

UNDP-GEF Community-Based Adaptation

Association AMSING

Douar El Mouddaa, Rural Commune Toubkal

Morocco

PROPOSAL SUMMARY

Project Title	Land & Water protection, conservation farming and climate risk management to increase the resilience of the El Mouddaa High Altitude mountain ecosystem and reinforce the adaptive capacities of the local community, in the face of increasingly erratic and violent rainstorms and more and more frequent droughts
Project Site	Douar Elmouddaa Commune Toubkal Kaidet Askaoune Taroudant Province
Proponent	Association Amsing Development, Association Amsing Agriculture
Authorized Representatives	Said Zirri: President, Association Amsing (Agriculture) Tel: +212-6-74-94-72-22
Cooperating Organizations	United States Peace Corps - Morocco Taroudant Provincial Direction of Water and Forests High Atlas Regional Direction of Water and Forest / Toubkal National Park Ouarzazate Regional Office for Agriculture Development German Technical Cooperation (GIZ) National Department of Meteorology (<i>Secretary of State for Water and Environment, at the Ministry of Energy, Mines, Water and Environment</i>) Agency of the Watershed Souss Massa Draa Rural Commune Toubkal Provincial Board of Taroudant UNDP-GEF CBA programme
Project Dates	July 2011- Dec 2012
Total Project Cost	2 267 370 MAD / 285 562 USD (exchange rate June 2011: 1 USD = 7.94 MAD)
Amount Requested from CBA	271 620 MAD / 34 209 USD
Co-funding	Community contribution (in kind): 302 300 MAD / 38 073 USD Ouarzazate Regional Office for Agriculture Development (in cash) 519 800 MAD / 65 465 USD and (in kind) 4 500 MAD / 566 USD Taroudant Provincial Direction of Water and Forests (in kind) : 5 600 MAD / 705 USD National Department of Meteorology (in kind) : 462 000 MAD / 58 186 USD Toubkal National Park (in kind) : 4 500 MAD / 566 USD Rural Commune Toubkal (in cash) : 51 000 MAD / 6 423 USD and (in kind) 8 000 MAD / 1 007 USD Peace Corps (in cash) 25 550 MAD / 3 217 USD and (in kind) 102 500 MAD / 12 909 USD GIZ (in cash) : 150 000 MAD / 18 891 USD Agency of the Watershed Souss Massa Draa (in cash) : 260 000 MAD / 32 745 USD Taroudant Provincial Board (TBC) : (in cash) 100 000 MAD / 12 594

	USD
Project Objective	Reinforce the resilience of the local ecosystem and strengthen the capacity of local community members to adapt to increasingly erratic and extreme weather, specifically floods, through a combination of adaptation solutions, including: biological & mechanical corrections aiming at ecosystem and infrastructure protection; resilient farming techniques aimed at strengthening livelihood & food security; experimenting a valley-wide community-based early warning system.
Brief Project Description	<p>El Moudaa is a traditional berber community of 350 people, located on the southern slopes of the High Atlas Mountains in Toubkal National Park. The village is very isolated, and situated at an altitude of 2000 m. The community relies mostly on natural resources for its livelihoods: small-scale farming, forestry and cattle-breeding.</p> <p>The baseline climate is very specific to the Toubkal (highest mountain in North Africa), with a combination of Mediterranean and steppic climate, with large weather fluctuation by seasons, hot and dry summers, and cold and humid winters.</p> <p>Climate change has been observed and experienced by the community, with increasing temperatures and more and more frequent drought, and changing snow and rainfall patterns, with more and more unpredictable and violent storms. In the face of these changes the community's men have increasingly been obliged to emigrate seasonally to find work, leaving women alone with increasing responsibilities. Local farmers have turned to cash crops which has lead to a situation where the village is dependent on the market for daily food, making the community highly vulnerable to the devastating floods that regularly isolate the village for several weeks, cutting all means of transportation. Floods also impact critical community infrastructures such as the traditional water canals, and contributes to increasing land degradation and erosion.</p> <p>The project will support rehabilitation of land and erosion control to increase the resilience of the local ecosystem. It will also protect the traditional water canals by burying them under the ground for enhanced resilience and sustainability. It will support improved farming techniques through piloting drip irrigation, greenhouse farming, to contribute to food security. The project will be the basis for experimenting a "valley-wide" community-based early warning system, involving improved observation and anticipation and risk management practices.</p> <p>The project will pilot a number of innovations and technologies (turf seed matt, greenhouse, drip irrigation, flood observation system), easy to own and maintain by the community, whose capacities will be reinforced every step of the way.</p> <p>The El Mouddaa project gathers a number of critical partners, which bring their experience and specific expertise to the project : the local association is led by local youth, bringing energy, new ideas, and a powerful leadership for inclusion of all groups; it is supported by US Peace Corps Volunteer ensuring on-going capacity building. Partners include : National Government Institutions (Agriculture, Water & Forest, Meteorology); Regional Agency of the Watershed (Souss Massa Draa); local Government (Province and Commune); the GIZ and the UNDP-GEF CBA programme.</p>

1.0 RATIONALE

1.1 Community/Ecosystem Context

Douar Elmouddaa is a subsistence farming community located on the southern slopes of the High Atlas Mountains in Toubkal National Park, Morocco. The village (one of the 45 “douars,” or villages, of the Rural Commune of Toubkal) is located in the Tifnout valley, roughly 20 kilometres south-east of Mt. Toubkal, and is accessed via 30 kilometres of unpaved road. Isolation and limited access to health and education contribute to the high vulnerability of the community in the face of climate change.

The High Atlas Mountains serve as a barrier between the northern Mediterranean climates and southern desert climates of the Sahara, with Douar Elmouddaa experiencing a unique ecosystem that at times resembles both alpine forest and high desert. Native vegetation includes juniper pine, various shrubs and herbaceous flowering plants (artemisia, adenocarpus), and cactus. There is no presence of large mammals due to hunting-driven extinction and little prey. The soil is sandy without humus to bare rock in the higher elevations. A natural spring occurs roughly 500 meters above the village.

Douar Elmouddaa is a traditional Berber community consisting of about 350 people living in 28 homes. Adult men and women make up 35-percent of the population (15 and 20-percent respectively) with children under 13 years of age comprising the remaining 65-percent. Community members rely almost solely upon the crops they grow including wheat, barley, corn, potatoes, onions, and seasonal fruit, which are either consumed directly or sold for income. Men are primarily responsible for physical labour including ploughing and sowing fields, irrigation, and transporting and processing crops. Many men also earn income through construction and occasional work in larger cities. **Women and children take on the majority of field work, including harvesting and maintenance, as well as caring for animals. They are also the primary care-taker of natural resources: fetching water, collecting wood...**

Douar Elmouddaa has undergone little change, structurally and socially, since the first families settled there nearly 2000 years ago. Families are organized by a traditional patriarchal structure. The community is likewise led by the male heads of households who act as council over social issues. **Community solidarity is central to social and structural decisions, with all households working together as a larger village family.** Today, farmers employ the same techniques, use the same tools, and cultivate the same crops as their ancestors. Fields are terraced and watered via an open-air irrigation ditch that spans 3 kilometres across a steep mountainside. The source of water is a river shared by three communities on a rotational schedule. Historically, water rights have been a major source of conflict between villages, even leading to a few physical confrontations between families. Currently, all communities are allowed a certain period each day to use the river; meaning that even without the impacts of climate change, water is a limited resource.

As a farming community, Douar Elmouddaa is particularly vulnerable to climatic shifts and extreme weather. Seasons with unusually high amounts of heat or cold drastically change the crop yield, which in turn affects both food and economic security of community members. Community members have seen an increasingly poor quantity and quality of harvest primarily stemming from increasing erosion and land degradation issues, which are exacerbated by an inefficient and wash-out prone irrigation line, increased weather variability, insufficient knowledge of new adaptive agricultural technologies, and poor natural resource and water conservation techniques.

Increasingly poor harvests are beginning to dramatically alter the social and structural facets of Elmouddaa. Limited or poor quality harvests are **forcing families to seek alternative means of income-generation, often resulting in an exodus of young men** to the larger cities for work. Adult men are already in the minority in Douar Elmouddaa, and their social and work responsibilities are left either unoccupied or passed on to women and children. The consequences of this added burden on women and children are threatening the quality of life for the majority of the community. **Young women in particular are forced to take on responsibilities usually designated for young adult men including harvesting and structural repairs.** Young men's exodus brings income to the families but at the same time leaves the village with fewer and fewer human resources when, due to climate change, increasing maintenance is necessary to sustain the critical infrastructures: women have had to participate in the construction of water canals. In many cases this **results in girls and young women leaving school early in order to attend to family needs, further entrenching themselves in a cycle of dependence and poverty.**

The most immediate and visible impacts of climate change involve erosion and extreme weather events. Traditionally, seasonal and consistent rain provided sufficient vegetation and soil compaction to support baselines structures such as irrigation, access roads, and fields. Increasing periods of drought followed by short yet violent storms reduce the vegetation and soil quality, further increasing erosion issues. It is not uncommon to see a two hour storm completely destroy the irri-

gation, roads, and fields via flash flooding and corresponding wash-out. The short periods of violent storming often result in weeks of structural repair work, further degrading the quality and quantity of crops. Community members are also forced to strain local forest resources through clearing of vegetation and destruction of natural landscape for new roads, fields, or irrigation canals and the use of forest products for new construction in order to mitigate the damage done by these storms, further degrading the land.

1.2 Current (Baseline) Climate and Risks

Douar Elmouddaa is located on the southern slopes of the High Atlas Mountains, which serve as a barrier between a typical northern Mediterranean climate and the desert climate of the Sahara. The climate can also be considered steppe at times. This unique position, in combination with a high elevation (2000+ meters), results in **large weather fluctuations by season**. Summers are usually very hot and dry, while winters can be bitterly cold and humid, depending on the presence of drought.

“In the past, there were four seasons. There was spring, from April to June. Then summer, from July to September. Fall was from October to December, and winter from January to March. Now spring has disappeared, we cannot feel it anymore. There is just Winter and Summer”, an old woman says.

Summer generally lasts from April to October, and is typically dry and hot. Precipitation is uncommon or light during this period, though sporadic and violent storms are becoming increasingly common, as community observation confirms.

Winter is experienced from November to March, with the January through March typically producing the majority of seasonal precipitation. Winters are typically extremely cold, with freezing and snow common during the wetter months. The community has observed that snow-fall and snow cover has decreased in the recent past: local women explain that, in the past, winters were so cold and harsh that women couldn't go out to collect wood. They would stock wood and food in the fall, to go through the winter. Now, **snow is more erratic and rare and temperatures are considered milder, contributing to a global decrease in water resources** (snow normally provides water reserves for the spring) and to **brusque and devastating water flows** (temperature variability in the winter provokes sudden melting of snow).

Violent and sporadic storms are also becoming common during early winter months, when in the past rain was falling from September to March in regular quantities. However, during drought years little precipitation is experienced year round.

The most common and devastating climate risks facing Douar Elmouddaa are those related to **increasingly long periods of drought in combination with a higher occurrence and intensity of extreme weather events**, particularly flash flooding. Prolonged periods of drought leave the soil loose and without significant plant growth for soil retention. Unpredictable and violent storms during the late summer and winter seasons then wash out all the poorly compacted soil, resulting in great amounts of structural and agricultural damages.

Extended drought periods are considered cyclical by most locals, coming at five-year intervals and lasting for two years. The general assumption is that two years of drought will be followed by three years of moderate precipitation. There has been a noticeable disruption to this cycle, with drought periods extending beyond their two year averages while producing less rain and more heat than expected. Extreme weather events are increasingly unpredictable and more intense, which is only exacerbated by damage from intense drought years. Increasing temperatures and decreasing annual precipitation are also becoming a noticeable risks.

Impacts on the community

Prolonged drought periods, a higher intensity and occurrence of extreme weather events, higher average temperatures and decreased annual precipitation have several noticeable effects on the community of Douar Elmouddaa specifically:

- Increased drought periods and lower annual rainfall result in increasingly poor quality and quantity of harvest, which in turn reduces economic and food security for local farmers and families
- Increased pressure on forest resources during drought years for animal feed and basic necessities further contribute to periodic flash flooding, soil loss, erosion, and reduction of viable farmland.
- Increasingly erratic and extreme weather result in increased vulnerability of baseline structures supporting agricultural and livelihood systems. Irrigation canals “the source of life for the village,” are washed away, water basins are filled with stones, drinking water canals are broken, and fields and crops are destroyed
- Insufficient farm production forces migration of young men and boys to larger cities for work opportunities

- Erosion and extreme weather events destroy roads, fields, homes, and further isolate the community, entrenching its members in a cycle of poverty from reallocating surplus money, labor, and time for repairs

During prolonged periods of drought, community members are forced to adapt their traditional agricultural and social practices in many ways that further increase their vulnerabilities to future risks. Drought seasons result in poor farm production resulting in an absence of appropriate food quantities for all domestic and economic needs. Community members with livestock are often forced to find alternative feed, often local forest resources. The use of forest resources for feed, specifically native brush and trees decreases soil retention and increases erosion and soil loss. Those families unable to produce basic food needs often cull their animals, reducing economic potential of livestock. Some families are also forced to abandon fields during drought years because of an inability to properly water all their crops. Abandoned fields only decrease the ability of fields to produce crops in the future and leads to considerable aridity of surrounding land. Families who abandon fields tend to seek alternative means of income, resulting in the increasingly common exodus of young men for work outside.

Extreme weather events often result in dramatic structural damage to the community. The irrigation line, an exposed ditch following a steep mountainside, is routinely washed out or filled with rocks, stopping all attempts at water mobilization. Roads are also commonly washed out or flooded, resulting in an inability to move goods and people for the time required to repair them. A usual flash flooding event last roughly two hours and results in two weeks worth of physical labour to repair damages. Immediately following a flooding event, local males are required to spend upwards of a month rebuilding or repairing irrigation canals and roads. During repair times, no water reaches the fields, which further increases the aridity of the soil and reduces the quality of the crops. Basic social structures are also effected during this period, including domestic water needs for cleaning and laundry, requirements for children to stay home from school to take the place of labourers, and the transportation of food and goods to the region. It is not uncommon for the road wash-outs to prevent the delivery of foodstuffs and goods to the region for several weeks. During this period, families must either reduce the quantity of food consumed, or turn toward alternative food sources, such as cows and chickens which are primarily raised for dairy and eggs.

As a small community, the most common support network for families suffering from the impacts of climactic events is the community itself. During particularly threatening times, families often band together to help in repairs or with food. Unfortunately, most families are impacted equally, meaning that there are few resources available for charity. Families often work together to repair structural and agricultural damages, building on traditional solidarity and collective work practices or “tiwizi.”

Currently no long-term planning exists for the region in anticipation of climate-related risks. Most reactions to climate risks are immediate and based only on what needs to be done in the immediate future. This lack of planning often results in unsustainable practices such as digging out eroded hillsides for irrigation line, over-watering during periods of available irrigation, and over-planting during non-drought years resulting in unproductive soils during drought years.

1.3 Future Climate Risks

According to the CBA Country Programme Strategy for Morocco, climate change is expected to increase average temperatures and reduce rainfall throughout the Kingdom of Morocco. Higher average temperatures and increasingly erratic rainfall threaten to increase the effects of drought and water scarcity, especially in areas where people rely upon agriculture for both food and economic security. Increased erosion is also considered a possible impact of climate change.

The Initial (2001) and Second (2010) National Communications to the United Nations Framework Convention on Climate Change provides the following climate projections and impacts:

- Increase in annual mean temperature: +0,6°C, +1,8°C and +3,2°C (respectively by 2015, 2045 and 2075), with increasingly frequent and intense heat waves
- Trend towards a reduction of mean annual rainfalls : -6%, -13% and -19% (respectively by 2015, 2045 and 2075)
- Change and disturbance in seasonal rainfall pattern (shorter period of winter precipitation).
- More and more frequent and violent storms, especially North and West of the Atlas mountains
- Increase in frequency and intensity of droughts, especially in the South and the East of Morocco
- Reduction in period of snow cover (upward migration of the 0°C isotherm, and acceleration of snow melting)
- Decrease in cereal yields by 40% in dry years and 10% in normal years
- Increase in water needs for irrigated crops between 7 and 12%

Local observations tend to reinforce the science-based assessments of climate change, most notably in regards to precipitation issues. The local communities have recorded and experienced climate change for the past 15 years, and has recorded a number of climatic events: historical rainfalls leading to devastating floods (1995/96; 2002; 2009/10); long and intense periods of droughts (1997; 2003/04). Local experiences suggest the following:

- Community members have noticed a slight increase in temperatures as predicted, especially during the winter months (women say that winters are less cold than they used to be)
- Snow has strongly decreased over the past 10-15 years. Elmouddaa mountains used to be covered in snow for several months, and now it rarely snows, and when it does, it melts very fast.
- Decreased average precipitation has been noted, particularly during the winter in both regards to rain and snow as predicted. However, when there is rain, it is considered much heavier than historical averages. Intense and sudden rain storms have been increasingly frequent for the past 15 years.
- There used to be four seasons, with a predictable calendar. Now people say there are only two seasons: winter and summer.
- Drought cycles last longer and are more intense, often surpassing the two-year cycles historically noted
- Cereal yields, specifically corn and wheat have reduced in the past few years, but these reductions are seen as common during drought years

1.4 Impacts of future / expected climate change

Increasing temperatures and declining average rainfall pose several risks specific to communities in the High Atlas Mountains in several ways:

- Decreasing rainfall will result in increased agricultural production risks from drought, threatening both the food and economic securities of the populations.
- Lower river and runoff levels from decreased precipitation and higher levels of evaporation from increasing temperatures will also result in less water for irrigation, threatening baseline attempts at water mobilization.
- Decreasing rainfall will increase aridity in the surrounding mountainsides, reducing rain-dependent vegetation and increasing the potential for erosion.
- Increased water needs for irrigation will further strain local ability to raise sufficient crops for economic and food security as well as increase the potential for water rights conflicts to arise
- Climatic impacts on harvests may force more young men and families to leave the region, impacting both the work burden of those who stay home and threatening traditional social structures as well as leaving fields untended further contributing to soil degradation
- Increasingly erratic and extreme weather will result in increased vulnerability of baseline structures supporting agricultural and livelihood systems, thus augmenting pressure on decreasing workforce and further exhausting an increasingly vulnerable community

If climate change intensifies, many social, economic, and agriculture facets of the traditional society in DouarElmouddaa will change dramatically. The current lack of knowledge of new appropriate agricultural, natural resource, and water conservation technologies would likely result in practices that further damage the local ecosystem or increase the effects of climate change. Potential effects of intensified climate change include:

- If rainfall continues to decline and the length and intensity of drought increases thus limiting the annual available water, community members would be forced to either reduce the amount of crops planted, attempt unfamiliar (and potentially unsustainable) crops, or reduce their use of water for domestic needs, which could cause health issues.
- If the intensity and occurrence of extreme weather events occur, community members would be forced to spend a considerably longer amount of time repairing the resulting structural damage. This could result in a decrease in agricultural production as farmers are unable to attend to their field for longer periods of time. Some families may begin abandoning their fields if they feel their efforts are futile in the face of regular and destructive storms.
- Some families have already started replacing traditional crops with those they feel are more immediately economically productive. Often these cash crops, such as high nutrient depleting saffron, are unsustainable and damage the fields. Families who often change their crop types in favour of current high-valued products find they cannot sustain their production while maintaining baseline staple crops.
- Besides, since climate change is expected to increasingly impact communication means (roads, bridges), even cash crops could fail to generate enough income for the farmers (due to difficulty to transport products to profitable market place).

- If more water is required to irrigate the same crops, water rights issues may arise again, leading to conflict between communities. The current practice of water sharing will not suffice if there is less water available altogether, or more water is required for the same crops. Water rights issues are already dangerously close to becoming a point of conflict between communities who all believe they have an equal right to the single water source.
- Families unable to produce sufficient staple crops may be forced to purchase these goods from outside sources, but have less and less income to do so, which would further entrench them in a cycle of poverty and would pose serious challenges to local food security.
- Community support structures are currently limited. If crop yields continue to decrease due to climate-driven effects, the small levels of support and solidarity may collapse, leaving a larger portion of the community desperately in need.
- The current response to erosion based wash-out is to simply dig into the eroded land more to reinforce structures such as the irrigation line and roads. This practice further exacerbates erosion issues by destroying what soil is still intact. This practice has left many areas completely barren of soil and increasingly prone to repeated wash-out. Digging away at the available soil could reach a point where soil retention is impossible in areas, again increasing the likelihood of structural damage.

1.5 Project Approach

Baseline threats to Global Environmental Benefits (biodiversity/ land degradation):

Anthropogenic Pressures:

- Excessive terracing (to create new farmland) destroys the natural landscape, contributes to increased erosion along slopes, and strains local natural water resources for irrigation uses.
- Hillsides are commonly used for grazing of natural vegetation, reducing biodiversity and straining the land
- Plantation of non-native crops, specifically high water consuming cash crops, reduces biodiversity, out-competes native vegetation, and severely degrades the soil in areas
- Previous wood collection and deforestation efforts dramatically reduced biodiversity in both native vegetation and mammals, as well as strained the land. Currently all communities near Toubkal National Park are not allowed to harvest forest resources under threat of financial penalty
- The creation of irrigation canals and re-routing of natural water systems has impacted natural river-dependent vegetation and strained the land in areas where canals are dug
- Domestic use of water, specifically use of the irrigation stream for laundry and cleaning, often results in an inundation of salts and chemicals into the water streams and eventually land. This has resulted in salinization and degradation of land

Baseline Climate and Environmental Pressures

- Naturally steep slopes and sandy soil increase the potential for erosion and land degradation when combined with less rainfall and erratic extreme weather events.

Additional Ecosystem Threats due to Climate Change:

- Increased intensity and duration of drought will further reduce native species and crop growth, contributing to decreased land quality and a higher erosion potential
- More frequent and higher intensity extreme weather events will continue to erode land, destroy crops, and degrade soil quality. The current practice of digging further into hillsides after wash-out will become unsustainable when soil is no longer available, further degrading already damaged soils and decreasing agricultural output
- With lower agricultural output, community members will be forced to rely more heavily on forest resources, straining both biodiversity and land quality

Project Response to Baseline Pressures:

With the support of partners (Water and Forest, Department of Agriculture), the project will respond to baseline pressures through the promotion and implementation of sustainable land and water management practices. Efficient and informed land and water management practices will ensure the mitigation of harmful practices and further decrease the community's vulnerability to the impacts of climate change.

- *Over-grazed and deforested landscape will be replanted (Cypress + Pine) and protected via a series of fences and land-management committee.*

Community and regional populations will replant 8,35 hectares of overgrazed and deforested land surrounding the region with Atlas cypress and high altitude Pine and foster regrowth through fenced protection of young plants and local and commune-wide enforced grazing and vegetation gathering regulations. A total of 560 trees will be planted, implementing

water & soil conservation techniques, in order to increase and sustain the efficiency of plantation as an erosion-control solution.

An additional 1ha will be planted around the Rural Commune headquarter, as a way to raise the awareness of the other communities of the region, and to advertise the project.

A local committee will oversee a community-agreed upon land management plan aimed at the promotion of repopulating degraded land while considering the needs of herders to feed their livestock.

Informed land management will promote the regeneration of overgrazed and deforested lands while maintaining respect for those dependent on local vegetation as feed for livestock. Following successful regrowth, land will be opened to herders, but grazing practices will be informed by new management policies.

- *A water management association is formed and trained:*

Community members, in support of the Department of Agriculture, formed a government-sanctioned water association responsible for overseeing all water use and management issues in the community as well as serving as the primary leadership behind all new technologies, projects, and training related to irrigation, domestic water use, and all water rights. The committee selected youthful leadership in order to ensure the sustainability of new practices and knowledge while providing project inclusion of local youth. Actually, the water management new association merged with the old association and are forming AMSING, which will be managing this project.

- *A domestic wash station will be constructed:*

Community members in partnership with US Peace Corps and the GIZ will construct an enclosed women's wash station with adjacent phytoremediation recharge pool in order to reduce the impacts of polluted irrigation water that damages agricultural land. Four covered wash basins will provide local women the opportunity to perform domestic chores such as laundry and dish washing without the threat of introducing dangerous chemicals into the irrigation stream. A water heating system will protect women from exposure to cold climate. Gray water will flow into a recharge pool that employs the use of vegetation for phytoremediation, of polluted water. After the water is cleaned using natural processes, the purified water will be re-released into the irrigation system, providing clean water for irrigation and eliminating water waste.

Local women and girls will be the primary parties responsible for upkeep and design of the wash station. The inclusion of women and girls will guarantee increased responsibility and ownership for typically under-represented population.

Project Response to Increasing Ecosystem Resilience to Climate Change:

With support from CBA and other partners, the project will increase the resilience of the local ecosystem by combating erosion and regenerating degraded lands through native vegetation plantation and the introduction of appropriate adaptive technologies.

- *A series of gabions and rock-dams will be constructed in drainage valleys:*

In partnership with the Agency of the Watershed (ABHSMD), the ORMVA and the Provincial Board, the introduction of gabions and rock dams inside drainage valleys will increase the resilience of the ecosystem in the face of increased inundations by both slowing the flow of rainwater and stopping large debris from washing away large portions of agricultural land. Gabions and rock dams will be constructed in the two identified ravines running through Douar Elmouddaa. Increasingly erratic and severe rainstorms result in flash flooding through this valley, with the water often carrying large rocks and boulders, which further impacts erosion and frequently destroys farm land, infrastructure, and forces community members to invest valuable time in repairs.

Sustainability of these constructions will be ensured through active and dense revegetation (using local plants, bushes and trees), which will maximise the fixation power of mechanical installations.

This adaptation solution will be implemented in a way to sustain and ensure increased efficiency of ravine protection, through strong involvement of community members, who will be concretely involved in implementation and trained by a professional contractor. Community workers will be hired and trained by a company (strong incentive) for the main portion of the activity (funded by partners), and will be responsible for implementing the final portion of ravine correction (community in-kind contribution). One asset that is specific to the area is the availability of rocks that will be used for the mechanical correction.

- *Drip irrigation will be installed in pre-designated agricultural collective land:*

In partnership with the ORMVA, ten hectares of drip irrigation will be installed in terraced fields, and farmers trained to the technology (new in the village) in order to improve water management in the face of increasing drought and decreasing

annual rainfall. The drip irrigation system will be attached to the current water delivery systems and provide an efficient water supply to fruit trees, vegetables, and other income-generating crops. This new system will guarantee farmers a consistent water supply for economically important crops during drought years and decreased rainfall while conserving enough water for staple crops. Farmers will not have to choose between income generation and staple foods for home and livestock.

- *Turf-reinforcement mats will be introduced in devitalized land:*

With potential partnership and support from ORMVA and INRA, a pilot turf-reinforcement mat will be tested and then installed on one hectare of eroded, steep hillside in order to re-establish vegetation and reduce erosion in highly degraded and susceptible land. The Peace Corps volunteer will research appropriate and sustainable technologies for the test installation. Following the results of the pilot site, this technology will be introduced in other areas within the village. The idea is to train as many people as possible on this tool and try to extend its use in the neighbouring villages of the valley.

Project Response to Decreasing Vulnerability to Impacts of Climate Change

With support from CBA and other partners, the project will decrease the community's vulnerability to the impacts of climate change through the installation of a permanent, fully enclosed irrigation line, the introduction of greenhouse agriculture, and the creation of an early warning system for extreme weather events.

- *Water-delivery systems will be strengthened via permanent enclosed irrigation:*

With the support of the Department of Agriculture, Commune of Toubkal, and UNDP CBA, 1,500 meters of piping will replace the existing canal water delivery system in order to ensure efficient, permanent, and wash-out proof irrigation to the community. The piping will be combined with several concrete pressure pools or "regards" that ease access to repairs and routine maintenance, as well as fix the piping into the hillside. The new irrigation will follow the same course as the current water canal.

The current canal is extremely susceptible to wash out caused by increasing occurrence of inundations and corresponding erosion. An enclosed, permanent structure will decrease the community's vulnerability to climate change by eliminating the potential for wash-out. The open system is also inefficient in the face of increasing temperatures, as evaporation of water is likely to increase, further decreasing the output from source to fields (currently, there is an estimated 70% water loss from the source to the fields). Enclosing the irrigation system will completely eliminate evaporation potential, and increase efficiency of water as well as resilience of local farming.

- *Greenhouse agricultural will be employed to ensure food security and technical training:*

Two medium size community greenhouses will be built in a central location (on a land belonging to the Association), housing various food stuffs such as potatoes, onions, tomatoes, and legumes as well as some experimental crops. The greenhouse will employ various new technologies including drip irrigation and passive-solar heating. Consistent and local vegetables will contribute to enhance food security for community members, especially following inundations which destroy infrastructure and routinely block access to weekly food markets. Enclosed farming will also decrease the impacts of drought years on community crops by providing weather-proof farming plots. Farmers will not be forced to decide between watering staple crops and income generating varieties during droughts and in the face of decreasing rainfall, furthering economic and food security.

Local women would be the primary caretakers of the greenhouse, providing ownership and training for one of the most vulnerable populations in the village. The greenhouse would dually serve as a training base for new technologies. Through adequate in-site training, local women will learn and cultivate new skills regarding adaptive technologies. The greenhouse will also be used to undertake some testing related to some adaptable crops that might be introduced in the village, and that will ensure food self sufficiency for the village.

- *An early storm warning system will be implemented with corresponding training:*

With the support of the Department of Meteorology (DMN), two weather stations (one automatic and one manual) will be installed in Toubkal National Park along with a program informing region members of weather alerts through the national meteorology centre. Department of Meteorology members will also train local volunteers on weather observations for local forecasting and extreme weather preparation. Community members in up to 45 villages in the Commune of Toubkal will be educated on severe weather affecting the region, through an inclusive awareness-raising programme, reaching out to men, women, youth, using culturally-appropriate communication canals.

- *Pilot testing of a community-based flood warning equipment*

Additionally to the DMN equipment, a pilot community flood warning installation will be tested (supported by CBA): a simple sensor-based innovative technology, invented by a Moroccan technician and supported by specialized State engineers, will be placed in a strategic location, by the main source of flooding. The sensors are connected with a siren that will alert the community when the amount of water reaches a certain level, that could endanger people / cattle or critical infrastructure. This equipment will complement the global early-warning strategy implemented in this project, and will be accompanied by technical and behavioural training, to enhance risk preparedness.. Once the system has proven successful, it will be promoted by the DMN whose representatives expressed previously interest in this innovation. The system could also be implemented in the neighbouring villages, in the future.

Project Approach to Community Knowledge and Understanding of Climate Change and Adaptation

In order to ensure sustainability and full understanding of both climate change and adaptation techniques and technologies, education, training, and capacity building will be incorporated in all steps and activities of the project from planning to evaluation. Specific efforts to increase community knowledge and understanding of climate change and adaptation include, but are not limited to:

- Commune-wide vulnerability and risk management workshop
- Greenhouse utilized as a training site for adaptive technologies and species
- On-site technical training and empowerment : erosion control (forestry, conservation tree planting, gabions and rock dams), turf reinforcement matt, conservation agriculture & food security (crop diversification, greenhouse farming, drip-irrigation), early warning system & climate risk management
- Ongoing community awareness discussions on climate change and risk preparation & management
- Established water management association
- Planning & Monitoring workshops and meetings, including VRA, discussing climate change, its impacts, and the efficiency of the solutions implemented
- Exchanges with other communities will be strengthened through visits to other project sites

Trainings and workshops will be implemented by partners and community members, with a routine emphasis on community members taking leadership. Technical training will take place on site, focusing on hands-on understanding of the technologies and theory. Community and association members will be expected to independently replicate lessons learned and disseminate information to the village and outlying communities.

Project Approach to Up-scaling, Replicating, and/or Impacting Local or National Policies or Practices

The project in Douar Elmouddaa is intended to act as a pilot project for the entire region. As such, specific emphasis on lessons learned, replication, and policy and practice informing will be included in all project phases. **Community and association members will be expected to serve as advisers and mentors for future projects in the region (community-to-community inspiration).** Local youth will take a major leadership role in the project, ensuring sustainability and potential replication.

Active mobilization of a diversity of partners is the project's strategy for upscaling from local to national levels. **The project will be a pilot nucleus for a larger approach that will encompass the entire Tifnout Valley, through the support and involvement of the Rural Commune of Toubkal and of the Toubkal National Park / Water and Forest Regional Directorate.** The pilot activities will be mainstreamed into a wider adaptation and climate risk management plan in the entire Commune / Valley, through the development and testing of a community-based early warning system.

The lessons learned from the project will be incorporated in the Communal Development Strategy, currently in preparation.

The support of critical government partners, such as the Water and Forest institution, the Agriculture Department and the Department of Meteorology (government) will strengthen the project's potential for upscaling in the entire High Atlas area, and at national level.

Specific measures aimed at up-scaling, replication, and local and national impacts include:

- Establishment of activity committees, creating local experts on specific facets on the project
- Monitoring and evaluation committees to ensure documentation of best practices and lessons learned (with support of a local photographer & IT specialist who will train the community members)
- Incorporation of project information and regular update (photo, reports, interviews) on the Rural Commune's website, thanks to the volunteer support of the commune's IT specialist

- Communication media will be produced in order to inform outside interested parties on the achievements, goals, and lessons learned of the project
- Greenhouse will serve as a training site and nursery for potential new technologies and vegetation species. Local women will take an active role in learning necessary skills and sharing information through the region
- Pilot two-species plantation of forest trees will inform future decisions on adaptive plantations
- **Training of community members on ravine correction and erosion control will be the basis for further projects** in the Valley : the community members will be able to train others, thus supporting **dissemination of the techniques and providing the entire valley with new skills & knowledge** (in a field where communities are likely to be more and more on their own in the future, the means available at the institutional level being insufficient in respect to the erosion challenge).
- **Community-based early warning and climate risk prevention and management** will be implemented within a “landscape” approach, encompassing the entire Tifnout Valley. This approach will contribute to the Development Approach led by the Toubkal National Park, which focuses on Valleys, rather than villages, and which incorporate natural, human and economical aspects (landscape approach).
- **It will also contribute to influence and inform the Communal Development Plan, where lessons learned from the project will be mainstreamed and upscaled through active participation of the Association in Communal consultations, and through active involvement of the Commune’s elected representatives in the pilot CBA project.**
- **The innovations implemented and tested in this project will generate valuable lessons for future projects in the High Atlas zone, and in other mountain areas : mountain conservation farming, greenhouse agriculture, turf seed matt for erosion control, pilot testing of a technical innovation for flood-warning, natural innovation for water depollution,**

Capacity and Awareness Constraints and What Will be Done to Address Them

The two most apparent barriers to capacity and awareness building in the community involve the relative remoteness of the village and education or language barriers. Little can be done to ease access to the community, but steps will be taken to make sure local labour and materials are used in project implementation. Local knowledge and skill will be used whenever possible, including the utilization of local skilled builders.

Education and language issues pose a unique challenge to the project. The majority of women and older men are illiterate and vastly undereducated. The primary language in the region (Tashelheit) is often not spoken by trainers and partner organizations. The emphasis on youth involvement will help mitigate some of these issues, as most young people, especially males, are educated and speak all necessary languages (Arabic and sometimes French). Youth will take an active role in facilitating discussions and explaining new information. Steps will be made to ensure the inclusion of all populations, and any barriers addressed openly and quickly.

Besides, the involvement of the Rural Commune will be critical to ensure that capacity constraints are addressed. The Communal elected representatives include a number of youth and women, which are working in close interaction with the communities, and will provide consistent support to ensure awareness-raising and inclusive outreach, in an appropriate way.

2.0 COMMUNITY OWNERSHIP

2.1 Project Formulation

Community and association began formulating the project several years ago as an attempt to continue previous successful rural development programs. Community members have long identified several aspects of the project as top priorities for the community, including the completion of the irrigation system and tree plantation. Over the past year, younger members of the community, with some facilitation from the Peace Corps volunteer, have begun speaking about climate change issues and how they could work toward adaptation.

In mid-August 2010, the first official community-wide meeting on climate change and the CBA project was conducted by local leaders and the Peace Corps volunteer. During this meeting, community members identified the top environmental concerns in the village and were introduced to the ideas of climate change. Following the meeting, a local plan was established to continue research and discussion on a climate change project. Several meetings have since been conducted regarding climate change and project formulation. On October 6, 2010, the first official meeting with potential partners was held in the local commune office. Members from the local association of Douar Elmouddaa, Water and Forest Department, Department of Agriculture, Commune of Toubkal, Peace Corps, and the Khalifa discussed the project and potential activities and roles. Following the meeting, community members began work toward establishing a water association, as suggested by partners.

On January 25, 2011, the initial Vulnerability Reduction Assessment was conducted for both local women and men (see 4.4.1). During this period, representatives from Toubkal National Park, the local commune, Water and Forest Department, CBA, Peace Corps, and community met to discuss the project, components, climate change, and potential roles.

Young adults have taken the primary leadership roles in project development. The newly formed water association is governed primarily by young men under 30 years of age. The strong participation of youth has ensured both sustainability and the inclusion of vulnerable members of the community. Special attention has also been made to include educated young women as facilitators for the female population, who often go underrepresented in the community. The Peace Corps volunteer's main responsibilities have involved actively supporting inclusive mobilization of the community, mentoring, facilitating meetings, acting as liaison between partners, advisory and technical roles, and proposal writing.

2.2 Project Implementation

Throughout its implementation, the project will **build on the existing solidarity and self-help practices** that are traditional to the community. These practices, that the community has always needed to survive in an unwelcoming environment, are still very strong today, but could erode if no support is brought to the community. They are based on **social duty and obligation**.

One of the emblematic practices is the TIWIZI (touiza) that applies to several aspects of local life : families helping each other for field work or house reparations; families contributing labor for communal work (fixing canals, for instance).

There is a deep and strong solidarity among women, who take over more and more roles and responsibilities within the community, which they cannot fill without supporting each other.

The male leadership of the local association will be in charge of the majority of project and community management, purchasing supplies, budgetary issues, accounting for funds, attending workshops, and most labor. Skilled technicians and labourers will transfer knowledge to younger or less experienced workers in order to ensure skill and knowledge transfer. Men will attend and help facilitate the majority of workshops.

Project activity committees will be established, creating local experts on new technologies or project components. Members of these committees will direct labor and learn directly from technicians. Committee members will relay information to the community and act as managers for future issues.

Specific efforts will be made to include youth and women, including the delegation of leadership positions for women and youths. Young adult men & women will take administrative and decision making roles in the association as well as

leadership in several project activity committees. In particular, a “gender” focal point will be elected in the association, in charge of ensuring mobilization of women.

Men will be specifically in charge of the activities involving drip-irrigation, erosion control, and water infrastructure. Women will participate in both their traditional roles managing food preparation for workers, but will also take leadership positions in some project activities, specifically the design and management of greenhouses and planting, conservation farming and washing station-related activities.. Women and young girls will be the primary caretakers of the greenhouses and will receive corresponding training on new technologies and practices related to greenhouse agriculture. Individual workshops will be held for women in order to adhere to cultural standards, while ensuring education and knowledge transfer to women. A specific gender approach is also supported for climate risk awareness and management.

The Peace Corps volunteer will assist and support the community on a daily basis during implementation. He will provide technical support (especially for greenhouse, seed matt), hands-on capacity-building on project activities. He will also assist and empower the association in project management (planning, organization, budget...), coordination of the activity committees, and liaison with partners. He will support on-going monitoring of project indicators, reporting, and will foster inclusive mobilization in the project.

2.3 Phase-Out Mechanism, Sustainability

Initial project design includes several tools and methods aimed at sustainability including project activity committees, technical trainings, ongoing workshops, and the focus on youth and women. Traditional local solidarity and social structures are also assets to sustainability.

The newly formed water and agriculture association is comprised and managed by youths, who work with the support and advice of older community members. Community youths are generally educated and dedicated to the growth and improvement of the village. Special emphasis has also been placed on the inclusion of youth in project activity committees, with several **young people (male and female) taking leadership roles** in projects involving new technologies (drip irrigation, greenhouse, wash station, and weather station. Projects not directly led by youth (piped irrigation, gabions, tree planting) will nevertheless involve younger populations in order to foster skill and knowledge transfer.

Project activity committees are established both as a means to **sound management and the creation of local experts** on specific new technologies and skills. They are composed of project participants and community volunteers, including youth and women. Leaders of project activity committees are expected to work directly with technicians where applicable, and report new information directly to local and regional community members. Local experts will ensure sustainability after the initial construction phase of the project is completed by establishing a **local knowledge base. Project activity committees are also involved in monitoring, evaluation, and reporting of all project activities, further increasing the continuous participation of community members, essential for future maintenance of the project realizations, and for further reinforcement of adaptation practices. Besides, they are critical for inclusion of all groups of the community, promotion of individual skills and shared responsibility in the project, all of which will contribute to efficiency and sustainability**

The inclusion and empowerment of women and girls in project activities will not only ensure the participation of one of the most vulnerable populations, but will also capitalize on the valuable knowledge and experience as well as the traditional social roles of women (the primary workers in the majority of household and agricultural work). Women and girls will continue to design and inform project activities, and will participate in workshops and trainings. This involvement will promote sustainability by educating and informing those populations most likely to routinely use new technologies, specifically the wash station, drip irrigation, and greenhouse. Skill transfer and training of local female experts will guarantee the mitigation of problems and repairs even when males are absent. Women will participate in project management and decision-making, by being fully responsible of the greenhouse and the washing station (project activity committee, implementation, training, monitoring), and by taking part in the project decision-making process.

Continued support and involvement of the Rural Commune will ensure that project-results inform regional policy and practices. The Commune will support new technologies and trainings both financially and in-kind. Informed regional policy will increase the likelihood of new technologies and skills being passed on to a broader population, and routinely support new methods through regional policy measures. The current project is intended to serve as a pilot for the entire region, with results and lessons learned informing the behaviors of all communities.

Support from national partners and meaningful participation of the community volunteers will promote a new relationship of trust and partnership between the community and outside stakeholders, favorable to sustainability, long-term empowerment and resilience, and favorable to future community projects and ongoing assistance from outside partners. Several of the partners are new to the region, and the relationships established in the project will continue after the implementation phase is complete. Community members will have contact with technicians and highly trained individuals who can assist in further training and technical assistance when needed.

Financially, many of the project **activities require high initial investment but low routine maintenance costs.** The community is dedicated to provide routine maintenance and repairs where necessary, and will be trained on seeking assistance from national organizations. Many partners will provide ongoing assistance for project activities and new technologies, specifically the weather station, where local populations are unable to provide support.

Capacity-building, technical training, and awareness workshops at both the community and regional level will ensure the transfer of knowledge and skills to local populations. Attendance and participation in these workshops will increase the ability of community members to sustain the project by fostering new knowledge and skills, as well as providing outside contacts with trained professionals.

Increased inclusion and recognition of all groups (especially youth and women) in local governance, the project seeks to achieve a general empowerment of the community, which in itself will increase the adaptive capacities and diminish the vulnerability to future climate change.

Contribution of the volunteers to the CBA Project												
Project Activities (to which persons plan to contribute on a voluntary basis)	Description of the voluntary contribution (capacities, knowledge, know-how, manual labor, materials, tools, etc.)	Total number of volunteers to be mobilized	Women	Men	Elderly persons (older than 60)	Youth (younger than 25)	People with disabilities	Local	National	International	Number of volunteer days anticipated	Monetary value of the voluntary contribution including labor and materials (enter as co-financing in the budget)
Piped Irrigation / Seguia	Labor: 2 technicians and 12 unskilled workers, digging trenches, installing pipe, building structures) Tools and Supplies: pick axes, shovels, small parts Support and food : 8 women Transport: truck, mules	22	8	14	2	4		27			22v * 60d = 1320 volunteers days	20*70dh*60= 84,000 MAD 2*150dh*60 = 18,000 MAD Total = 102 000 MAD
Building Wash Station	Labor: 1 technician, 5 unskilled workers, building structure, measuring, installing system, food preparation (4 women) Tools and Supplies: pick axes, shovels, measuring equipment, small parts, land Transportation: truck, mule	10	4	6				10			10 v *6 days = 60 volunteers days	150*60= 9,000MAD 5*70*60=21,000 MAD Total=30,000 MAD
Planting Trees	Labor: 26 workers, digging, bringing water, measuring, food preparation Tools and Supplies: shovels, pick axes, buckets, fertilizer, food, land Transport: truck, mule	26	14	5	2	5		26			26 v * 40 days = 1040 volunteer days	26*70*40= 72,800 MAD
Building Greenhouse	Labor, Tools and Supplies, Transportation Labor:16 workers (including 1 technician)	16	10	6							16 v * 10 d = 160 volunteers days	15*10*70= 10,500 MAD 1*150*10= 1500 MAD Total= 12,000 MAD
Installation of Drip-irrigation	Labor: trench digging, assistance in installation Tools and Supplies: shovels, pick axes Transportation: truck, mule	12	4	2	4						12v * 20d = 240 volunteers days	12*70*20= 16,800MAD

Building Gabions & Rock dams	Labor : digging, collecting rocks, installation Tools & supplies	16	4	12							16v *60d = 960 volunteers days	16*70*60= 67,200MAD
Total		102									3780 volunteers days	300,800 MAD

For reference: What are the mechanisms for volunteerism that already exist in the community before the CBA project (for example, traditional mechanisms for mutual assistance, associations, etc.)?

The traditional mechanism for local solidarity is called Tiwizi, which applies in all cases where assistance is needed beyond the immediate families effected by an increased workload. Community members, through traditional structures, assist each other in field work, structural reparations, communal labor, local festivities including wedding and funerals, and building and upkeep of the local mosque.

Men traditionally support each other through assistance with manual labor in the fields or when building houses in a mutually beneficial way. If a family requests assistance, available community members will work without request for compensation, assuming that the favor will be returned in kind. Women routinely offer support to male laborers through food preparation and assistance with transportation. Women and girls regularly work in teams during harvest or grass collection on a rotational basis.

The ultimate example of community volunteerism and Tiwizi is the reparation of the irrigation canal when it is destroyed by weather events. All families are expected to provide male laborers during this process. Men create an ad-hoc schedule for who will contribute labor per day. Those who do not work the first day are expected to work the following. Women create a schedule for meals, with each family supplying one meal per day. Children are even mobilized to provide small assistance in transporting tools or food.

Seasonal harvests are also coordinated as a community activity. Families support each other by providing labor during the cutting and transport of harvested goods. Harvested goods are collected in communal areas and the threshing or grinding of goods is done communally for several weeks. Again, men provide the physical labor during the threshing, while women and children provide meals. In recent years, community members have rented a threshing machine, with the cost being equally split among families.

For reference: Number of volunteers in the community already engaged in climate change adaptation activities before the CBA project.

Between 50 and 75 community members are currently engaged in climate change adaptation activities including reparation of structures damaged from extreme weather events, adaptation of infrastructure in face of changing climate, and new technologies or agricultural techniques.

For reference: What are the opportunities or obstacles that could facilitate or impede people from engaging in voluntary activities?

Awareness of the potential benefits, specifically those which reduce the burden of repairs and monetary loss due to extreme weather events, will ensure the participation and motivation of community members.

Community solidarity (Tiwizi) is already a strong facet of society and will ensure volunteerism through traditional structures. Community members are regularly involved in projects and activities that benefit the greater good. The jemmaa, or communal authority, will support the activities and encourage volunteerism.

The cultural division between men and women could be an obstacle to the mobilization of women. Specific project activities and roles will be established specifically for women in order to ensure their participation. They will be included in all aspects of project (implementation, leadership, decision-making, monitoring...).

3.0 PROPONENT DESCRIPTION

3.1 Organization's background and capacity

Two local associations currently operate in Douar Elmouddaa. Association Amsing was formed in the summer of 2010 with the mission to “fairly and openly govern the community of Douar Elmouddaa while promoting activities and projects that improve the lives of community members and support environmental health”. Association Amsing is a re-establishment of an active local association that has worked with outside partners for nearly 6 years. The association consists primarily of adult males, representing all of the families within the village. Members of the association include a president, vice-president, secretary, treasurer, and two assistants. The organization focuses primarily on social development issues and local, social concerns. Members meet whenever issues arise in the community or project development is needed.

The second association in Douar Elmouddaa was established in the winter of 2011 as a response to recommendations from partners in the current CBA project. The new association's primary focus is water and land management. Youth have taken the majority of leadership responsibilities in the new association, with no administrator over the age of 40 years. The extremely active and motivated association has taken the majority of responsibility for the CBA project, though works cohesively with Association Amsing. Membership is similar to Association Amsing, with a president, vice-president, secretary, treasurer, and assistants who represent all of the families in the village.

The existence of two, age-separated, associations in Douar Elmouddaa creates a **unique social dynamic**. Traditionally, only married, adult men were allowed to serve as officers and leaders in village associations. A youthful association is a relatively new concept for community members, in many ways challenging traditional power roles. Despite the change in tradition, **both associations work together and openly**.

The new association is considerably better educated than Association Amsing, and therefore takes the majority of proposal writing, administrative duties, and project development roles in the community. Members of Association Amsing take advisory roles in most project development, as well as community mobilization and liaison with local authorities, and are seen as a valuable resource for both historical and technical knowledge.

Previous forms of Association Amsing have completed several projects in the past, with the benefit of a United States Peace Corps volunteer as liaison. Previous projects include the creation of a water chateau in 2001 with collaboration from the High Commission of Water and Forests and Peace Corps. The water chateau tapped a natural spring located above the village and provided consistent water to all the homes. The association also worked with the High Commission of Water and Forests and Peace Corps to build a large water-storage basin. The water basin improved efficiency of water delivery systems and decreased water-use conflicts with other villages by providing storage during non-working hours. The latest major project of the local association was once again a collaboration with the High Commission of Water and Forests and Peace Corps to enclose 550 meters of the irrigation canal. This project increased the efficiency of water delivery and reduced vulnerability to wash out where applied. The CBA project builds on this previous successful experience, to replicate protection of vulnerable irrigation canals on a larger portion.

The Peace Corps volunteer who supported development of this project, lived in the community for two years, and worked with the community on capacity-building issues such as proper association management, goal setting, and project planning. With help from the volunteer, the community has established a community-resource guide outlining goals, objectives, problems, solutions, and resources. For the past year, the Peace Corps volunteer and community have worked almost exclusively on planning for the CBA project. The volunteer works primarily as a liaison between the community and partners, as well as an adviser on trainings and project development. A new Peace Corps Volunteer is taking over to ensure support to the association during project implementation, fostering local empowerment and capacity-building on all aspects of project management.

4.0 PROJECT DESCRIPTION

4.1 Detailed logframe

<p>Project Objective</p> <p><i>Reinforce the resilience of the local ecosystem and strengthen the capacity of local community members to adapt to increasingly erratic and extreme weather, specifically floods, through a combination of adaptation solutions, including: biological & mechanical ecosystem and infrastructure protection; resilient farming techniques aimed at strengthening livelihood & food security; experimenting a valley-wide community-based early warning system.</i></p>
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Outcome 1.0	Indicators	Monitoring mechanisms and sources of information
Protection and resilience of ecosystem & natural resources are strengthened	<p><i>Nb of hectares of degraded land replanted</i></p> <p><i>Nb of innovations implemented and successful to combat land degradation & flood control</i></p> <p><i>Nb of community members (male and female) trained in erosion control techniques</i></p> <p><i>Nb of youth and women participating in the project</i></p> <p><i>Nb of women trained & routinely using wash station</i></p> <p><i>Volume of water cleaned by filtration pool and re-released into irrigation stream</i></p>	<p>Regular site measurements</p> <p>Quarterly reports</p> <p>Training reports</p> <p>Interviews & photostories</p> <p>Final evaluation</p> <p>Workshop report</p>
<p>Output 1.1:</p> <p>Forest trees and native vegetation are planted along eroded and degraded lands, protected by fencing (Water and Forest contribution)</p>		
Activities under Output 1.1	Necessary means	
Plantation of 280 Atlas Cypress, and 280 Alep Pine (resilient altitude trees) on 8,35 ha of degraded land	<p>280 plants of Atlas Cypress + 280 plants of Alep Pine = 560 trees</p> <p>Transportation</p> <p>Labor (digging and planting)</p>	
Fencing of the planted area	<p>Fencing Material & Transportation</p> <p>Labor</p>	
<p>Output 1.2:</p> <p>Gabions and rock dams are constructed amid flood-prone ravines</p>		
Activities under Output 1.2	Necessary means	

	Correction of 2 ravines : <ul style="list-style-type: none"> - Ravine 1 = 900 m3 - Ravine 2 = 650 m3 	Rock / Material / Equipment Plants and trees for revegetation Technical measurements & support / Community Labor	
	Output 1.3: Turf reinforcement matt is tested in highly eroded hills for soil regeneration		
	Pilot testing of TRM on 1ha of devitalized land	Research & technical study (PCV) Equipment / Material Labor	
	Hands-on training and promotion of the technique and its potential for erosion control (during implementation) : practical 5 days training facilitated by Peace Corps Volunteer	Facilitator / Trainer (Peace Corps Volunteer + ORMVA)	
	Output 1.4 : Domestic pollution of natural waters is mitigated through construction of wash station and filtration pool <u>(BASELINE OUTPUT – implemented through co-funding from Peace Corps and the GIZ)</u>		
	Construction of a wash station	Research & technical study Material & Equipment Technical support Labor & tools	
	Construction of a filtration pool and equipment with filtration plants	Material & Equipment Technical support Labor & tools	
	Hands-on training and awareness raising with the women (in site)	Trainer / Facilitator	

Outcome 2.0	Indicators	Monitoring mechanisms and sources of information
Resilience of local farming is strengthened in the face of increasing risk of floods, increasing drought periods and decreasing overall rainfall, enhancing agricultural productivity and food security	<i>Efficiency of the project in protecting and improving management of water resources (reduction in water loss due to evaporation or destruction of water canals)</i> <i>Nb of innovations implemented and owned by the community: drip-irrigation, greenhouse</i> <i>Nb of community members trained on new agricultural practices or techniques</i> <i>Quality of life, including decrease of labor and emotional security, improved by reinforced infrastructure</i> <i>Nb of households benefiting from increased agricultural productivity and food security</i>	Regular site measurements Quarterly reports Training reports Interviews & photostories Final evaluation Workshop report
Output 2.1. Water delivery systems are reinforced in the face of increasing floods and increasing evaporation, through enclosed permanent irrigation		
Activities under Output 2.1	Necessary means	
Install 1,5 km of underground canalization, including 15 regards	Equipment : Piping / Cement / Metal / Glue Transportation Labor (community) / Tools / Animals Community technician	
Output 2.2. Efficiency of water management practices is increased through new technologies and technical training		
Activities under Output 2.2	Necessary means	
Implementation of a pilot drip-irrigation system (10 ha)	Material & Equipment Technical assistance (ORMVA) Labor	
Practical training on maintenance and usage of drip-irrigation (2 days : 1 day for women, 1 day for men)	ORMVA technician	
Output 2.3. Greenhouse agriculture is piloted with corresponding training		
Activities under Output 2.3	Necessary means	
Build the structure of 2 greenhouses of 56m*9m*2m	Metal & plastic / Seeds & plants Research, preparatory study, design & technical support (PCV) Labor	

<p>Training on resilient agriculture using greenhouse & conservation farming techniques : 10 days, for women</p> <ul style="list-style-type: none"> - Crop rotation / Seasonal cropping : vegetables, legumes & cereal - Greenhouse farming techniques - Irrigation & water management - Natural fertilization - Awareness raising on food conservation & food security - Collective greenhouse management 	Facilitator / Woman trainer (INRA + NGO Migration et Développement)
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Outcome 3.0	Indicators	Monitoring mechanisms and sources of information
Community's capacities to adapt, prepare, and face climate change impacts are increased through pilot design and implementation of a community early-warning system	<p><i>Population covered by climate change awareness programs</i></p> <p><i>Effectiveness of new technologies (weather station, flood-alert) and education in preparing community in face of potential climate risks</i></p> <p><i>Quality of life, including decrease of labor and increase of emotional security, improved by early-warning system</i></p> <p><i>Nb of communities participating in regional awareness programs</i></p>	<p>Quarterly reports</p> <p>Training reports</p> <p>Interviews & photostories</p> <p>Final evaluation</p> <p>Workshop report</p>
Output 3.1. Early storm warning system is implemented at the regional level and community members trained on storm preparation techniques		
Activities under Output 3.1	Necessary means	
Installation of 1 automatic weather station, to measure temperature, atmospheric pressure, humidity, rain, solar radiation. Equipped with computer & GSM (DMN)	<p>Equipment (including Computer & GSM)</p> <p>Technical installation (Direction de la Météorologie Nationale)</p>	
Installation of 1 manual weather station (observation station) (DMN)	Equipment & labor (DMN)	
Pilot testing of a simple flood warning system (CBA)	Installation of the equipment / Training	
Set up of a community communication and warning system, including creation of a committee (DMN)	Specialized support / organization & design of the scheme	
<p>Technical Training programme of a Community-based Early Warning Committee</p> <ul style="list-style-type: none"> - Technical training for using and maintaining the weather stations - Interpretive training for the communication and warning committee 	Trainer / Meeting room	
Output 3.2. Community and regional populations is aware of climate change and climate risks (understand climate change, interpret warning, adopt the adequate behavior...)		
Activities under Output 3.2	Necessary means	
Awareness raising programme with the local schools : Training of trainers / Workshop with all the teachers and staff of the Education Delegation : 3 meetings	Trainer / Meeting room	
Mobile awareness raising programme for women (6 days) – in several parts of the valley)	Specialized consultant / Facilitator	

	Workshop with the local associations	Meeting room (Commune) Facilitator
	Output 3.3. CBA knowledge sharing and cross-fertilization is strengthened between communities	
	Activities under Output 3.3	Necessary means
	Participation in national CBA workshop (training and knowledge sharing)	Transportation / Accommodation
	Exchange visit in the Agoundis valley <i>(The Agoundis community will have the same activity, so they can visit each other).</i>	Transportation of community members / Food / Accommodation

Outcome 4.0	Indicators	Monitoring mechanisms and sources of information
Lessons learned from the project are capitalized and promoted, to inform local, regional, and national policy on adaptation to climate change	<i>Nb of women and youth involved in project</i> <i>Nb of community members trained in new technologies/ practices</i> <i>Nb of stakeholders (NGO, local govt, teachers, other communities...) engaged by project training in climate change risk management and scenario planning</i>	Quarterly reports Interviews & photostories Final evaluation Workshop report
Output 4.1. Project results are monitored and evaluated, involving community members and all partners		
Activities under Output 4.1	Necessary means	
Monitoring of activities & project committees, lead by local experts (community members, coordinated by association)	Meeting hall, Camera, Facilitator (Peace Corps) Support of the Commune / Volunteer photographer and IT specialist	
5 meetings of a Project Steering committee, involving the Commune and the project partners	Meeting hall / Coordination	
Final participatory Evaluation of the project	Consultant / Meeting room	
Output 4.2. Lessons learned are documented, capitalized and disseminated		
Activities under Output 4.2	Necessary means	
Participatory Production of a communication media	Meeting hall / Facilitator (Peace Corps) Nature of Communication Project & Media to be defined following the meetings	
Regular updating of the Commune's WEBSITE with project reports & photos	Support of the Commune's volunteer photographer and IT specialist	
Organization of a final regional workshop to widely share the lessons learned	Meeting hall, computer, projector Printouts / Facilitators	

4.2 Timetable

		2011						2012											
		July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Outcome 1: Protection and resilience of ecosystem & natural resources are strengthened																			
Output 1.1	Forest Trees Planted																		
Output 1.2	Gabions and rock dams constructed																		
Output 1.3	TRM design, research, test implementation																		
Output 1.4	Construction of wash station and filtration pool																		
Outcome 2: Resilience of local farming is strengthened																			
Output 2.1	Install 1.5km of canalization																		
Output 2.2	Install 10ha drip-irrigation																		
Output 2.3	Construction of Greenhouse																		
Outcome 3: Community's capacities to adapt, prepare, and face climate change impacts are increased																			
Output 3.1	Installation of weather stations																		
	Training on early warning system + Community committee																		
	Testing of simple flood warning system (pilot technology)																		
Output 3.2	Awareness raising program local schools																		
	Mobile awareness program with women																		
	Workshop w/ local associations																		
Output 3.3	CBA workshop (Rabat)																		
	Visit Agoundis																		
Outcome 4: Project results and lessons learned inform local, regional, and national policy on adaptation to climate change																			
Output 4.1	Monitoring by project activity committees																		
	Meetings of steering Committee																		
	Participative final evaluation																		
Output 4.2	Creation of original media																		
	Update of Commune's website																		
	Final regional workshop																		

4.3 Risks and Barriers

Barriers:

- New technologies such as the early storm warning system, drip-irrigation, and greenhouse require a level of technical knowledge that is not available within the community. Specific measures in the project will support technical training and the establishment of local experts who can transfer knowledge throughout the community (Internal).
- Due to cultural norms and practices, women and men rarely work together and men routinely take leadership and decision-making roles. Women also rarely leave the village or attend meeting with men. A specific focus will be made to ensure the participation of women, specifically through the greenhouse and wash station. The creation of specific project components for women ensures their investment and participation, while complying with local customs (Internal).
- Community members tend to have a fatalistic world-view, with few individuals believing they have control over their future. This can create difficulties in long-term planning and understanding of potential climate change risks. Using culturally appropriate language, and by reflecting on the past, community members will gain confidence in their ability to impact their environment (Internal).
- Some of the project components involve shared land outside of the village, while some components may impact communal land and water use. Members from neighbouring villages may oppose certain project components or the use of communal land (specifically regarding tree planting in communal lands). Efforts will be made to include local government and community support and communication of regional benefits of project measures (Internal/ External).

Risks:

- Suboptimal performance of erosion control devices such as gabions and rock dams to slow rate of water, or blockage of gabions and rock dams. In order to manage this risk, community members will be trained on installation and maintenance of these components. Outside technicians will survey the planned area to ensure the success of the erosion control devices (Internal).
- Maintenance issues regarding drip irrigation. Irrigation lines may become blocked or face breakage. Mitigation of these potential issues will come through technical training on installation and upkeep of the new irrigation system (Internal/ External).
- Extreme weather events may delay or prevent the implementation and or construction of project components. In order to manage this risk, community members will implement project components, namely those most vulnerable to weather issues such as tree planting and irrigation construction, during seasons with the least variability (External).
- Poor attendance at workshops or trainings. This risk will be minimized by increased communication between community members, choosing dates and times agreed upon by all involved, convenient training locations, and local emphasis on participation and volunteerism.

4.4 Monitoring and Evaluation Plan

4.4.1 Initial Vulnerability Reduction Assessment (VRA) Analysis

Two VRA workshops were organized in a private house in the community : one for the men, one for the women.

- The **men's workshop** was held at 8pm, when all men are back from their occupations. Around 20 men, old and young, gather. Participation is excellent, the participants seem to be already very used to discuss among themselves. Facilitation is ensured by Mohammed Ayoubi (Toubkal National Park), supported by Naima Oumoussa (Peace Corps).

Men's seasonal calendar:

Seasons: It is hot from April to September (it hasn't changed)

Snow: used to happen between October and March, but now only in January

Main climatic events that people remember

1995/96 :Much rain / Floods. Damages

1997:Historical drought. Scarcity of water; livestock died; there was no vegetation and crops

2002:Floods

2003/04:Drought

2010:Several floods

The main climate change issue is floods, due to heavy and violent rain.

- The **women's workshop** was held in the morning, before noon, at the time that best suited women. Around 30 women (with a balanced participation of all age-group) gathered on the roof of a private house to participate in the meeting. Participation was very lively and enthusiastic. The workshop was facilitated by Naima Oumoussa (Peace Corps), with the support of Zohra, a young woman from a neighboring village, who is a literacy teacher and belongs to the local communal council (elected). Zohra ensured translation and facilitation in the local Tachelhit language.

Women's seasonal calendar:

Rain: Usually: from September to March / May, regular rainfalls

Now: January to June, torrential irregular rainfalls (for the past 7 years). There can even be rain in the summer, but it is sudden. More and more often, it rains for only 2 hours and there is a lot of damage.

Temperature: Summer is from June to August / used to be very hot, but now they feel the overall temperatures are milder

From September to March / used to be very cold, but seems less cold now (there used to be a severe disease linked with the extreme cold, and it disappeared).

Droughts: women remember the impacts of droughts in the past (there was no water in the canals).

Snow: In the past, winters were long and harsh. There was snow from December to May. People couldn't go out much, and they had to stock wood during the summer, but it was useful for the environment and provided water for household consumption and for irrigation.

For the past 13 years, almost no snow anymore. And when there is snow, it melts very fast (therefore water resources diminish).

Seasons:

An old woman shares her souvenirs of the seasons when she was young:

“There was spring, from April to June. Then summer, from July to September. Fall was from October to December, and winter from January to March. Now spring has disappeared, we can't feel it anymore. There is just Winter and Summer”

Main climate change issue: increasingly frequent, sudden, and heavy rains, generating severe and damaging floods.

Vulnerability Reduction Assessment Indicator (will be measured at mid-course and at the end of the project).

	Men	Women
Q1	1	1
Q2	1	1
Q3	2	1
Q4	3	2
<i>Total</i>	7	5
<i>Average noted on 5</i>	1,75	1,25
Average noted on 10	3,5	2,5
COMMUNITY AVERAGE (/10)	3	

HIGH VULNERABILITY, balanced by the high level of solidarity and the community's enthusiasm and confidence in the project.

Vulnerability Reduction Assessment Reporting Form // MEN					
Indicator	Question/Questions Used	Score	Reasons for Negative Responses	Reasons for Positive Responses	Solutions / Ideas from the community
1. Vulnerability of livelihood/welfare to existing climate change and/or climate variability.	What happens when there are heavy rains and floods? How do they impact your daily life / livelihood?	2/10	<ul style="list-style-type: none"> -Water infiltrates in the houses or even destroys the houses -Seguia (water canals for irrigation / “the source of life for the village”) are washed away, and we need to repair them -Serij (water basin) are filled with stones, generating a lot of maintenance for the community -Drinking water canalizations are broken -Roads and bridges are destroyed -Fields are flooded and crops destroyed -There is much water, but we cannot use it (too much water at the same time) ⇒ Impacts on agriculture ⇒ Impacts on communication means / isolation ⇒ Direct impact on households / water / houses ⇒ Increased workload for the community / destruction of local efforts 	<ul style="list-style-type: none"> -Floods bring sand and stones, that can be used for construction work in the community Existing adaptation practices / How have people been coping so far : -Rebuild and fix what has been destroyed, thanks to traditional solidarity practices (tiwizi) -Wait for God’s assistance 	<ul style="list-style-type: none"> -Build underground canals for irrigation water -Build a bridge for the irrigation canal to pass the valley where it is destroyed every time there is heavy rain -Arrange monitoring spots on the canals, where stones and sand brought by the floods would be gathered and from which they can be easily retrieved (to avoid them to block the canals) -Planting in the area around the village, to regenerate the local ecosystem and minimize the impacts of floods on the community
2. Vulnerability of livelihood/welfare to developing climate change risks.	What will happen if there are twice as many heavy rains and floods ? How will that impact your daily life / livelihood?	2/10	<ul style="list-style-type: none"> -If the seguia is destroyed repeatedly, people will be more and more discouraged and will leave the village -There could be more and more disputes and conflicts between the families. Some families will not contribute to fix destroyed infrastructures because the men will leave for work. Others will have to do 	<ul style="list-style-type: none"> -Women actively participate in most of the community work. They even help building / repairing infrastructures, when men are working outside of the village -Duty / obligation for every family to contribute and participate (Traditional solidarity helps the community survive) 	<ul style="list-style-type: none"> -Ravine correction / gabions -Regenerate forest ecosystem by planting -Reinforce fruit tree planting -Improve farming techniques to increase productivity and protect resources (drip irrigation, new water collection basin) -Underground water canals, less vulnerable to floods

			<p>their work and would resent those who don't.</p> <p>⇒ More and more work will be necessary to maintain the essential infrastructures</p> <p>⇒ But less and less workforce will be available</p> <p>⇒ Displacement / rural exodus</p> <p>⇒ More and more pressure on those who stay, especially elderly and women</p> <p>Erosion of local solidarity and social structures</p>		
3. Magnitude of barriers (institutional, policy, technological, financial, etc) barriers to adaptation.	What prevents you from implementing the solutions you propose ? what are the obstacles and assets?	4/10	<ul style="list-style-type: none"> -lack of funding and financial means -erosion of local solidarity -rural exodus: young men leave / lack of labor and workforce 		<ul style="list-style-type: none"> -Help and support from external organization / government -Materials and equipment -Plants -Training -Organize community labor
Assets available to community for adaptation (volunteers, skills, commitment, indigenous knowledge, community leadership, etc.)		<ul style="list-style-type: none"> -TIWIZI: community work, solidarity, self help -Strong motivation of the community -Involvement and essential role of women in the village 			
4. Ability and willingness of the community to continue to manage climate change risks	Do you think this project will help you face these problems ? Are you ready to mobilize for the project? What would be your contribution?	6/10		<ul style="list-style-type: none"> -We will provide labor for planting, digging, transportation -We will ensure protection of the surrounding ecosystem and the areas that will be replanted / we will ensure enforcement of the law -The project will regenerate the forest, which is essential to our life. Biodiversity will be restored, soils will be fixated and will help protect the village against the floods. -The forest's ecological and economical functions will be restored -The village's prosperity will increase 	<ul style="list-style-type: none"> -Additional activities should be done, such as a washing station to reduce the pollution of irrigation water -A greenhouse, so that we can produce our own vegetable -The road should be repaired and paved -A fridge to preserve apples
VRA Score		3.5/10			

Vulnerability Reduction Assessment Reporting Form // WOMEN					
<i>Indicator</i>	<i>Question/Questions Used</i>	<i>Score</i>	<i>Reasons for Negative Responses</i>	<i>Reasons for Positive Responses</i>	
1. Vulnerability of livelihood/welfare to existing climate change and/or climate variability.	What happens when there are heavy rains and floods? How do they impact your daily life / livelihood?	2/10	<p>-Rain is too brutal and destroys everything : Seguia (water canals) Bridges and roads → isolation / children cant go to school Houses are destroyed or threatened / water infiltrates in the old houses Fields and crops are washed away</p> <p>-Danger and fear to lose children and family -As women, we cannot collect water because, when canals are destroyed water is lost. For us, the most important is the water canals and the bridges</p>	-After a flood, we go out to collect everything that we can (crops, seeds, plants) that we use to feed the sheep	<p>-Plant trees in the mountains -Protect the forest ecosystem against overgrazing -Build underground canals</p>
2. Vulnerability of livelihood/welfare to developing climate change risks.	What will happen if there are twice as many heavy rains ? How will that impact your daily life / livelihood?	2/10	<p>-Danger will increase, we will live in fear -We fear that we will die, us and our families -Our houses will be destroyed -Our children will have more and more diseases, due to the cold and the rain, and there is no access to health -Our crops will be destroyed</p>		<p>-Replanting / regenerating the forest -Ravine correction / gabions -Repair the bridges -Underground water canal -Build a collective wash station, protected from the cold</p>
3. Magnitude of barriers (institutional, policy, technological, financial, etc) barriers to adaptation.	What prevents you from implementing the solutions you proposed ? what are the obstacles and assets?	2/10	<p>-Lack of financial means -Lack of knowledge and technical means -We feel that we cannot do much by ourselves. If we want to replant the forest, it is too big for us. Other villages are also concerned and they should be involved. -We cant prevent people from other villages from grazing and</p>		<p>-Educate children -Support our children to learn and study so they can find a job -Create a women's cooperative to develop local products and increase our income</p>

			cutting wood in the forest -We didn't know that cutting wood would create these problems, otherwise we wouldn't have done it. -We don't know who to talk to to ask for help -We don't have plants to plant -Replanting is a new problem. For us, vegetation was natural, we don't know how to plant		
	Assets available to community for adaptation (volunteers, skills, commitment, indigenous knowledge, community leadership, etc.)	-Our youth is involved -We have water -We have our sheep -TIWIZI: selfhelp, solidarity and volunteerism ("instead of hiring someone to work for me, I ask my neighbor to help me. And I will help her in return") -We have some skills : artisanat, agriculture			
4. Ability and willingness of the community to continue to manage climate change risks	Do you think that this project will help you gain capacities in the future ? are you ready to mobilize for the project? What will be your contribution ?	4/10	-Even with this project, our children will suffer from the harsh climate. They are cold at school, and teachers don't come to teach because it is too cold.	-Once the project is implemented we will feel more safe here -We can support and educate our children Our contribution will be: -We will reduce the pressure on the vegetation -We will protect the replanted forest against grazers and protect the new plants -We will help carry the plants -We will help as labor for construction (women have already helped build a water canal in the past) -We will prepare food for the workers	
VRA Score		2.5/10			

4.4.2 Project M&E Plan

The project activities will be monitored on a participatory and **on-going basis** by the local implementation team and activities committees, according to the logical framework indicators.

The following groups of indicators will be monitored: the Vulnerability Reduction Assessment, the Impact Assessment System, and Adaptation Indicators.

Measurement of the Vulnerability Reduction Assessment

	Approximate timing of VRA sessions	Who ran/ will run the VRA meeting	Who will be responsible for collecting VRA data
First	January 25, 2011	Peace Corps / Water and Forest – National Park / CBA	CBA / PC
Second/midterm	December 2011	Association / Water and Forest – National Park / Peace Corps	Association (with PC and National Park support)
Final	September 2012	Association / Water and Forest – National Park / Peace Corps	Association (with PC and National Park support)

Measurement of the Impact Assessment System Indicators (Global Environmental Benefit focal areas + livelihood and empowerment).

IAS Indicator to be measured	How it will be measured	When it will be measured	Target value to be achieved by project end	Who will measure it
Nb of ha of degraded land replanted, restored and protected	Measuring the number of ha replanted, restored, & protected by the project Photo / Photostory Activity reports	Quarterly monitoring + final evaluation	At least 50 ha of degraded land are restored sustainably	Association, with support of PC and partners + Consultant (final evaluation)
Nb of innovations implemented and successful to combat land degradation	Measuring the nb of ha protected thanks to innovations Measuring the degree of ownership of the innovations Nb of community members trained in new technologies (gender disaggregated data) and using them Photos/ Interviews Training reports /	Quarterly monitoring + final evaluation	6 innovations are implemented and mastered : -Flood control devices -Turf Reinforcement Matt -Greenhouse farming -Drip irrigation -Conservation farming techniques -Natural filtration pool & wash station -Pilot flood-	Association, with support of PC and partners + Consultant (final evaluation)

	Activity reports		surveillance technology	
Number of youth and women participating in the project (Capacity-building indicator)	Activity reports Life stories	After each activity + Quarterly + final evaluation	At least 30% of total participants are women, and 30% of total participants are youth	Association, with support of PC and partners + Consultant (final evaluation)
Number of households benefiting from increased livelihood	Final participatory evaluation / Workshop and individual interviews	Final evaluation	At least 20 households	Consultant (final evaluation)

Measurement of the Adaptation Indicators

Adaptation indicators	How it will be measured	When it will be measured	Target value to be achieved by project end	Who will measure
Efficiency of the project in protecting and improving management of water resources (reduction in water loss due to evaporation or destruction of water canals)	Measuring / estimated water loss in the canals Amount of water managed with conservation techniques Activity report	Quarterly reports + final evaluation	30% less water loss	Association, with support of PC and partners + Consultant (final evaluation)
Population within the project area covered by climate change awareness programmes	Activity reports / Project activities participation = meetings, trainings, concrete activities (gender disaggregated data)	After each activity + Quarterly reports + final evaluation	At least 150 people covered	Association, with support of PC and partners + Consultant (final evaluation)
Population benefiting from increased food security and agricultural productivity	Final evaluation Survey/interviews	Final evaluation	50% of households that have participated in the project	Consultant (final evaluation)
Population benefitting from increased quality of life and emotional security, decrease of labor	Activity reports Final evaluation & survey	Mid-term and end of project	At least 50% of households	Association, with support of PC and partners + Consultant (final evaluation)
Population prepared to face potential climate risks	Training & activity reports Final evaluation & survey	Mid-term and end of project	At least 50% of households	Association, with support of PC and partners + Consultant (final evaluation)

Nb of stakeholders (NGOs, local government,...) engaged by project and provided with training in CC risk management and scenario planning	Workshop participation / Workshop report Interviews	Quarterly + final evaluation	At least 3 NGOs, 1 local government, 10 local, regional and national partners are engaged	Association, with support of PC and partners + Consultant (final evaluation)
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4.5 Project Management

4.5.1 Management Structures

- **Overall Local Coordination:** In order to ensure sound implementation and communication, detailed management structures are included in the project plan from the local to national levels. Overall local management will be overseen by the Association Amsing, who will act as general council regarding all aspects of the project, as well as the party responsible for reporting to regional and national partners. Specific project activity committees will be created by Association Amsing, whose main duties include implementation and transfer of knowledge. These committees will be inclusive and mobilization of youth and women ensured. Members of the project activity committees will act as local experts on specific activities and are expected to report information to local and regional bodies. Some responsibilities will be allotted to the individual workers and community members, as per their interests and specific skills. Specific duties of all local management structures are as follows:

- **Association Amsing:**

- Overall coordination, management and monitoring of all project activities
- Community inclusive mobilization (in particular, a gender focal point will be appointed, to ensure women inclusion)
- Creation of project activity committees and appointment of activity leaders, in an inclusive way
- Budget management
- Coordination of transportation of materials and people
- Mediation of conflicts beyond the control of project activity committee leaders or requesting assistance for mediation from regional or national partners
- Reporting to regional and national partners, including monthly progress reports, completion reports, and tools for knowledge or skill sharing beyond the local levels
- Coordination of meetings and local-level trainings

- **Project Activity Committees:**

- Mobilization of unskilled local labor and some skilled local labor
- Day-to-day management and implementation of work regarding specific activity
- Monitoring and evaluation of activity progress
- Mediation of minor conflicts, or requesting assistance for mediation from Association Amsing
- Reporting to the community and transferring knowledge and skills at local or regional levels

- **Community Members/ Local Laborers**

- Direct work and implementation procedures
- Reporting minor conflicts to project activity committee leaders
- Participation in trainings, activities, meetings

- **Coordination Between Local and National Levels:** Given the broad scope of the project and participation of several national partners, there is a need for coordination between local and national levels. Peace Corps will assume the role as liaison between local, regional and national partners, with the primary responsibilities of ensuring sound communication and conflict resolution as well as advisory management of project activities. **Peace Corps will not act as project managers, but rather as facilitators and advisers in order to promote leadership and empowerment of the community.** Regional and national partners will also assume this role when necessary, but are not expected to serve as overall coordinators. Specific duties of Peace Corps (and occasionally partners) include:

- Communication between local community and association and regional and national partners

- Oversight of projects in an advisory capacity
 - Assistance in reporting, proposal writing, budget issues
 - Coordination of technical support, including the acquisition of technicians
 - Support of local community and promotion of needs to regional and national levels
 - Conflict resolution beyond the scope of Association Amsing
 - Coordination and assistance in training events
- **Coordination of Technical Support and Regional and National Partners:** The project includes several new technologies, skills, and ideas that require managerial support from partners supporting such activities. Project partners are expected to build the capacity of local populations through hand-on training and knowledge transfer. In cases of new technologies etc, the partnering organizations will provide technicians who will act as managers of specific project activities. Project activity committee leaders and representatives from Association Amsing will work under these technicians while learning the new skills. Peace Corps will act as coordinators between these parties.

Over the course of the project, 5 meetings will be organized with all the project partners, in order to ensure monitoring of project implementation.

4.5.2 Relationship and Responsibilities of Proponent and Project Partners:

- **Peace Corps** has provided the community of Elmoudaa with three volunteers who have lived and worked in the community for at least two years each. In the past, Peace Corps has partnered with the community to build a water basin, water tower, plant fruit trees, install irrigation, and assist in capacity building of local associations. For this project, Peace Corps will act as project facilitators, advisers, liaisons to regional and national partners, and assist in capacity building and training. The current volunteer will also assist in new technology research, specifically turf reinforcement mats, and assist in any administrative or organizational work for the local association.
- **The Provincial Directorate of Water and Forest of Tarouddant and the Toubkal National Park (Regional Directorate for Water and Forestry – High Atlas)** work with communities near or in the boundaries of the national forest to support environmental and forest management as well as some small projects. In the past, Toubkal National Park has provided assistance with a water storage basin, water tower, and tree planting. The Department of Water and Forests will be responsible for assistance in forest tree planting, technical training for gabions, environmental education, and facilitation or assistance in workshops.
- **The Department of Agriculture (Extension)** is a relatively new partner for Douar Elmoudaa and supports projects regarding agricultural methods and new technologies that improve output and sustainability of farm systems. The Department of Agriculture will assist the project in the construction of gabions, materials for the installation of piped irrigation, implementation of and technical training on drip-irrigation, as well as facilitation or assistance in workshops.
- **The Agency of the Souss Massa Draa Watershed (ABHSMD)** will be responsible for the ravine control activities, hiring the adequate contractor, ensuring quality execution, sustainability of the installations, as well as training of the community members.
- **The Direction of National Meteorology** (*Secretary of State for Water and Environment, at the Ministry of Energy, Mines, Water and Environment*) is a new partner in the region and works at local and national levels to monitor and map the weather in Morocco, as well as identify and educate people on climate risks in the country. The Department of Meteorology will assist the project with the installation of weather stations and subsequent technical training, as well as support workshops and trainings regarding severe weather.
- **The German Technical Cooperation** will support the project with the creation of a water filtration pool for the women's wash station and corresponding training.
- **The Rural Commune of Toubkal is a main supporter and project partner. The President of the Commune ensures support of the association in implementing the activities and liaising with partners. The Commune will specifically support the Water Canal protection, the Valley-wide early warning system, dissemination and upscaling through incorporation of lessons learned in Communal Development Plan.**
- **The UNDP/ GEF CBA Morocco Team** will provide ongoing support to the proponent on project implementation, monitoring, and reporting. The team will help draft the relevant TORs and facilitate workshops. They will also remain in permanent contact with all the partners and participate in project monitoring.

5.0 PROJECT COSTS AND OTHER SOURCES OF FUNDING

		Budget Items (Description)	# Units	Cost Per Unit (MAD)	Total (MAD)	Amount Requested from CBA	Community Contribution	Agriculture Department / ORMVA		Water and Forest	Direction Météo Nationale	Toubkal National Park	Commune Rurale Toubkal	Peace corps	Peace corps	GIZ	Souss Massa Derâ Watershed Agency	Taroudant Provincial Board
						In Cash (MAD)	In Kind	In cash	In kind	In kind	In kind	In kind	In kind	In Cash	In kind	In kind	In kind	In kind
Outcome 1	Resilience of ecosystem is strengthened and baseline pressures reduced																	
	Output 1	Forest trees and native vegetation are planted along eroded and degraded lands protected by fencing																
		Plantation of Pine / Cypress / Cedar																
		Purchase of forest trees	560,00	10,00	5 600,00					5 600,00								
		Transportation of trees	1,00	1 500,00	1 500,00			1 500,00										
		Laborers (26 volunteers)	40 days	70,00	72 800,00			72 800,00										
	Output 2	Gabions and rock dams are constructed amid flood-prone ravines																
		Construction of gabions/rock dams (1550 m3)																
		Equipment / material 150 m3	1,00	60 000,00	60 000,00				60 000,00									
		Equipment / material 650 m3	1,00	260 000,00	260 000,00												260 000,00	
		Equipment / material 250 m3	1,00	100 000,00	100 000,00													100 000,00
		Community Labor & Contribution (16 volunteers)	60 days	70,00	67 200,00			67 200,00										
	Output 3	Turf reinforcement matt is introduced in highly eroded hills for soil regeneration																
		Pilot testing of TRM on 1ha of devitalized land	1 global budget	15 000,00	15 000,00			15 000,00										
		Research, technical support & training	Facilitator / Trainer	20 days	500,00	10 000,00									10 000,00			
	Output 4	Domestic pollution of natural waters is mitigated through construction of wash station and filtration pool																
		Construction of wash station																
		Material & Equipment	1 global budget	25 550,00	25 550,00									25 550,00				
		Technical support	6 days	500,00	3 000,00										3 000,00			
		Laborers (10 volunteers)	6 days	70 / 150	30 000,00			30 000,00										
		Construction of a filtration pool and equipment with filtration plants + TRAINING for women	1 global budget	150 000,00	150 000,00											150 000,00		

Outcome 2	Security and productivity of agricultural systems are strengthened in face of inundations, increased drought periods and decreasing rainfall																	
Output 1	Water delivery systems are reinforced against increasing floods via enclosed permanent irrigation																	
	Installation of 1,5 km of underground canals, including 15 regards	Equipment (piping, cement, metal, glue)	global budget	160 800,00	160 800,00		100 000,00		9 800,00				51 000,00					
		Labor (community) - 20 volunteers	60 days	70,00	84 000,00				84 000,00									
		Community technician / supervisor - 2 volunteers	60 days	150,00	18 000,00				18 000,00									
		Food for lunch break	60 days	100,00	6 000,00		6 000,00											
Output 2	Efficiency of water management practices is increased through new technologies and technical training																	
	Implementation of a pilot drip irrigation system (10	Material / Equipment	10 ha	45 000,00	450 000,00				450 000,00									
		Technician	10 days	150,00	1 500,00				1 500,00									
		Laborers (12volunteers)	20 days	70,00	16 800,00				16 800,00									
	Training on maintenance and usage of drip irrigation	Facilitator / trainer	2 days	500,00	1 000,00				1 000,00									
Output 3	Greenhouse agriculture is implemented with corresponding training																	
	Build 2 greenhouses (53m*9m*2m)	Preparatory study & research / design / technical support	15 days	500,00	7 500,00													
		Equipment + Seeds	1 global budget	60 000,00	60 000,00		60 000,00											
		Laborers (16volunteers)	10 days	70 / 150	12 000,00				12 000,00									
	Training on Implementation of green house crops (women)	Facilitator / greenhouse & conservation farming	10 days	500,00	4 000,00				2 000,00									

Outcome 3	Community's capacities to adapt, prepare, and face climate change impacts are increased																
Output 1	Early storm warning system is implemented at the regional level and community members trained on storm preparation techniques																
	Installation of 1 automatic weather station	Equipment / Material + technicians	1 global budget	400 000,00	400 000,00						400 000,00						
	Installation of 1 observation station	Equipment / Technician	1 global budget	50 000,00	50 000,00						50 000,00						
	Pilot technology for flood-surveillance & alert + Technical support and training	Equipment / Installation / Training	1 global budget	35 000,00	35 000,00	35 000,00											
	Training programme	Technical training of local observators	3 days	1 500,00	4 500,00						4 500,00						
		Interpretive training for the communication&warning committee	1 day	1 500,00	1 500,00						1 500,00						
Output 2	Community and regional populations participate in awareness of risk management workshop																
	Awareness raising programme with local teachers / schools	3 workshops	3 workshops	1 500,00	4 500,00						4 500,00						
	Reach out programme for the women	Gender & Risk management Facilitator	4 days	1 500,00	6 000,00						6 000,00						
	Workshop with the local associations	1 day workshop in the Commune	1 day	1 500,00	1 500,00							1 500,00					
Output 3	CBA knowledge sharing																
	Participation in National CBA workshop	Transport & accomodation for 3 community representatives (3 pers.*5 days)	5 jours	400,00	6 000,00	6 000,00											
	Cross fertilization community workshop in the Agoundis Valley	Transport et hébergement pour des représentants de la communauté (15 pers.*2 days)	1 global budget	2 000,00	2 000,00	2 000,00											

ANNEX 1- Project partners contact information

El Mangad Abderrahmane	Eaux et Forêts de Taroudant	06 61 91 10 06
Chakiri Sidi Mohamed	Eaux et Forêts de Taroudant	06 61 91 10 12
Ayoubi Mohammed	Parc National de Toubkal	06 61 91 45 74
Zirri Hossein	Cheikh au sein de la Commune de Toubkal	06 69 66 22 13
Zirri Said	Président de l'association Amsing	06 74 94 72 22
Wittmann Anne-France	Coordonnatrice du programme CBA/PNUD	06 67 66 22 08
Smith Steven	Corps de la Paix des Etats-Unis	06 11 25 94 58
Benedetto Luis	Corps de la Paix des Etats-Unis	06 62 44 39 79
Oumoussa Naima	Corps de la Paix des Etats-Unis	06 62 51 73 30
Himmi Mohamed	Président de la Commune de Toubkal	06 61 37 38 14
Zahir Mohamed	Directeur Provincial de l'Équipement de Taroudant	06 60 19 23 73
Idrissi My Hicham	Direction Provinciale de l'Équipement de Taroudant	06 60 19 21 70
Leila Akhmiss	Fondation Crédit Agricole du Maroc pour le Développement Durable	05 37 68 37 80
Mokhtari Soraya	Directeur du Parc de Toubkal	06 76 76 23 64
Ettair Adil	Directeur Provincial des Eaux et Forêts de Taroudant	06 61 91 10 22
Mokssit Abdallah	Directeur de la Météorologie Nationale	06 61 33 74 87
Omar CHAFKI	Directeur Adjoint- DMN	06 61 34 97 65
EIMesoudi Ibrahim	Chef du Centre National d'Exploitation Météorologique 'CNEM'- DMN	06 61 34 97 82
El fasskaoui M'hamed	Directeur de l'Agence de Bassin de Souss Massa Derâa	05 28 84 25 51/39 59 – 06 61 43 22 51
Aslikh	Secrétaire Général - ABHSMD	05 28 84 25 51/39 59
Hamassi Abdelkrim	Directeur C MV 260 Ouzioua	06 61 72 27 36
Addajou Larbi	Coordinateur Subdivision de l'ORMVA de Taliouine	06 66 15 10 02
Ismail El Hamdi	ORMVA de Taliouine	06 61 62 23 11
Amazzal Ahmed	Président de l'association de Toubkal	05 24 30 45 74
Idmouhamed Abdallah	Khalifa de la Commune de Toubkal	06 61 12 86 84
Si Mohamed Selhaoui		06 61 12 86 86
Abdelmjid Belmahi	Kaid Askouen	06 61 98 71 83
Abdessamad El Kayouh	Président du Conseil Provincial de Traoudant	06 61 14 88 14
El Ounissi Abdeljabbar	Conseil Provincial de Traoudant	06 60 12 36 06
Saida Bouzabda	INDH Taroudant	06 66 38 19 08
El Houssaini	Président du Comité INDH - Taroudant	05 28 85 25 90
Abderrahim El Ourdighi	Fondation du Haut Atlas	06 71 36 99 57

ANNEX 2 – Site pictures



El Mouddaa – Altitude 2000 m



Damage caused by flash flood



Vulnerability workshop, with women

Annex 3 – Resume of Peace Corps Volunteer supporting project implementation

Luis Benedetto
22-66 Crescent St.
Astoria, NY 11105
Phone: 214-733-1160
benedettoluis@yahoo.com
Morocco
March 14, 2011

EXPERIENCE:

VOLUNTEER WORK

Eco-Action - Volunteer (FL)

Perform clean-ups and work with other volunteers to clean lakes and fields in Central Florida.
2007-2010

Environmental Initiative - Volunteer (FL)

Work in landscaping, building greenhouses, coordinating volunteer schedules, working in a community garden.
2007-2010

Student Sustainability Alliance - Board Member and Education Coordinator (FL)

Create and implement environmental programs for the University of Central Florida, to educate and involve the student body, and to manage volunteers and volunteer activity.
2008-2009

Eco-Advocates of Central Florida - Board Member (FL)

Work to involve students and the community on environmental protection campaigns, to work in congress with national and statewide organizations to create and pass legislation, and to coordinate volunteers for clean-ups and other actions.
2006-2010

POTS (Part Of The Solution) - Volunteer (NY)

Work with other volunteers in a community kitchen to feed homeless and needy members of the community.
2010-2011

Central Park Conservancy – Volunteer (NY)

Work with other volunteers in landscaping and assist land managers in horticulture projects around Central Park.
2010-2011 3 hours per week

Theodore Roosevelt Sanctuary and Audubon Center – Youth Educator (NY)

Lead classes in environmental education for schools and camps in western Long Island. I am also responsible for designing and modifying education programs.
2010-2011 6 hours per week

WORK EXPERIENCE

2009-2010

The Coye Law Firm, Case Manager

- Collect medical records, police reports
- Communicate with insurance adjustors
- Write demands and drafting legal documents
- Communicate legal issues to clients

2008- 2009

UCF Environmental Initiative, Sustainability Assistant

- Maintain Sustainability Alliance Website
- Corresponded via email with 800+ members
- Wrote newsletter on environmental issues affecting Florida
- Provided educational material to the University Community
- Supervised 100+ volunteers

2006

Infosur Trades, Inc., Sales Manager

- Facilitated contract work for commercial buildings
- Interacted with clients and subcontractors
- Managed invoices for billing
- Provided cost estimates

DEGREE:

University of Central Florida

Bachelor of Science, December 2009
Major in Legal Studies
GPA in major: 3.7

FOREIGN LANGUAGES

SPANISH, FRENCH (HAVE BEGUN TRAINING)

TRAINING

Microsoft Office, including Word, Excel, PowerPoint
Legal research using West Law and Lexis/Nexis; data entry; update website; Filemaker

HOBBIES

Hobbies include running, triathlons, surfing, soccer, beach volleyball

ANNEX 4 – Commitment letters from the partners

ROYAUME DU MAROC
MINISTERE DE L'INTERIEUR
Cercle de Taliouine
Commune de Toubkal

CT/AMSING 01/2001

Le 10/06/2011

Attestation de partenariat et de co-financement de projet

Projet CBA de l'association AMSING (El Mouddaa)

Je, sous signé, Mohamed HIMMI, Président du Conseil Communal de Toubkal, par la présente, je certifie que la Commune Rurale de Toubkal appuiera l'association AMSING de El Mouddaa (CR TOUBKAL), dans la réalisation de son projet d'Adaptation Communautaire (dans le cadre du programme PNUD CBA)

Notre contribution à ce projet est la suivante :

- Participation au financement et à la réalisation de canaux d'irrigation souterrains (à hauteur de 51 000 dh)
- Organisation d'un atelier avec toutes les associations de la Commune pour les sensibiliser à la gestion des risques climatiques
- Appui d'un photographe bénévole de la Commune Rurale pour former l'association à l'utilisation des outils photos / vidéos et promotion du projet sur le site internet de la commune
- Participation aux réunions du Comité de Pilotage
- Appui à l'organisation d'un Atelier Régional Final : invitation des partenaires (au niveau régional), mise à disposition salle de réunion, ordinateur, projecteur

La Commune Rurale de Toubkal encourage l'initiative de l'association AMSING et s'engage à lui apporter l'appui nécessaire possible à (organisation, suivi et reporting, procédures administratives, suivi de réalisation du projet et réception de travaux...), à travers l'équipe technique communale.

Président de la commune de Toubkal
Signé: Mohamed HIMMI



Royaume du Maroc

AGENCE DU BASSIN HYDRAULIQUE
DE SOUSS MASSA ET DRAA



001541

21 AVR 2011

N° /DGERE/2011

AGADIR, LE

LE DIRECTEUR DE L'AGENCE DU BASSIN
HYDRAULIQUE DE SOUSS MASSA ET DRAA
-AGADIR-

/-)

MADAME NAIMA OUMOUSA
ASSISTANCE AU PROGRAMME DE L'ENVIRONNEMENT
CORPS DE LA PAIX DES U.S.A
-RABAT-

Objet : Projet d'adaptation au changement climatique

REF : Votre envoi du 19/04/2011

Dans le cadre du projet d'adaptation au changement climatique, prévu à Douar El Moussa (commune de Toubkal, Province de Taroudant), j'ai l'honneur de vous confirmer notre contribution pour la mise en place des gabions à hauteur de 260 000, 00 DH au titre de l'exercice 2011 et ce dans le cadre d'une convention de partenariat à élaborer entre les différents partenaires et intervenants.

Veuillez agréer, Madame, l'expression de mes salutations distinguées.

مدير وكالة الحوض المائي
لسوس ماسة ودرعة
امضاء: محمد الفيكوري

AGENCE DU BASSIN HYDRAULIQUE DE SOUSS MASSA ET DRAA

ROYAUME DU MAROC
 Secrétariat d'Etat auprès du Ministère de l'Énergie,
 des Mines, de l'Eau et de l'Environnement,
 Chargé de l'Eau et de l'Environnement
 Département de l'Eau
 DIRECTION DE LA METEOROLOGIE NATIONALE



المملكة المغربية
 كتابة الدولة لدى وزارة الطاقة والمعادن
 والماء والبيئة
 المكنة بالمساح والبيئة
 قطاع الماء
 مديرية الأرصاد الجوية الوطنية

N°.....473.....MN/EX/CNEM

Casablanca, le 23 AVR. 2011

A
 Mme la coordinatrice du programme d'adaptation
 communautaire du PNUD.

Objet: Projet d'adaptation au changement climatique

Ref: Votre écrit n° 11-079 du 15/04/2011

Suite à votre écrit cité en référence, j'ai l'honneur de vous informer que la DMN est disposée à contribuer à la réalisation du dit projet moyennant les actions suivantes :

- L'installation d'une station automatique à TOUBKAL,
- L'installation d'une station classique d'observation météorologique dans un endroit répondant aux besoins du projet,
- La transmission des bulletins d'alerte météorologique à la commune de TOUBKAL
- La formation technique du comité local d'alerte en matière d'utilisation et entretien des stations, analyse et interprétation des données,
- L'animation d'un atelier sur la gestion des risques avec les associations locales.

En vous remerciant de l'importance que vous portez à l'information météorologique, veuillez agréer, Madame la coordinatrice, l'expression de mes salutations les plus distinguées.

Le Directeur de la
 Météorologie Nationale *P.I.*

Signé : Omar CHA/TKI

ROYAUME DU MAROC



Haut Commissariat aux Eaux et Forêts
et à la Lutte Contre la Désertification

Direction Régionale des Eaux et Forêts
et de la Lutte Contre la Désertification du Sud Ouest

Direction Provinciale des Eaux et Forêts
et de la Lutte Contre la Désertification de Taroudannt

Le Directeur Provincial

N° 4743 DREFL/CD.SO/DPEFL/CD.37

Taroudannt, le 28 AVR 2011

A

Mme. Naïma OUMOUSA
Assistante au Programme de l'Environnement
Corps de la Paix des USA
2, rue Abou Marouane Essaadi, Agdal – Rabat 101000

- **Objet** : Projet d'adaptation au changement climatique.

- **Référence** : Votre fax du 27/4/2011.

Suite à votre fax de référence, j'ai l'honneur de vous confirmer la contribution de notre direction à la réalisation de l'opération de reboisement qui portera sur une superficie de 8,35 ha. Cette contribution consistera à la mise à la disposition de l'association Amsing des plants forestiers nécessaires (**280 plants de Cyprés et 280 plants de Pin d'Alep**), ainsi que l'assistance technique en matière de reboisement et de construction des seuils en gabion.

Il est à signaler que le transport des plants de la pépinière d'Ait Hammadi relevant du CCDRF d'Oulad Teïma jusqu'au lieu dit «El Moudaa» sera à la charge de l'association bénéficiaire.

Veillez agréer, Madame, l'expression de mes salutations distinguées.



Le Directeur Provincial des
Eaux et Forêts et de la lutte
Contre La Désertification
de Taroudannt
Signé : ET_TAIR - ADIL