



REVEGETATION AND TRANS-BOUNDARY NATURAL RESOURCES MANAGEMENT

PHASE 1: MASSACRE AND PEDERNALES RIVERS WATERSHEDS

FINAL NARRATIVE REPORT

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I. SUMMARY

This document is the final technical report of the first phase implementation of the "Revegetation and trans-boundary natural resources management: Massacre and Pedernales rivers watersheds" project. This report provides, for the period of May 2011 to December 2013, the background elements, activities performed, results and lessons learned from the project implementation.

The main objective of the project was to create a favorable environment to restore trans-boundary ecosystems and reduce vulnerability to climate change in order to improve the living conditions of the Haitian and Dominican populations, especially those that inhabit the watersheds along the border line.

- As a result, various information, training, and awareness-raising activities were performed, most importantly there were meetings by the steering committee, more than ten bi-national technical meetings, various participatory workshops, and training sessions for brigade chiefs, employees, technical assistants, landowners and beneficiaries of implemented sub-projects.
- About twenty meetings were held with partners, the Ministries of Environment (Haiti and Dominican Republic) and others actors working in the border area, including the establishment of the coordination-hub for the main three local municipalities in the Massacre watershed and a bi-national commission for the creation of a joint database.
- In addition, more than 1,400 hectares have been replanted with fruit and forest tree species, more than 500 green jobs have been created through the implementation of 30 reforestation brigades, and 8 nurseries with a total production capacity of nearly 800,000 seedlings yearly were established.
- More than 1,000 families have directly and indirectly benefited from the project activities. Indeed, several sub-projects have been implemented: goat farming in Haiti, and in the Dominican Republic, setting up of four community greenhouses, setting up of 15 apiaries and the construction of forest surveillance facilities (watchtowers and a guardhouse).

In addition, the project aimed to intensify activities of different trans-boundary projects and strengthen cooperation between both countries. Agreements were signed with community based organizations to improve cooperation and coordination of activities implementation in the field. The project supported the initiative of the biological corridor by providing the Dosmond Plant Propagation Center with materials and equipments. In order to support the germplasm center, reforestation brigades were assigned to it during the first phase.

Several studies were conducted, among which was an important study that has updated and provided new information on trans-boundary environmental challenges: "Haiti - Dominican Republic environmental challenges in the border area," and a land survey on the two watersheds of Massacre and Pedernales. Awareness-raising activities were performed, including two eco-tours by both Haitian and Dominican students in both countries, awareness activities on World Environment Day in 2012 with the participation of the Haitian Minister of Environment and over 400 students, and the World Environment Day 2013 with the participation of the Haitian and Dominican presidents. Finally, a video has been produced showing projects impacts and beneficiaries' livelihood improvements.

II. BACKGROUND

2.1. History

In 2008, the Ministers of Environment of Dominican Republic and Haiti, Dr. Jaime David Fernandez Mirabal and Jean Marie Claude Germain signed the Declaration of Via Anacaona and agreed to establish a bi-national programme to promote the reforestation and restoration of degraded areas along the 380 kilometers border between the two countries, called Frontera Verde, an area of solidarity and common commitment.

The restoration of the Massacre and Pedernales watersheds is part of the efforts of the Ministries of Environment of the Dominican Republic and Haiti in the border area, to create a green structure adapted to climate changes, the conservation and management of water resources and to the reduction of poverty on the Dominican-Haitian border.

The Frontera Verde programme was inspired by the National Plan Quisqueya Verde of Dominican Republic to provide concrete answers to the environmental issues at the watersheds level. Furthermore, this programme has initiated the establishment of a brigade-based system for the reforestation of degraded areas on both sides of the border, which facilitates the population's involvement in the border reforestation and in the watersheds protection. This system is composed of 10 people per brigade, men and women of both countries. Inhabitants of the watersheds rely on local natural resources and are facing growing challenges in terms of livelihoods. They are putting uncontrolled pressure on the remaining ligneous resources and farmland and moreover are exposed to natural disasters. The earthquake of January 12, 2010 made them even more vulnerable because it severely affected the economy and the environment. The earthquake, especially in Haiti, also affected the performance of on-going projects and the reassignment of available funds for environmental initiatives. Moreover, the catastrophe caused changes in human migration patterns; therefore causing additional environmental impacts.

As a result, rehabilitation and management plans have focused on aspects such as job creation and environmental preservation, specifically:

- the deforestation which leads to severe land degradation;
- The reform and development of small scale agriculture to improve the sustainability of livelihoods as a long-term alternative;
- The flood risk of trans-boundary rivers due to significant and usually irreversible degradation of watersheds on the Haitian territory;

- The institutionalization of trans-boundary cooperation for the environment and trans-boundary river watersheds;
- The environmental governance for charcoal and other forest-product trade regulation and control.

It is in this regard that the Norwegian Government along with the World Food Programme (WFP) and the United Nations Environment Programme (UNEP) decided to fund the Frontera Verde programme. On May 16, 2011 the Declaration of Intent was signed in Ouanaminthe for the triangular cooperation among the Republic of Haiti, the Dominican Republic and the Norwegian Ministry of Foreign Affairs, through the project "Massacre and Pedernales Rivers Watersheds Restoration", with the technical assistance of UNEP and UNDP.

2.2. Project implementation site

The project is located in the Massacre and Pedernales rivers watersheds.



In the Massacre river watershed, 501 km², of which 150 km² correspond to Haiti and 351 km² to the Dominican Republic. The impacted zone corresponds to sixteen (16) sections: Eight (8) on the Haitian side distributed in the Ferrier, Ouanaminthe and Capotille communes; and eight (8) on the Dominican side distributed in the municipalities of Dajabón and Loma de Cabrera.



In the Pedernales River watershed, which forms the border with Haiti from its mouth in the Caribbean Sea to several kilometers upstream, having an extension of 174,23 km², the impacted zone corresponds to nine (9) sections: four (4) on the Haitian side distributed in the commune of Anse-à-Pitres, and five (5) on the Dominican side distributed on the municipality of Pedernales. The Mulito river is the main tributary on the Dominican side.

The cornerstone of the project is the sustainable management of natural resources by contributing to the well-being of communities. It addresses the underlying causes of deforestation and degradation of natural resources, especially with a reforestation approach and trans-boundary cooperation, taking into account the importance of forest cover, water cycle and climate change mitigation impacts as well as fighting desertification.

2.3. Objectives of the report

This document is the final report of the first phase of "Revegetation and Trans-boundary Natural Resources Management" in the Massacre and Pedernales rivers watersheds. It provides the details of the project implemented activities, constraints and lessons learned during its implementation. It presents the overall context of the operation incorporating different levels of outcomes and implemented activities. It addresses the strategy implementation, strengths and weaknesses and concludes on lessons learned.

III. ACTIVITIES UNDERTAKEN AND RESULTS

The activities have covered the four (4) components of the project:

- Restoration of vegetation cover;
- Strengthening the institutional capacity of the public sector and local organizations on both sides of the border;
- Demonstrations of sustainable livelihoods through production models, integrated management of water resources, basic sanitation and risk management;
- Strengthening the Bi-national Technical Cooperation in relation to the project management in order to guarantee the efficient functioning and dissemination of results.

The results of the various activities performed within each component are shown in the following table.

Regarding the indicators, it should be noted that the indicators underlined were designed for the first phase of one year project. The indicators in italic were designed to be reached within a 4 years programme that has not taken place.

Logical Framework	Results achieved	Justifications if indicators not reached	Verification Sources	Details
<p>OUTPUT 1. Vegetation cover restored</p> <p>Baseline: The current forest cover in Haiti is less than 2% of the whole territory, and the border between the Haitian Republic and the Dominican Republic is vulnerable to progressive desertification processes. Natural habitats altered, damaged or destroyed. Growing loss in biodiversity composition. Disturbances of ecosystem functions, etc.</p>				
<p>Product 1.1. Degraded areas reforested with forestry and agroforestry species for conservation and multiple uses</p> <p>Indicators : <u>825 hectares reforested by mid 2012</u></p> <p><u>Number of bi national brigades increased from 37 brigades with 10 persons/brigade in 2010 to 65 bi national brigades with 10 persons/brigade</u></p> <p><i>- 28 new brigades established, by mid 2012</i> <i>- 7,081 hectares reforested in the bi national Masacre-Jassa and Pedernales watersheds, by the end of 2013</i> <i>- Number of bi national brigades (60 bi national brigades with 10 persons per brigade) keeps functioning in the Massacre-Jassa and Pedernales watersheds, by 2013</i></p>	<p>Haiti: 778.82 hectares DR: 736.6 hectares</p> <p>30 operational brigades: - 16 in Haiti and - 14 in DR composed of 10 persons per brigade</p>	<p>The target indicator was not reached. The plan was to implement the programme in two phases; but only the first phase was implemented. The implementation of the first phase took 28 months. The indicator linked to the first phase was reached.</p>	<p>Quarterly and annual reports and field missions report</p> <p>Final evaluation</p>	<p>One of the main objectives of the project was the institutionalization and implementation of a platform for managing the brigades as a methodological approach to the long-term reforestation programme in Haiti. Unfortunately, unlike the Dominican brigades, the Haitian ones could not be institutionalized. However, on the Haitian side some progress was made on creating that platform by: a) Involving the local coordination and authorities in the selection of the brigade members; b) organizing training and awareness-raising activities on the importance of natural resources management; c) examining with the Ministry of Environment the issue of supporting the brigades, managing, coordinating, and continuing the operations. The reforestation brigades were established in coordination with community representatives of the project areas. The areas to be reforested were selected and identified in conjunction with local authorities and more than ten awareness and motivation meetings were held in the project areas. The Labor Intensive work (HIMO) approach was used in Haiti where over 800 short-term “green jobs” were created. In the DR, 140 long term “green jobs” were created.</p>

<p>Product 1.2. High value forestry and agro-forestry, endemic, and/or naturalized plant species are produced in community nurseries</p> <p>Indicators: <u>Four (4) community nurseries are operating and delivering seedlings by end of 2011</u></p> <p><i>101 community nurseries are operating and delivering seedlings by the end of 2013</i></p>	<p>There are eight (8) nurseries operating. Four (4) in each country</p>	<p>Similar point as in output 1.1</p>	<p>Quarterly and annual reports and field missions report</p> <p>Final evaluation</p>	<p>Permanent nurseries staff in both countries have ensured every nursery were operating. The operations are led by a nurseryman and farm workers. All the nurseries were built near a water point.</p> <p>Nurseries (capacity of 100,000 seedlings each) have produced :</p> <ul style="list-style-type: none"> - 614,877 seedlings in Haiti (37% fruit tree and 63% forest tree) - 950,983 seedlings in Dominican Republic (forest trees).
<p>Product 1.3. A participatory model to obtain the information and contribute to regulate land tenure in the Haitian side of the selected watersheds is in place</p> <p>Indicators: <u>- Cadastral map showing the land ownership conflicts produced, by mid 2012</u></p> <p><i>- 50% of land ownership conflicts regularized, by the end of 2013</i></p>	<p>Two maps displaying land conflicts in both Massacre and Pedernales rivers watersheds were developed for the Haitian side.</p>		<p>Study report</p> <p>Final evaluation</p>	<p>The land ownership study of the Massacre and Pedernales Rivers watersheds aimed at making an inventory of the situation, identifying current and potential land conflicts and making proposals for solving them.</p> <p>Thus, some observations and concrete proposals were made :</p> <ul style="list-style-type: none"> - There is still no land occupation plan (LOP) being implemented in various municipalities of the republic of Haiti. - The provision of services from institutions which are involved in land (DGI (Tax Authority)/ ONACA (National Land Registry)/ INARA (National Institute of Land Reform)/ CNIGS (National Centre for Geospatial information)/ Notaries and Land surveyors/ various courts) remains poor, inefficient and relatively expensive.

				<p>-Land access by peasants without land is satisfactory considering the available resources despite the high emigration rate of non-owners.</p> <p>- Land acquisition by purchase contract tends to increase but can in no way guarantee security of tenure, due to the numerous institutions that grant title without cross checking.</p> <p>- Land conflicts are caused in the project area a lot more by normal conflicts (free livestock - irrigation water and drainage - collective grazing, etc.) than by ownership without title or legal deed.</p>
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OUTPUT 2. Strengthened the public sector and local organizations institutional capacity on both sides of the border for the management of trans-boundary natural resources

Baseline: Proven weaknesses of government actors and institutions in decision making processes, governance, policy formulation and implementation, coordination and monitoring of programmes and projects aiming to restore ecosystem integrity in the Haitian side of the border. Insufficient data available on the current state of natural resources along the border. Insufficiency in qualified personnel to perform effective actions aiming to reverse the current trend. Poor collaboration between the Haitian Government and the Dominican Government to jointly address the environmental and other issues shared along the border

<p>Product 2.1. Information on the state of natural resources, biodiversity and socioeconomic aspects of the border zone raised</p> <p>Indicators: <u>By end 2011:</u> - 15% of the information on transboundary trade on sensible environmental goods completed - 15% of detailed biophysical and socioeconomic information on Massacre and Pedernales watersheds completed - 15% of impacts on human transboundary migration information are known.</p> <p><i>By the end of 2013:</i> - Information on trans-boundary trade on sensible goods 100% completed - Detailed biophysical and socioeconomic information on the Massacre and Pedernales watersheds 100% completed - 95% of human trans-boundary An inventory and assessment of existing natural resources along the border realized Data on resource exploitation and trading is updated and available for decision makers and policy makers</p>	<p>Over 80 % of the information was collected. Data on trans-boundary trade of sensitive environmental biophysical and socio-economic goods in the Massacre and Pedernales Rivers watersheds have been completed. The trans-boundary human migration impacts are known.</p>		<p>Published study: Haiti-Dominican Republic. Environmental challenges of the border zone”</p> <p>Final evaluation</p>	<p>The study was conducted by UNEP with the active participation of Ministries of Environment (Haiti and Dominican Republic), Ministry of Agriculture and UNDP on the environmental challenges on the border zone. This study examines many aspects of the border including: the state of natural resources and the trade of environmentally sensitive goods. It contributes to a better understanding of the interdependence between the two countries and their striking contrasts in terms of economic, social and environmental conditions.</p>
<p>Product 2.2. Geographic information system and tools for monitoring deforestation by remote sensing installed</p> <p>Indicators:</p>	<p>Results not achieved.</p> <p>Biophysical information about the frontier zone are available in the study</p>	<p>It was planned, in coordination with different stakeholders at the border, to set up a</p>	<p>Reports of bi-national meetings on establishing the database.</p>	<p>Two bi-national meetings were held to create a trans-boundary joint database for the project. These meetings brought the following results:</p> <ul style="list-style-type: none"> - Creation of a bi-national commission with

<p>- <u>50% of geographic information nodes installed and operating, by mid 2012</u> - <i>Geographic information system nodes 100% completed and operating, by the end of 2013</i></p>	<p>on trans-boundary environmental challenges, but this information is not in the database</p> <p>Initiatives were made. The database implementation process can continue, if coordinated by CNIGS and Dominican department of natural resources (DIARENA).</p>	<p>joint GIS database. In this sense, meetings were held with DIARENA, CNIGS, and the Caribbean Biological Corridor (CBC) and other partners for the implementation of a GIS database</p>	<p>Final evaluation</p>	<p>representatives of CNIGS (Haiti) DIARENA (Dominican Republic)</p> <ul style="list-style-type: none"> - Establishment of mechanisms for the creation of the joint database, - Identification of appropriate implementation techniques, - Development of a protocol for exchanging data between CNIGS and DIARENA, - Development of data collection protocols and working conditions of the commission.
<p>Product 2.3. Community leaders and key stakeholders trained and awareness raised in the local population on natural resources management and on water and sanitation</p> <p>Indicators:</p> <p><u>By the end of 2011:</u></p> <ul style="list-style-type: none"> - <u>At least 15% of leaders and key players are trained and sensitized</u> - <u>Four bi-national eco-visits with school boys-girls and youngsters organized</u> <p><i>At the end of 2013:</i></p> <ul style="list-style-type: none"> - <i>At least 65% of leaders and stakeholders are trained and sensitized by the project</i> 	<p>In Haiti, more than 60% of community leaders and key stakeholders are motivated, trained and organized. There were 2 bi-national eco-tours organized.</p> <p>In the DR: over 85% of community leaders were trained and environmentally aware, 151 members of brigades were trained on establishing and maintaining plantations</p> <ul style="list-style-type: none"> - 61 beekeepers and 4 food crop associations in 	<p>Administrative delays and schedule conflicts between the schools and the operation team made it difficult to organize bi-national eco-tours.</p>	<p>Quarterly and annual reports and field missions report</p> <p>Final evaluation</p>	<p>The community leaders were involved in all activities and operations of the project; setting up new nurseries, recruiting brigades, monitoring plantations. Discussions have clearly contributed to strengthening the capacities of local authorities on issues related to natural resources management.</p> <p>Several training and awareness sessions were carried out with a new environmental club at Capois la Mort public high school in Ouanaminthe (about 30 participants). This new club was formed with the support of the team that's implemented the project.</p> <p>The Bi-national Management team organized a series of meetings in order to educate and raise awareness among members of the local coordination hub in order to get them to</p>

<p>- Sixteen bi-national eco-visits with school boys-girls and youngsters organized</p>	<p>greenhouses were established.</p> <p>4 workshops were organized for community beekeepers in the Dominican Republic (47 participants in Dajabón and 74 in Pedernales).</p> <p>Training sessions were organized for women organizations in the DR on irrigation system management, seed germination, selling/marketing of cultivated fruit etc.</p>			<p>participate in all project activities. About a hundred landowners attended the training programme.</p>
<p>Product 2.4. Personnel from governmental institutions trained</p> <p>Indicators:</p> <p><u>By the end of 2011:</u></p> <p>- <u>At least 50% of governmental institutions staff trained in integrated management of natural resources</u></p> <p>- <u>At least 50% of customs staff trained to control trade of species and products at the border</u></p> <p><i>By the end of 2013:</i></p>	<p>Results not achieved</p>	<p>Administrative delays and schedule conflicts between the implementation team and governmental institutions.</p>	<p>Quarterly and annual reports and field missions report</p> <p>Final evaluation</p>	<p>Material and equipment support was given to the Haitian Ministry of Environment especially the Dosmond germ plasm center for the initiative of the Biological Corridor. The bi-national implementation team supported the center throughout the first phase of the project, reforestation brigades and technicians were there for them to ensure efficient operating.</p> <p>When the project started, the bi-national implementation team put together a local hub in each local municipality and / or municipality to support the implementation unit and a coordination of local hubs with the representatives of communes and municipalities. This structure was formed with local authorities</p>

<p>- At least 100% of governmental institutions staff trained in integrated management of natural resources</p> <p>- Two trans-boundary customs transformed into "Green customs"</p>				<p>and representatives of the civil society and has been involved in all the activities of the project management.</p> <p>The bi-national implementation team organized two meetings with the heads of the trans-boundary customs office of Ouanaminthe and Dajabón and others in the same sector to examine the feasibility of training workshops for the customs officers and other technicians. The implementation team worked on the Reference Terms and recruited trainers, while customs officials' task was to prepare list of participants.</p>
<p>Product 2.5. Control and monitoring participatory networks in situ, established</p> <p>Indicators:</p> <p><u>By the end of 2011:</u></p> <p><u>Seven (7) networks, 2/communes and municipalities within the Massacre and Pedernales watersheds established</u></p> <ul style="list-style-type: none"> • <u>Four (4) networks in Haiti, 2/communes</u> • <u>Three (3) networks in DR, 2/municipalities</u> <p><u>By the end of 2013:</u></p> <p><u>By the fourth year, 14 networks, 2 communes</u></p>	<p>Results not achieved in Haiti</p> <p>In DR, 2 networks for control and monitoring in the field, including community participation have been established in the Massacre and Pedernales rivers watersheds along with the construction of a fire watchtower and a guardhouse in the Cero Chaquey Protected Area and an observation tower in the Cerro Juan Calvo.</p>	<p>Those networks could not be established in Haiti due to the various challenges faced during the implementation of the project in some municipalities (Anse a Pitres, Ferrier). However, in the municipality of Capotille where the project is very advanced, meetings were held with local</p>	<p>Minutes of the meetings</p> <p>Quarterly and annual reports and field missions report</p> <p>Final evaluation</p>	<p>For Haiti, the implementation team organized more than 5 meetings for the establishment of a network of volunteer guards in the town of Capotille with the coordination of local hubs. More than ten (10) people volunteered to make this pilot come true There were many reforestation activities in this town, that's why two watchtowers was planned to be built in this area. The reference terms were developed, but due to insufficient time and funds, the activity was not finalized.</p>

<p><i>and municipalities, within the Massacre and Pedernales watersheds established</i></p> <ul style="list-style-type: none"> • <i>Eight (8) networks in Haiti, 2/communes</i> • <i>Six (6) networks in DR, 2/municipalities</i> 		<p>stakeholders who agreed to control and monitor implemented activities of the project</p>		
<p>Product 2.6. Created and established the bi-national platform to conserve and protect in situ, high biodiversity and conservation values areas</p> <p>Indicators:</p> <p><u>By the end of 2011:</u></p> <p><u>- 50% of in situ monitoring and control system installed</u></p> <p><u>- 15% of requisites to declare the Haitian Biosphere Reserve within Man and the Biosphere UNESCO Programme completed.</u></p> <p><i>By the end of 2013:</i></p> <p><i>-100% of in situ control and monitoring system established</i></p> <p><i>-100% of requisites to declare the Haitian Biosphere Reserve within Man and the Biosphere UNESCO Programme completed.</i></p>	<p>Results not achieved in Haiti</p> <p>In the DR 40% of control and monitoring system established on the ground and the construction of three fire control infrastructure, protection and observation in two high value areas for biodiversity conservation, the Massacre River watershed:</p> <ul style="list-style-type: none"> - A fire watch Tower, Cerro Chaquey, Dajabón - A guardhouse, Cerro Chaquey, Dajabón - A watch tower, Cerro Juan Calvo, Dajabón 	<p>Most activities such as the Biosphere Reserve declaration have already been carried out by another project led by the Haitian National Commission in collaboration with UNESCO</p>	<p>Minutes of the meetings Quarterly and annual reports and field missions report</p> <p>Final evaluation</p>	<p>The study on trans-boundary challenges addressed the issue in depth and recommendations were made to strengthen the initiatives already in place.</p> <p>The creation and establishment of a bi-national platform for the protection and conservation of biodiversity is a transversal activity that would allow recipients to engage in and better appropriate the concept before completing the creation of this bi-national platform. This activity could not be finalized.</p> <p>The construction of a watchtower in the Dominican Republic is an important activity because it is a structure that will ensure permanent control of forest fires.</p> <p>Similarly, the construction of watchtower in the Forest Reserve called "El Cerro Juan Calvo" with panoramic view over the valley of the Massacre River on both sides of the border is also a major achievement.</p> <p>In Haiti, the space for the construction of these structures was identified in the town of Capotille. Delays for legal authorization did not allow the activity to be achieved on time.</p>

OUTPUT 3. Sustainable livelihoods alternatives demonstration through production models, integrated water resources management and basic sanitation and risk management				
Baseline: The National Strategies for Growth and Poverty Reduction are being implemented, but the Units for Study and Planning of concerned ministries in charge of the implementation process are not fully functional. No management mechanism for the external assistance is in place and institutional and technical management capacities are yet to be developed				
Product 3.1. Agriculture in controlled environment developed Indicators: <u>- Three 500 m² each metallic greenhouses handed by the end of 2011</u> <i>- Twenty 500m² each metallic greenhouses handed by the end of 2013</i>	In DR, 4 community greenhouses of 500 m ² each were built	This operation was not carried out in Haiti due to budgetary constraints	Quarterly and annual reports and field missions report Final evaluation	In DR, along with the greenhouses construction, a training, monitoring and supervision plan was developed to ensure the optimal operation of the greenhouses beyond the project. In Haiti, a community based organization has been selected to carry out this greenhouse construction subproject. The terms of reference have been prepared for publication. The operation was not finalized due to insufficient time and resources.
Product 3.2. Drip Irrigated agricultural crops production farms established Indicators: <u>- 10 hectares of farmlands are drip irrigated by the end of 2011</u> <i>- 87 hectares of farmlands are drip irrigated, by the end of 2013</i>	Results not achieved	This operation was not carried out in Haiti and Dominican Republic due to budgetary constraints and prioritization of other activities.	Quarterly and annual reports and field missions report Final evaluation	After an evaluation of the context in the field, a water supply system appeared more appropriate. The terms of reference were developed. The operation was not implemented due to insufficient time and resources.
Product 3.3. Bee hives established Indicators: <u>- Nine boxes apiaries installed and functioning, by end 2011</u> <i>- Sixty three boxes apiaries are functioning, by the end of 2013</i>	16 apiaries were installed in DR of 10 hives each; 12 in the Massacre river watershed and 4 in the Pedernales river watershed		Quarterly and annual reports and field missions report Final evaluation	These apiaries were installed in a Langstroth-type double box. A training plan was developed with a follow-up and monitoring protocol to guarantee the performance of the apiaries after the project completion. In Haiti, the implementation team worked

				with the beekeeping cooperative in Ouanaminthe; a sub-project was developed to prepare the installation of 12 model apiaries with 10 hives each and 13 hectares of honeybee orchards. The operation was not executed due to insufficient time and resources. However, the activity has been included in a new programme coordinated by UNDP in the North East that will support the Ouanaminthe beekeeping cooperative.
<p>Product 3.4. Improved minor livestock species in stable production units established based on the production of high nutritional value fodder.</p> <p>Indicators:</p> <p><u>21 sheep/goats livestock units established within the Massacre and Pedernales watersheds by the end of 2013</u></p>	<p>In Haiti, a management committee of 3 members was established for this sub-project</p> <p>Technical training of 3 veterinary officers and 140 people on breeding goats and goat health.</p> <p>Distribution of goats to 140 beneficiaries (2 per beneficiary) and establishment of 27 stations in three municipalities with 2 billy-goats per station.</p> <p>140 goats delivery contracts signed. 7.5 ha of fodder established</p>	<p>This operation was not carried out in Dominican Republic due to budgetary constraints and prioritization of other activities.</p>	<p>Quarterly and annual reports and field missions report</p> <p>Final evaluation</p>	<p>This sub-project was developed in order to help improve small farmers' living conditions in the three municipalities of Capotille, Ferrier and Ouanaminthe by increasing and improving their goat herds.</p> <p>It was also designed to give the inhabitants of the areas located on the Haitian-Dominican border the opportunity to developed the local technical resources (trained breeders) required to meet the requirements of goat breeding (farmers trained) after the project is completed.</p>

<p>Product 3.5. Multiple purposes (energy, wood) forestry farms established</p> <p>Indicators :</p> <p><u>- 5 hectares of forestry energy farms planted, by mid-2012</u></p> <p><i>- 43 hectares of forestry energy farms planted by the end of 2013</i></p>	<p>Results not achieved in Haiti</p>	<p>This operation was not carried out in Haiti and Dominican Republic due to budgetary constraints and prioritization of other activities.</p>	<p>Reports and final evaluation</p>	
<p>Product 3.6. Water reservoirs installed</p> <p>Indicators:</p> <p><u>- Two secure water reservoirs established by the end of 2011</u></p> <p><i>- Six secured water reservoirs established by the end of 2013</i></p>	<p>Results not achieved</p>	<p>This operation was not carried out in Haiti and Dominican Republic due to budgetary constraints and prioritization of other activities.</p>		<p>A water tank construction was planned for the municipality of Las Garrapatas, Dajabón. But financial offer to implement this activity were too high compared to the planed budget. The terms of reference were developed and are available at the Ministry of Environment.</p>
<p>Product 3.7. Housing conditions for rural environment basic sanitation improved</p> <p>Indicators:</p> <p><u>- Eight healthy homes built by the end of 2011</u></p> <p><i>- Sixty-six healthy homes built by the end of 2013</i></p>	<p>Results not achieved</p> <p>In Haiti, a group of construction workers were trained on construction for a healthy housing project in vulnerable rural communities.</p>	<p>Due to budget constraints in both countries, the product was cancelled</p>		<p>A group of construction workers were trained to carry the healthy housing construction project. These local technicians will be available for the project during a possible second phase to install the sanitary facilities.</p>

<p>Product 3.8. Community compensation fund to support local initiatives established.</p> <p>Indicators: - <u>By the end 2011, 60% of the fund is capitalized with funds requested</u> - <i>By the end of 2013, 100% of the fund is capitalized with funds requested</i></p>	<p>Results not achieved</p>	<p>Due to budget constraints in both countries, the product was cancelled</p>		
<p>OUTPUT 4. Bi-national technical cooperation in relation to project management strengthened, to guarantee efficient functioning and dissemination of results Baseline: There have been some bi national initiatives going on. However, they are not sufficient regarding natural resource management in such a way to enhance technical cooperation between the two countries in order to produce lessons learned that can be disseminated at a large scale</p>				
<p>Product 4.1. Bi-national coordination committee established and operating</p> <p>Indicators: - <u>By the end of 2011, the Bi-national committee conduct on annual operating plan and on assessment of project progress (three (3) meetings; one (1) to approve the annual operating plan, and two (2) to evaluate project progress)</u> - <i>By the end of 2013, the bi-national committee conduct on annual operating plan and on assessment of project progress</i></p>	<p>The bi-national Steering Committee and the bi-national office were established and were functional</p>		<p>Minutes of the meetings Quarterly and annual reports and field missions report Final evaluation</p>	<p>The Bi-national Steering Committee whose goal is to ensure the success of the project through a clear monitoring system was established. This committee has been operational since April 2011 and has had 2 meetings. The bi-national office facilitated exchanges between the two Ministries of Environment (Haiti and the Dominican Republic) and organized several meetings between the technical staff on the progress of the project</p>
<p>Product 4.2. Installed and operating technical project execution teams in each country</p> <p>Indicators: - <u>98% of the total activities in the 2011annual operating plan are executed by the end of</u></p>	<p>The bi-national implementation team was functional.</p> <p>Surveillance equipments such as motorcycles have been acquired in Haiti and in Dominican Republic, as</p>		<p>Minutes of the meetings Quarterly and annual reports and field missions report Final evaluation Office inventory</p>	<p>The bi-national office was established and operating.</p>

<p><u>2011</u></p> <p>- 100 % of the total activities in the 2012 – 2013 annual operating plan are executed by the end of 2013</p>	<p>well as office equipment (computers, printers, etc.).</p>			
<p>Output 4.3. Installed and operating project monitoring system</p> <p>Indicators:</p> <p><u>By the end of 2011:</u></p> <p>- <u>Three (3) periodic reviews: Two (2) project monitoring reviews, one/semi-annual; and one (1) final assessment with results from project first year</u></p> <p>- <u>Working technical bi national teams have conducted two (2) project visibility events, one (1) to launch the project, and one (1) to disseminate first year project implementation progress and/or results</u></p>	<p>Conducting visibility events to disseminate project results and lessons learned from it. The project used UNDP Haiti web page to ensure its visibility. Quarterly and annual reports were submitted (technical and financial). The implementation team organized weekly meetings with the technical staff to set work priorities. In addition, several meetings aiming at sharing project results were held with the local coordination and a final evaluation was carried out under UNEP's coordination.</p>		<p>Minutes of the meetings</p> <p>Quarterly and annual reports and field missions report</p> <p>Final evaluation</p>	<p>The implementation team has also made several tours in both watersheds to ensure the success of the project. Exchanges and meetings involving nurserymen, leaders of reforestation brigades and members of the organizations responsible for sub-projects in Dominican Republic and Haiti were held. They enabled beneficiaries to share their problems with the coordination team of the project and adaptive response management to be settled.</p> <p>The project management team explored avenues of cooperation and promoted synergies to avoid duplication and encourage complementarity of actions between institutions and organizations at the border area.</p>

Despite the difficulties, the project made significant progress in reforestation, more than 1,400 hectares were reforested, which is an increase of 70% of the expected 825 hectares. In-depth work was completed with the brigades (awareness on the importance of reforestation, training sessions on planting techniques and coaching by agricultural technicians). Those activities have demonstrated that reforestation is possible in border areas. In Haiti, institutionalization at the central level should be the next step considering local coordination has been set up through the project. It would ensure not only the results durability but also activities continuity and sustainability.

Meetings that were held with the various partners in the project area have to be highlighted. First, they have participated in a better understanding of the different activities implemented at the border area, then they have explored avenues for cooperation, promoted synergies to avoid duplication and encouraged complementarities of actions at the border area. They have notably resulted in the holding of several bi-national working meetings.

Finally, in agreement with the National Strategic Development Plan of Haiti and the government priority to restore degraded watersheds, the project has contributed to:

- The country vegetal cover restoration,
- Risk management to reduce vulnerability of populations and infrastructures,
- Strengthening synergies and bi-national cooperation between the two countries.

3.1. Significant accomplishments

In addition to the planned activities, additional events concerning the project implementation that have to be acknowledged are:

- The award won by the project for the South-South Cooperation,
- The organization of the World Environment Days 2012 (with the Haitian Minister of Environment) and 2013 with the participation of the two countries' presidents where the report on trans-boundary environmental challenges was officially handed to them.

3.2. Project impacts on the haitian-dominican border communities

The first phase of the project helped create more than 1,000 green jobs for Haitian-Dominican families living along the border. These jobs had a significant impact on the beneficiaries; some were able to meet various needs such as providing food for their families, sending their children to school, building and/or rebuilding housing facilities or buying cattle, among others. According to the team observations, tree cutting has slightly dropped on Haiti's side because of these jobs.

3.3. Possible economic benefits for the beneficiaries

The plantations done thanks to the project have induced an increase in vegetation cover in the border areas with tree species of high economic value. These growing fruit orchards represent mid-term economic resources for Haitian citizens. Hence, project's benefits are not only environmental but also economical.

3.4. Main constraints to the implementation

The main issues encountered during the implementation of the project were:

- Difficulties regarding the payment of the Haitian brigades (administrative delays; a project-specific account was never created within the Haitian Ministry of Environment forcing UNDP to proceed the brigades payment itself). These delays have affected the brigades motivation, plant production within the nurseries and maintenance of plantations;
- It took longer than expected to establish the implementation team especially because of the resignation of the first bi-national director;
- The relatively slow processes for disbursement for certain activities in the field also caused delays of implementation;
- Shortage of logistics, particularly the delay occurred in setting up the Bi-national Office, transporting and purchasing inputs from one town to another also affected the implementation process significantly;
- The involvement of several partners and agencies has sometimes constrained the performance of the project. This problem resulted from the lack of cooperation between institutions and unsuitable institutional set-up;
- The distance between the two targeted watersheds (Massacre and Pedernales) affected the project results: activities planned and resources (technical and logistical) in the Pedernales watersheds were not adapted to the local context. This constraint also affected coordination between the project management team and provincial and departmental offices;
- The bi-national management team had to make large expenses on logistics including staff recurrent travel expenses related to the implementation of the project; Recurrent staff travel were needed for the project implementation which resulted in larger

expenses concerning project's logistic. The fact that the bi-national office was based in Ouanaminthe while the administrative operations were done in Port au Prince represented also a constraint.

- The project was subject to political, administrative and management constraints that affected the bi-national collaboration and functioning of the project implementation team.

As a consequence, the first phase lasted 28 months instead of the 12 months originally planned, with three extensions requested to the donor.

3.5. Lessons learned

The key lessons learned during the first phase of the project are:

- Reforesting both countries is possible through planning, appropriate strategies and local participation;
- Reforestation brigades are a good strategy for reforestation of degraded areas;
- The project has represented a strategic opportunity to strengthen the technical cooperation between both countries and the trans-boundary local authorities especially in the Massacre watershed;
- Some problems shared by both countries can be solved through joint and coordinated efforts. The governments of Dominican Republic and Haiti especially understood how important it was to enhance natural resources management on both sides of the border;
- Reforestation activities represent a good mean to create numerous green jobs in vulnerable communities;
- By adopting a participatory and inclusive approach, local communities are becoming more interested in the project; they embraced the activities and appropriation of work and plantations monitoring is improved.
- Stability and consistency of the Haitian Ministry of Environment will facilitate a better appropriation and participation in field activities, which can be achieved with the support of the implementing agencies.

Finally, the project was awarded first place in the "Sharing Knowledge for Development" contest launched by UNDP Latin America and Caribbean Regional Office. This award aims at encouraging knowledge-sharing particularly through South-South Cooperation. The innovative approach of the project, reforestation results achieved, and collaboration of diverse partners were decisive for the first place attribution. This award consisted in an \$ 8,000 USD grant, which funded a systematization workshop animated by an expert from the UNDP Panama "Knowledge, Innovation, and Capacity" group.

This workshop was held on February 25, 2014 in the town of Dajabón with the participation of the bi-national stakeholders:

- The Dominican and Haitian Ministries of Environment, especially the technical staff that supported and implemented the project,
- the project implementing team and UNDP representatives of Dominican Republic and Haiti,
- Representatives of the brigades, local authorities and community-based organizations of both side of the Massacre River watershed, who were particularly involved in reforestation processes.

It resulted in a practical and concise brochure that summarizes lessons learned and best practices. It will be available in Spanish, French and Creole. This opportunity has helped promote the project achievements at a very important time of the first phase completion.

IV. CONCLUSIONS

Implementing similar activities in countries with different contexts is challenging. The bi-national approach of the project must be enhanced if future actions are to be taken. Despite the project challenges, more than 1,000 green jobs were created and more than 1,400 hectares were reforested in the border areas especially in the Massacre River watershed. In Dominican Republic, the activities were successfully conducted by the Ministry of Environment. Unfortunately, in Haiti, the North East Direction of the Ministry of Environment needs to be strengthened to be able to monitor plantations adequately in the long term, and to support local organizations and brigades in doing so.

However, the bi-national project has facilitated exchanges, especially technical ones, between both countries and helped Haiti to benefit from advances made in Dominican Republic in terms of reforestation and sustainable livelihoods alternatives. It has also participated in identifying the key environmental challenges that political decision-makers must take into account to successfully tackle environmental degradation on the border. A joint coordination should be an important part of such a project. It is essential to capitalize on successful bi-national initiatives and to strengthen structures that facilitate connection and collaboration between the two countries.