, and heavy winds sweep fertile topsoil away. Millet, sorghum, black-eyed peas, okra and sorrel—stable crops in the area—are suffering from poor growth and output. Agricultural lands are deteriorating, leading to poor agricultural production and constant productivity loss. The dire situation has caused many households to become incapable of meeting their nutritional needs, and food insecurity is threatening the community’s existence.

Aimed at improving the food security and securing livelihoods for the most vulnerable groups in Tamalolo, two CBA projects were implemented concurrently to provide synergies and benefits to each other. The first project, **‘Adapting to Climate Change in the Community’**, focused on improving the living conditions of 14 villages in Tamalolo, and increasing their adaptive capacity through the improvement of rainfall production systems and the introduction of drip irrigation as a means of intensifying agro-silvo-pastoral production. The project was implemented by Cellulele Recherche Action Concertee en Gestion des Ressources Naturelles (CRAC-GRN), a local NGO. This project targeted a population of approximately 2,216 residents, 51 percent of whom were women. The community’s principal socio-economic activities were farming and breeding, both of which are highly reliant on annual rainfall.

The second project, **‘Intensified Agro-Forestry Practices for Climate Change Adaptation’**, worked on similar climate change adaptation-focused themes to support and complement CRAC-GRN’s work. Sustainable agro-forestry practices were developed to improve food production and reduce pressure on the affected ecosystem. This second project was implemented by the NGO Yanahi and targeted five of Tamalolo’s rural villages, with approximately 745 residents.

### ADAPTATION MEASURES AND ENVIRONMENTAL BENEFITS

#### Project 1: Adapting to Climate Change in the Community

The focus of the first CBA project was on the introduction of low-cost drip irrigation systems, the rehabilitation of traditional wells and the improvement of farming techniques to intensify and diversify agro-silvo-pastoral production.

Through awareness-raising and capacity building workshops, the community members applied drip irrigation to improve rain-fed farming, and were informed on the benefits of this low-cost system:

1. it allowed water to penetrate to the plant root systems without degrading the soil;
2. it provided moisture regardless of rainfall; and
3. it provided better and more consistent watering than traditional rain-fed methods, which could not be regulated in frequency or intensity.

Additionally, since drip irrigation systems required smaller quantities of water than the traditional hand irrigation systems, it allowed the existing wells in the area to replenish and maintain consistent water levels. To further improve the water accessibility and water resource management in the villages, two new wells were constructed and old traditional wells were rehabilitated with solid materials.

Farmers were also trained in farming techniques to intensify agro-silvo production. Zai, half-moon and stone-line farming technique, which can be used on uncultivated land, was applied to restore degraded soils. As a result, 3,000 meters of millet stem chords were produced, which protected farmlands from sand cover and violent winds. This layer of protection also helped to maintain agricultural fields to preserve long-term soil health.



**Drip irrigation.**

*Photo: UNDP/Abdou Gaidama for UNDP-GEF CBA Niger*



**Gardening by women Tamalolo with drip irrigation.**

*Photo: UNDP/Abdou Gaidama for UNDP-GEF CBA Niger*

## **Project 2: Intensified Agro-Forestry Practices for Climate Change Adaptation**

The focus of the second CBA project was on developing sustainable agro-forestry practices to improve food production and reduce pressure on the affected ecosystem. The agricultural practices under this project were supplemented by the irrigation improvements from the first project.

Under this project, local farmers were taught to identify local plant varieties that adapted to the zone's climate conditions. They were also trained on agricultural methods that increased crop yields and prevented soil degradation, which allowed the drip irrigation systems to be more effective. Agro-forestry practices, such as mulching of timothy grass clumps (drought-resistant species noted for its ability to grow in poor sandy soils) on bare sandy spaces and the establishment of tree plantations and village nurseries, protected the ecosystem. Sustainable farming techniques (cutting, pruning and maintaining young shoots) reconstituted vegetation cover and protected cultures against violent winds. Additionally, as a part of the land resource management, the use of 'Albarka' (adobe) fireplaces was promoted to save on energy and wood, and reduce pressure on the ecosystem.

Farmers within the five villages identified 4,000 seedlings and produced 10,000 nursery plants as a result of the project. These achievements increased the ground cover and were used for market gardening. Thereby, the soil was protected from strong winds and prevented soil erosion. The increased tree cover also protected the villages and their crops from violent winds, and the trees provided cooking fuel and building materials for the community.

## COMMUNITY MOBILIZATION AND SOCIO-ECONOMIC IMPACTS

Both projects formed committees and used a participatory approach to implement the projects. The committees included community members, local authorities, and NGO members—all of whom acted as facilitators.

### Project 1: Adapting to Climate Change in the Community

Women in Tamalolo make up the majority of the population and who are the most vulnerable to climate change were trained in drip irrigation techniques and equipment installation and maintenance. These systems are relatively easy to operate and move, which allowed women to operate the equipment independently on homestead gardens and generate income.

### Project 2: Intensified Agro-Forestry Practices for Climate Change Adaptation

The market gardening introduced by the project improved food security and diversified income-generating opportunities for women. This improved their adaptive capacity by minimizing impact from the loss of a single source of income, improving business skills, and providing a way to purchase food when crop stores are low. The ability to earn money also increases the autonomy of women.



Training session in Tamalolo on drip irrigation techniques.

*Photo: UNDP/Abdou Gaidama for UNDP-GEF CBANiger*

Together, these two projects improved food security and livelihoods while helping community members to better understand climate change and its associated impacts. The communities were able to develop adaptation strategies to reduce their risk to climate variability and improve their overall resiliency to climate change impacts. In combination with the valuable group organization skills, the communities learned from implementing the projects, which left them with more of an ability to achieve sustainable development.

As a means of documenting, monitoring and assessing the adaptation measures and its results, the NGOs and community members were filmed throughout the project cycle. The films showed activities that yielded positive results and identified activities and measured that needed modification. The DVD films produced, which included interviews with community members in Tamalolo, were aired in other villages and future sites for other CBA projects (Dakoro region) as a way to begin climate change and adaptation awareness and to mobilize the community. The film was an important knowledge-sharing tool that opened up dialogues and built synergies amongst community members and NGOs in Tamalolo and Dakoro. By sharing experience and exchanging knowledge, the CBA NGO partners in Dakoro were able to incorporate winning strategies adopted in Tamalolo and avoid missteps.

## LOCAL VOICES

### Gadjere Ardo, community member

Interviews by: Abdou Gaidama, UNV assigned to CBA Niger

#### On Sustainability

When the project is over, what are the communities left with?

“Even before the end of the project, arrangements were put in place to enable us to ensure business continuity but also their longevity. For example, at the banks of animal feed manufactured by the CBA project, it was set up a management committee for each bank.

Members of management committees were elected by the village (community) General Assembly and trained in inventory management and community life to strengthen their capacities. At startup, the CBA project established an initial stock of animal feed (wheat bran) with input from communities. The contribution of the beneficiaries was mobilized and fixed in the social general meetings and used to pay the shipping and handling of purchased products. The sale price is a function of cost and is set by the various general meetings.

Thus, once the products (wheat bran) were sold, the Management Committees convened a village meeting to take stock of the situation and carry out the re-stocking. For rebuilding stocks, basic funds and further input from the community were used for the purchase of new stock and the operation continues as well.”

#### Are you empowered and do you want to train other communities to empower them?

“The CBA project is the first project to intervene in our area (community). Various awareness sessions, advisory support provided by the CBA teams, the achievement of certain infrastructures, which may have contributed to improve our daily life such as improving access to rehabilitation of water wells with traditional solid materials, we say that we are emancipated.

We are ready to help other communities that have not been affected by the CBA project by providing our craftsmen, trained divers for maintenance of cemented wells, knowledge on the agriculture technique, improved forage seed provided with the CBA project, to conduct awareness sessions on climate change.

We will also provide them with improved forage seed for them to do the cultivation of fodder to supplement the recurrent deficit of fodder.”

#### How are Inequities resolved?

“In the case of our community, before the advent of the CBA project when it comes to sharing (distribution) or making decisions about the community, the views of women are not taken into account and this is what makes that women are still marginalized.

But today with the intervention of the CBA project resulting in the implementation of certain activities, such as (VRA Exercise, forage), community meetings related to project activities that are held with women, the involvement of women in all project activities that the woman has become essential in decision-making at all levels in our community.”

#### On Socio-economic:

“The CBA project has significantly improved our social relations by lower inter and intra community conflicts over access to fodder, water points (wells, pond) by putting us together around a common goal (project), by making banks of animal feed in order to mitigate the lack of forage that can create tensions, initiating the growing of forage with improved forage seeds, rehabilitating traditional wells with solid materials and increasing access to drinking water for members of communities and their livestock. Our capital stock was saved, thanks to the banks of animal feed implemented by the CBA project at the lack of fodder has experienced the zone. Therefore, our local economy is saved.”



## UPSCALING AND REPLICATION

The National Steering Committees (NSC), who provided strategic guidance to the CBA projects, included several government officials (Ministry of Water and Environment, Ministry of Agriculture, Ministry of Planning) who advocated for CBA sustainable practices to be included in existing or new policies.

The Vulnerability Reduction Assessment (VRA), a UNDP methodology piloted by the project, were replicated in several African Adaptation Programme (AAP) and Least Developed Countries Fund (LDCF) projects, along with other adaptive solutions of the CBA projects.

CARE International integrated the CBA project tools and methods for gender mainstreaming into their project activities. CBA Niger and CBA Morocco, contributed to global partnership building with CARE, through knowledge and lessons exchanges, as well as proactive participation in CARE Adaptation Learning Programme's learning workshop on Gender & CBA (2011).

## PARTNERSHIPS

This project brought together key partners, including a consortium of NGOs (NGO Cellulele Recherche Action Concertee en Gestion des Ressources Naturelles (CRAC-GRN), NGO Yanahi) government (Niger's Ministry of Water and Environment, Ministry of Agriculture, Ministry of Planning; Government of Japan), UN agencies (UNDP, GEF SGP, UNV) and international organizations (CARE International).

## LESSONS LEARNED

1. **Gender mainstreaming is important for gender equality and community ownership.** Since the needs and interests of men and women are different, climate change and variability affect them in different ways. Therefore, needs should be addressed with equality so as not to compound the effects of climate change. Gender mainstreaming also brings out the natural talents and unique skills of people, especially of marginal groups, who are already active agents of change. For example, women who already have the responsibilities of being key household caretakers, producers and resource managers have the skills and experiences in finding and ensuring sustainable solutions. Given the opportunity, support and capacity in a gender-balanced manner, people change their strategies and existing practices to be able to adapt to climate change risks.

## EQUATOR INITIATIVE PRIZE AWARD-WINNING PROJECT

### CBA Morocco: Social inclusion and volunteerism for sustainability in addressing climate change

#### BACKGROUND AND CLIMATE CHANGE RISKS

The El Mouddaa is a traditional Berber community comprised of 350 people, located on the southern slopes of the High Atlas Mountains in Toubkal National Park. The village is very isolated and situated in a highly remote area at an altitude of 2000 metres. Its baseline climate is very specific to the Toubkal, which is the highest mountain in North Africa. The main sources of livelihood are small-scale farming, forestry and cattle breeding. In this regard, the community relies mostly on these natural resources for its source of livelihood.

Over the past 20 years, the community has observed and experienced climate changes that have adversely impacted their livelihoods. The increasing temperatures, more and more frequent droughts, changing snow and rainfall patterns, and unpredictable and violent storms have degraded the ecosystems the community relies on for its livelihood. As a result, the community's men are increasingly obliged to emigrate seasonally to find work, and this migration leaves women alone with more responsibilities. The changes are affecting local farmers as well; they are turning to cash crops and abandoning traditional subsistence crops. This has increased the community's dependency on the market for daily food.

As a result of climate change, the community suffers from devastating floods, which when they occur, cut all means of transportation to and from the community, which can leave the local people isolated for several weeks. The floods also impact critical village infrastructures, such as the traditional water canals community houses, roads and irrigation lines, exacerbate land degradation and erosion, and exhaust the community for weeks in repairing critical infrastructure.

The CBA project '**Land and Water protection, conservation farming and climate risk management to increase the resilience of the El Mouddaa high altitude mountain ecosystem and reinforcement of the adaptive capacities of the local community, in the face of increasingly erratic and violent rainstorms and more and more frequent droughts**' fostered sustainable land and water management, climate-resilient agricultural practices, and community early warning techniques. These help the local community to better deal with current and future climate challenges.

#### ADAPTATION MEASURES AND ENVIRONMENTAL BENEFITS

Under this project, the community set aside large sections of land around the village for conservation, reforestation and re-vegetation based on awareness-raising efforts and local consultations. The community outlawed grazing of herds in and around the village to protect and sustain native shrubs and grasses. This passive re-vegetation resulted in the regeneration of parcels of land, the reduction of erosion around the community and the reduction of flash flooding risks.

The community continued the land-rehabilitation process by reforesting eight hectares of degraded land (with 4,500 forest trees) around the village to further mitigate the risks from erosion and flooding. Furthermore, the community-tested pilot solutions: a combination of environmentally friendly low-technology water and sanitation solutions, including (1) the construction of a community wash station with a filtration pool implementing a phyto-remediation natural decontamination technique, which prevents hazardous chemicals from contaminating irrigation water and damaging soils and crop production; (2) the introduction of composting toilets; and (3) the collection of rain water for domestic use. These pilot activities have contributed to environmental protection, more sustainable natural resource management and preservation of ecosystem services.

Additionally, the community members strategically built rock dams in a large ravine crossing the village, thus reducing the flood-water flow and damages to village infrastructure. Permanent irrigation water flow was secured by placing the main traditional irrigation line underground, as this was often washed out. Traditional subsistence crops (cereals, vegetables) were re-introduced in greenhouses in order to strengthen food security and local health.

## COMMUNITY MOBILIZATION AND SOCIO-ECONOMIC IMPACTS

This project managed to include all members of the community in adaptation to climate change measures, in a context where inclusion remains one of the key field challenges. The local organization practiced inclusion and empowerment of the most vulnerable. It was led by younger members of the community and supported by community elders, who brought local wisdom and authority to the process.

Youth had a critical role in the project focusing on bridging all community groups, and in particular, reaching out to women, whom they actively mobilized and involved in the project. These inclusive practices were vital for adaptation to climate change as it allowed each participant an avenue to contribute their knowledge and skills to the project. Today, the El Mouddaa community members consider themselves as actors of change rather than victims. They successfully combined the adaptation measures and approaches learned from the project with deeply rooted village traditions, such as local volunteerism, for their sustainability.

The adaptation measures of this community-implemented project increased the well-being of the local community through the protection of critical village infrastructure and the strengthening of local food security. Future and ad hoc rehabilitation work, which historically has put pressure on the community, especially on women, as it took them away from paying jobs and care-taking obligations to the family, was reduced. Increased agricultural yields from the high altitude greenhouse farming led to income-generating options and improved food security.

## LOCAL VOICES

### Zahra Boussalem

Interviews done by: Naima Oumoussa, Ministry of Environment, Morocco

Her role: "I helped by irrigating plants, preparing food for workers, and transporting plants. I am basically open for all kinds of work. I am excited by this project."

Her view on impact of the CBA project: "Before, the sagiya was destroying fields and roads, and the ravine was destroying my own house. Once, my house, my door and my livestock were taken by the water flow. I am more secure. Thank you to everyone who helped with this project."

Her view on the community's, and the ecosystems' resilience: "The project preserved the village; we are all feeling more secure."



### Lhassan, 48 years old

Interviews done by: Naima Oumoussa, Ministry of Environment, Morocco

His role: "I am helping with labor and I am willing to help my community. After each inundation, we have lots of damages in the community; the project will help protect the land, that is why I am intending to help in all phases of the project."

His view on impact of the CBA project: "The project actually brought together people, both those living in Lmoudaa as well as those working occasionally outside. Everyone participated."

His view on the community's and the ecosystems' resilience: Thanks to the existing community spirit, we are convinced that we need to take advantage of this project to build on our solidarity.



**Said – 23 years old**

Interviews done by: Naima Oumoussa, Ministry of Environment, Morocco

His role: (In Labor) “I helped with tree planting, piping transportation, and irrigation construction. I also learned how to build gabions.”

His view on impact of the CBA project: “The project changed the role of women in the community; women became more proactive, they worked in shifts to prepare food for workers in the field. Women also helped with watering planted trees.

His view on the community’s, and the ecosystems’ resilience: There are positive results just in the few months of the project implementation. Gabions play a role in reducing floods negative impacts. They also played a role in securing sand.



**UPSCALING AND REPLICATION**

The project has generated valuable lessons and experiences on adaptation to climate change that are critical at local, national and global levels. At the national level, the project was replicated in a multi-site project funded by the Japanese Cooperation and the National Initiative for Human Development (3 communities). Best Practices from the CBA project were mainstreamed in Climate Change Matrix by the Ministry of Environment.

At the local level, climate change adaptation initiatives based from the CBA project were incorporated into the Communal Development Strategy, a strategy that is implemented in over 40 villages. Additionally, the CBA activities were mainstreamed into a wider adaptation and climate-risk management plans which cover the entire commune, involving approximately 40 communities. The project site was chosen to be the demonstration plots by the following: the National Meteorology Directorate (Government) for community early warning systems, providing a basis for future replication and upscaling; GIZ AGIRE for innovative community-based sustainable water and sanitation techniques, and by the United States Forestry Services to host a sub-national workshop on Climate-Resilient Rural Roads that reached out to local communities, local governments and extension services.

**PARTNERSHIPS**

This project has brought key partners together, including NGOs, government agencies, international agencies and UN agencies. This project was implemented by NGO AMSING through a participatory approach. Partners at the national and global levels include the Ministry of Environment of Morocco, National Meteorology, GIZ, and US Peace Corps.

## LESSONS LEARNED

- 1. Inclusivity is critical to long-term project success.** CBA projects must include all community members regardless of age, gender, physical and mental abilities in all stages of the project to ensure their sustainability. With the active participation of each member, all needs and interests will be addressed in the adaptation initiatives of the project. CBA projects are implemented by 'learning-by-doing' and involving all members is important for the project success and the long-term associated benefits.
- 2. Performing social, institutional and environmental analysis during the initial developmental stages of the project is vital to project success.** Undertaking these assessments early on will provide the project with a snapshot of the community's vulnerability and an assessment of the community's institutional capacities to respond to climate change. This information helps the project to understand the nature of the communities' vulnerability, including the most vulnerable groups, the reason why some groups are more vulnerable than other, and how long the community will be vulnerable. Communities that are armed with this knowledge are able to customize project activities to respond to the needs of the local community members and their ecosystem, as well as the needs of project partners.

## CBA Guatemala: Indigenous people adapt to climate change and embrace self-sufficiency

### BACKGROUND AND CLIMATE CHANGE RISKS

Western Guatemala consists of a biologically diverse, mountainous region, with large populations of indigenous people who experience high levels of poverty. The climate change effects on the local communities and their ecosystems are interrelated and have severely affected the livelihoods, biodiversity and socio-economic development of the region. These climate change impacts threaten natural ecosystems and curtail progress in the region towards meeting the Millennium Development Goals.

The Meteorological Institute of Guatemala (INSIVUMEH) reported the occurrence of intense tropical storm seasons, which have swept through the country from east to west. These erratic storms have caused severe damage, including famine and loss of human lives, real estate, crops and biodiversity.

The Guatemalan First National Communication (PCN) to the United Nations Framework Convention on Climate Change and INSIVUMEH also predicts an increase in temperature of about 3°C for West Guatemala at the end of the 21st Century. According to these sources, the increase in temperature will be coupled with a continuous increase in the intensity of hurricanes, with greater magnitude in the western and highland regions of Guatemala. The PCN estimates an increase in the variability of rainfall associated with El Niño-La Niña, while the IPCC AR4 estimates a decrease in mean annual precipitation for the Central American region. Temperature increases are expected to be concentrated mainly at the start of the rainy season, and precipitation is expected to decline significantly, which will lead to longer dry periods within the rainy season. The rising sea surface temperatures in the oceans that surround Guatemala are expected to increase the intensity of hurricanes affecting the region.

Two CBA projects in Guatemala were implemented to develop the capacity of communities to adapt to climate change by integrating climate risk management practices into community management of agro-ecosystems, forest ecosystems and watersheds. Both projects were located in the department of San Marcos, the third most densely populated region in Guatemala (based on the 2002 population census, with 794,951 inhabitants). The dense population in the area was causing severe contamination of the Rio Suchiate and Coatan tributaries, as well as pollution of water basin resources. The loss of water basin resources, which were contaminated, led to an alarming reduction in soil vegetation cover and rising evapotranspiration in the region. These impacts, which are associated with population pressures, increased erratic rains. As a result, delayed rainy seasons and intensified rainfall periods (when they occur) caused increased runoff and sediment that moved upstream in the basin. The volume of sediment moving upstream was increasing to unmanageable levels. The forest remnants and the soil conservation practices present in the middle of the basin were unable to absorb the large quantities of sediment.



**Ditches are established to water retention for crops and soil preservation.**

*Photo: UNDP/Grupo Los Reforestales for UNDP-GEF CBA Guatemala*

### Project 1: Tree Nursery for climate change adaptation

Project 1 was located in Lade Taltimiche, in the Comitancillo municipality of San Marcos. It focused on strengthening the resilience of the Taltimiche village and ecosystems by enhancing agricultural, forestation and water activities that were initiated in 2008 (pre-CBA project), after Storm Stan destroyed most of the land in the region. The Association of Integral Development Projects of Comitancillo (APRODIC), an NGO partner, implemented this first CBA project in Guatemala, with 40 community members, of whom 68 percent are women and 32 percent are men.

### Project 2: Building our future through improved tree nursery and galleys

Project 2 was located in Piedra del Fuego, in the Comitancillo municipality of San Marcos. The municipality's population consisted of an indigenous tribe, Mayan Mam, and had 32 community members, of whom 69 percent were women and 31 percent were men. The NGO Grupo Mixto Los Reforestales implemented the project.

Both project areas were located in the 'No.5, Según SESAN1' zone and have suffered damages from Storm Stan and other torrential storms. The communities were enduring continuous adverse impacts of climate change, such as soil erosion and high temperatures, which led to deficient agricultural production. Since these areas depended on locally grown produce as their primary food source (for up to 70 or 80 percent of their sustenance), climate change posed a threat to their livelihoods and existence.

The project applied almanario, a methodological tool that used a participatory approach to project development, management, implementation, execution and monitoring. The partner NGO and the CBA team also supported project management by providing technical advice and oversight.

## ADAPTATION MEASURES AND ENVIRONMENTAL BENEFITS

Due to climate change impacts, the Taltimiche village had experienced severe deforestation, soil erosion, landslides/mudslide, loss of wild animal species and native potatoes (golden potato), and loss of trees (firewood). The sustainable agro-forestry practices introduced by the CBA project resulted in positive impacts on reforestation and soil preservation (terraces, ditches, hedgerows) efforts. The project participants planted 35,000 nursery native trees (pines, cypress and alnus) on four hectares of degraded community areas. The soil quality on these four hectares improved as result of the tree planting, and the soil quality led to better crop production. They also planted climate-resilient native seeds and organic potatoes and beans on two hectares, which led to increased agricultural production on the land. Additionally, 40 compost cabins were built to support the organic farms, using native organic material. The native material replaced traditional materials in an effort to adapt in the face of climate change. The communities intend to continue building soil conservation structures on two more hectares.

The Mayan Mam, residents of Piedra del Fuego, were faced with deforestation, water scarcity and heavy soil erosion brought about by climate change. As a response measure, the CBA project introduced the community members to soil conservation, reforestation and water-saving techniques. These measures made a difference in the communities: 24 acres of soil preserved with living or dead barriers and organic farming, 2,000 young alder and cypress trees reforested to decrease mudslides, and contour ditches to increase water absorption.



**Men and women remove plants that harm trees in the forest nursery.**

*Photo: UNDP/APRODIC for UNDP-GEF CBA Guatemala*

## COMMUNITY MOBILIZATION AND SOCIO-ECONOMIC IMPACT

The CBA project sites were located in areas where the indigenous population lived in extreme poverty, i.e. on less than \$1 a day (representing 38 percent of the total population). It was also the main operation for the PEC in Guatemala, and is rich trans-boundary rivers, watersheds, ecosystems and endemic species that are of global importance. In this region, the meager existence that community members faced did not provide community members with the ability to feed or educate themselves or to take care of their basic health needs. As a result, the community members' ability to adapt to circumstances caused by extreme weather events was also compromised.



**Community members monitor the presence of pests and diseases.**

*Photo: UNDP/Grupo Los Reforestales for UNDP-GEF CBA Guatemala*

In rural areas of Guatemala such as the project areas, communities often lack formal education and have little knowledge about climate change. As a result, the populations in these areas tend to be underdeveloped and lack of control over resources. The lack of knowledge and control are probably the biggest challenges the community members were facing, and led to continuous problems with crops (pest and disease), water scarcity, poor soil quality and mudslides. Under these circumstances, the communities were unable to meet their nutritional needs and their livelihoods were negatively affected.



**After completing the tree planting activities in the nurseries, community members monitor the presence of pests and diseases in the tree nurseries.**

*Photo: UNDP/Grupo Los Reforestales for UNDP-GEF CBA Guatemala*

The projects' capacity-building workshops and knowledge-raising sessions empowered the community members by building self-sufficiency. Community members learned and understood the true concept of community management through training sessions in administration and finance, community organization, gender equity, domestic violence, agro-forestry, biodiversity, vulnerability, climate change risks and threats and adapting to climate change. Throughout the implementation of the project, the community members were continually encouraged to solve their problems on food security by executing the adaptive practices introduced by the project or by 'learning-by-doing'. Technical and motivational guidance were always available from the CBA staff as well as from the partner CBOs.

In the middle of the project, community residents began to have a sense of self-sufficiency, and have manifested a desire to continue with other projects of similar magnitudes based on the principle of self-management and self-motivation. After the project, the community members believed that even though environmental and weather conditions continually change, the communities can adapt to reduce the adverse impacts of climate change.

Participants kept daily records of weather conditions, including the position of the sun, identification and analysis of implemented adaptive practices, which were used for comparison with other members' records and as reference for future work.

The community members directly benefitted from the implementation of the CBA project's activities. Families experienced improved nutrition due to the increased yields and quality of crops from organic agriculture and soil conservation techniques. Before the project, many families were without food. Today, they have their own basic crops like corn and beans. Additionally, with the increased agricultural production, they have seeds for the future.

### UPSCALING AND REPLICATION

Replication of soil preservation techniques started when neighboring communities observed the increase in the communities' agricultural production. Additionally, volunteers were mobilized due to the positive impacts of the project. As part of the environment and social responsibility programme for students, elementary school students in Aldea Taltimiche worked in the project's nursery tree.

At the local level, the Southwest Network for CC was established, which was linked to the National Bureau of CC who is responsible for climate change policy preparation. The mainstreaming of CBA best practices into a new project from the Adaptation Fund (AF) was proposed, which was recently approved, and was an outcome from synergies between GEF SGP Guatemala, CBA Project, UNDP CO and the Ministry of Environment and Natural Resources (MARN).

### PARTNERSHIPS

The CBA project in Guatemala partnered with IUCN on initiatives to combat the challenges along the basin's three points (upper, medium and low). Guatemala was recurrently affected by a variety of phenomena that threatened the country: (1) geographic location in Central America – Guatemala is impacted by hydro-meteorological events, such as hurricanes, heavy rains, storms and their influence on floods, frosts, droughts and landslides; (2) influence of three tectonic plates – Guatemala is hit with a large number of earthquakes that originate from three tectonic plates; (3) Interaction between the Cocos plate and the Caribbean plate. Guatemala is home to a volcanic belt that crosses the country from west to east and is composed of 37 volcanoes, 7 of which are active in this region: Atitlan, Cerro Quemado, Fuego, Pacaya, Santa Maria, Santiaguito and Tacaná.

The first step toward reducing Guatemala's vulnerability to climate change was to stabilize ecosystems at the basin level. The CBA projects in Guatemala adopted an integrated river basin-wide approach that aimed to increase the ecological resiliency of the ecosystems and to increase the general resiliency of the community to the effects of climate change. While the projects' primary focus is agriculture and water, the projects' approaches can be applied to a range of community livelihood issues.

### LESSONS LEARNED

- 1. Self-sufficiency is critical to sustain momentum post-CBA project.** The introduction of easily adopted project measures provided the community the ability to cope with short-term needs and a jumpstart that brought them to a certain level of self-sufficiency or adequately address long-term interests mid-way through the project. When communities become self-sufficient, they are taking responsibility for developing their own resilience (personal and land) to climate change. Self-sufficiency also empowers community members to reach out to neighboring communities to help address their neighbor's climate change challenges.

## CONCLUSION

The adaptation measures implemented in these CBA projects yielded positive results. The natural resource management techniques applied by the projects on dry lands, wetlands, and various mountain zones led to the restoration of lands, decrease in soil erosion, reduction of landslides in steep slopes, increase in irrigation while reducing the overall water consumption, and increasing biodiversity conservation. The ecosystems are now in a better position to withstand extreme meteorological events. Additionally, reforestation and innovative practices, such as the introduction of fuel-efficient stoves, have contributed to decreased fuel wood use and to the reduction of greenhouse gas emissions. Due to the increased crop production, the communities' food security and income-generating options increased. Lastly, the communities' restored productive lands have reduced migration to other lands, thereby, alleviating additional responsibilities to community members left behind while other seek better opportunities elsewhere and reducing conflict with other land tenants.

Along with the environmental solutions provided by the projects, the successes were achieved due to the project approaches that ensured gender equality, decentralization of power, community development and community ownership. The strategies and approaches in these projects emerged from the community stewardships of ecosystems and their reliance on natural resources for livelihoods, as well as cultural and social well-being. The social inclusion approaches of the projects ensured that all the community members, regardless of gender, age, physical and mental abilities, actively participated throughout the project cycle. Thus, each community member's problems and solutions were identified, empowering them to take charge of their own development.

The implicit centralization of power in small communities was removed by creating opportunities for marginal groups to be engaged in project activities, previously not allowed by social norms. Thereby, the access to services and resources for marginal groups within the communities was improved. Lastly, as gender roles differ by culture, the site-specific gender mainstreaming results of the projects have proven the importance of understanding and respecting various cultural norms in order to implement a project successfully. When activities are implemented in culturally-sensitive manner, communities are able to accept changes in traditional gender roles. In this regard, marginalized groups such as women, youth and the elderly, gained the respect of their peers and continued to be included in activities they were not allowed or capacitated to be involved in before, such as decision-making activities.

Empowering communities to take charge of their own development not only is a key to their own sustainability in the midst of climate change variations and its adverse impacts, but also to the sustainability of other communities. As communities gained skills and knowledge to adapt to climate change, they became active agents of change and shared their knowledge with other communities. The projects' best practices were replicated by neighboring communities either through their own in-kind and monetary contributions, and/or the co-financing contributions of donors with whom they partnered. The projects' demonstration plots also encouraged government policy makers to integrate climate change adaptation best practices into policy/ies and other donors to replicate the best practices in other regions within the respective country/ies and/or other countries within their respective continents.

Lastly, the collaboration and diversified expertise of all partners made these successes come true. The communities were the main implementation partners on the ground. They committed their time, labor, resources and knowledge and were navigated by the strategic guidance of the national steering/coordinating committees, the grassroots expertise of GEF SGP National Coordinators and UNDP Project Coordinators, the community mobilization skills of the UN volunteers, the overall management of NGOs/CBOs and the engagement of policy makers. At the global level, UNDP provided the over-arching programme oversight, including technical advice, while reporting back to funding partners on project progress and fund utilization.

## SUMMARY ON LESSONS: 11 KEY GENERAL LESSONS FOR CBA PROJECTS

1. **Equitable investment and egalitarian approach:** The needs of all gender and in particular, those of women and girls must be integrated into the climate change adaptation investments and promote outcomes that equally benefit men, women, boys and girls. An egalitarian approach must be employed to ensure the removal of power centralization and economic and social inequalities that are often implicit at the community level.
2. **Analysis and measures need to be site-specific.** It is important that analysis and measures are site-specific because problems tend to be site-specific. Site-specific analysis and measures help to ensure that successful solutions to problems are found and that project results are provided with a bearing to macro and micro levels.
3. **Transformation begins with new perceptions and attitudes.** New behaviours and systems cannot take hold until there is a shift in perception and attitude—it is about moving beyond current practices and realizing new possibilities.
4. **Capacity building and knowledge-raising are critical in climate change adaptation.** Although people experience climate change, they do not always understand it. Most commonly, people associate climate change with ‘disasters’ or ‘weather’. In this regard, knowledge-raising and capacity-building in climate change adaptation initiatives need to be articulated in a systematic manner to allow efficient monitoring and assessment, capturing of lessons and replication of practices. Additionally, complementing knowledge-raising activities with enhanced monitoring of social dimensions, outreach and good governance ensures synergies between all levels (local, national and global).
5. **Inclusivity is critical to long-term project success.** CBA projects must include all community members regardless of age, gender, physical and mental abilities in all stages of the project to ensure their sustainability. With the active participation of each member, all needs and interests will be addressed in the adaptation initiatives of the project. CBA projects are implemented by ‘learning-by-doing’ and involving all members is important for the project success and the long-term benefits associated.
6. **Gender mainstreaming is important for gender equality and community ownership.** Since the needs and interests of men and women are different, climate change and variability affect them in different ways. Therefore, needs should be addressed with equality so as not to compound the effects of climate change. Gender mainstreaming also brings out the natural talents and unique skills of people, especially of marginal groups, who are already active agents of change. For example, women who already have the responsibilities of being key household caretakers, producers and resource managers have the skills and experiences in finding and ensuring sustainable solutions. Given the opportunity, support and capacity in a gender-balanced manner, people change their strategies and existing practices to be able to adapt to climate change risks.
7. **Performing social, institutional and environmental analysis during the initial developmental stages of the project is vital to project success.** Undertaking these assessments early on will provide the project with a snapshot of the community’s vulnerability and an assessment of the community’s institutional capacities to respond to climate change. This information helps the project to understand the nature of the communities’ vulnerability, including the most vulnerable groups, the reason why some groups are more vulnerable than other, and how long the community will be vulnerable. Communities that are armed with this knowledge are able to customize project activities to respond to the needs of the local community members and their ecosystem, as well as the needs of project partners
8. **Having a landscape approach and projects with complimentary objectives fosters teamwork amongst communities and speeds up results and replication of sustainable adaptive practices.** The rate of replication is especially important when the practices result in socio-economic benefits. Experience has shown that having projects with complementary objectives is more time efficient and effective, which benefits the NGO and other project staff and partners who oversee the projects.

9. **Planning for managing natural disasters will prevent project setbacks and failures.** Projects must take into consideration the impacts of natural disasters as an element in their development planning. In Jamaica, one of the greenhouses was partially damaged during a storm because the effects of natural disasters were not sufficiently addressed in the project plan. Additionally, this is a critical step as local communities understand and grasp 'climate change' when it is discussed in the context of disasters (floods, typhoons, cyclones, etc.). To this end, they are able to respond on how to manage climate change-induced impacts.
10. **Partnerships are vital for influencing policies, out-scaling to other sectors and replicating best practices.** Alliances with government agencies, civil society organizations, academic and research institutions, and donors allow the projects to achieve its goals and are beneficial to both parties. When communities make the right linkages, they are able to see the connection between underlying environmental problems that are at the root of their project measures. They are also able to adapt to the environmental problem by adopting alternative measures (i.e. change in farming activities, lifestyle, etc.) while finding and maintaining alternate/sustainable livelihoods. These partnerships allow for influencing policies, linking best practices into other initiatives (disaster risk reduction initiatives and other adaptation initiatives), as well as integrating best practices to other sectors (educational sector). Additionally, global partnerships contribute to mainstreaming community-based approaches and raising awareness globally on the critical roles communities play in climate change adaptation and sustainable development.
11. **Self-sufficiency is critical to sustain momentum post-CBA project.** The introduction of easily adopted project measures provided the community the ability to cope with short-term needs and a jumpstart that brought them to a certain level of self-sufficiency or adequately address long-term interests mid-way through the project. When communities become self-sufficient, they are taking responsibility for developing their own resilience (personal and land) to climate change. Self-sufficiency also empowers community members to reach out to neighboring communities to help address their neighbor's climate change challenges.

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