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### INTERIM PROGRESS REPORT

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| **Reporting UN Organization** | **:** | United Nations Development Programme |
| **Country** | **:** | Lebanon |
| **Project No.** | : | 00059666 and 00069789 |
| **Project Title** | : | Flood Risk Management and Water Harvesting for Livelihood Recovery in Baalback-Hermel, phase I and II |
| **RF Signature date** | : | 10 October 2007 |
| **Project Start date** | : | Phase I: 01 February 2008 Phase II: 20 February 2009 |
| **Project Timeframe** | : | Phase I: 31 May 2011 (extended)Phase II: 31 December 2011 |
| **Reporting Period** | **:** | October – December 2010 |

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| I. PURPOSE |

**Project Summary & Objectives**

The project aims at assisting the Government of Lebanon in its recovery and reform efforts in the conflict-affected and high-poverty region of Baalback-Hermel through better land management practices, namely flood risk reduction and improved access to irrigation water and networks to achieve crop diversification and improve productivity.. This will be achieved through the construction of stone walls, check dams and water collection reservoirs to prevent runoff water from reaching villages and farms and through the restoration of land cover to reduce soil erosion. The objectives related to water management will be achieved through construction of membrane-lined reservoirs to collect unused water from springs, rainfall and snow melts and through installation of water-use efficient irrigation networks and systems that will be used by local farmers to improve their crop diversity and productivity. The project is financed by the Government of Spain through the Lebanon Recovery Fund established on the occasion of the Stockholm Conference, and is in line with the UNDP’s development goal of alleviating poverty in rural drylands of the conflict-affected Baalback Hermel area.

**Project Phases and Expected Outputs**

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| **FRM I**  2.8 million USD | * Establishment and Implementation of a flood risk management plan over an area of 94 km2 in Aarsal and Fakhe region. * Water harvesting in North Bekaa and installation of efficient irrigation networks. * Crop diversification and improved land cover in North Bekaa. * Improved public awareness on flood risks management and training of the target municipality on maintenenace of flood management structures. |
| **FRM II**  3.8 million USD | * Establishment and Implementation of a flood risk management plan over an area of 200 km2 in Upper Aarsal and Ras Baalback * Improved land cover in Ras Baalback and upper Aarsal mountains. * Improved soil conservation in Ras Baalback and Aarsal. * Improved public awareness on flood risks management and training of the target municipality on maintenenace of flood management structures. |

**Project Linkages to National Priorities and Recovery**

The National Action Program to Combat Desertification (NAP), which was developed in 2003 by the Ministry of Agriculture and in collaboration with UNDP and German Society for International Cooperation (GIZ), classified the project’s target area (Baalback-Hermel) as one of the areas prone to high risks of desertification. This is mainly due to lack of proper land and water management practices, bad rainfall distribution, overgrazing, steep mountains with shallow soil and poor vegetative cover. Moreover, summer droughts and uneven rain distribution are the main reasons for poor agricultural productivity in that area.

The effect of the July 2006 conflict on North Bekaa, particularly Baalback-Hermel area was not to be underestimated. Large scale destructions in infrastructure, biodiversity and agriculture were reported. These led to harder living conditions, more poverty and increased soil erosion threats.

The expected outcomes from the current project particularly those related to water harvesting, increased vegetation cover and higher productivity will serve very well the national efforts and plans aiming at combating desertification and alleviating poverty in North Bekaa. They will also serve the recovery efforts made by the Lebanese government in normalizing the living conditions of rural communities and in restoring the basic needs and infrastructure for practicing sound and profitable agriculture in the affected area.

**Project Implementation Partners**

International Partners: Spanish Agency for International Cooperation

German Society for International Cooperation (GIZ)

Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD)

National Partners: Ministry of Agriculture

Ministry of Water & Energy, Bekaa

Local municipalities and communities

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| **II. RESOURCES** |

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|  | **Amount (USD)** | |
|  | **Phase I** | **Phase II** |
| **Total budget approved** | 2,834,880 | 3,800,000 |
| **Total disbursements –Sep - Dec 2010** | **114,941.52** | **95,840** |
| **Commitments for next quarter** | 550,000 | 400,000 |

**Budget and Expenditure Breakdown per LRF Category:**

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|  | **Phase I** | | | **Phase II** | |  |
| **CATEGORY** | **Total Budget**  **(USD)** | **Exp. July - September 2010** | **Exp to date (Dec 2010)** | **Total Budget**  **(USD)** | **Exp. July-September 2010** | **Exp to date (Dec 2010)** |
| **1. Personnel** (Incl. staff and consultants) | 200,000.00 | 0.00 |  | 300,000.00 | 78,205.00 |  |
| **2. Contracts**  (Incl. companies, professional services) | 250,000.00 | 0.00 |  | 250,000.00 | 0.00 |  |
| **3. Training** (incl. AV printing / production) | 50,000.00 | 0.00 |  | 50,000.00 | 0.00 |  |
| **‘**  **4. Transport** (local) | 20,000.00 | 522.50 |  | 30,000.00 | 2,271.27 |  |
| **5. Supplies and commodities**  (Incl. IT equipment and rental & maintenance) | 50,000.00 | 0.00 |  | 40,000.00 | 269.82 |  |
| **6. Equipment (including installation)** | 2,000,000.00 | 106,899.49 |  | 2,800,000.00 | 0.00 |  |
| **7. Travel** | 50,000.00 | 0.00 |  | 40,000.00 | 8,186.80 |  |
| **8. Miscellaneous** | 37,833.00 | 0.00 |  | 24,000.00 | 638.00 |  |
| **9. Agency Management Support (7%)** | 186,048.00 | 7,519.53 |  | 266,000.00 | 6,269.96 |  |
| **TOTAL** | **2,834,880.00** | **114,941.52** |  | **3,800,000.00** | **95,840.85** |  |

**III. Results: Progress per activities**

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| **Project Outputs** | **Activities** | **Progress to date** | **Targets for 2010** |
| **1. Project Management and Coordination** | * 1. Technical, financial and operational Management.   2. Promote synergies with relevant on-going projects in target area.   3. Exchange of information and coordination meetings | * Ongoing meetings with the project stakeholders and subcontractors:   Ras baalback Municipality (2 meetings), Aarsal Municipality (5), ELARD (8), Rafik El Khoury & Farhat (7)   * Workshop on National Risks Assessment on November 8th 2010 with UNDP Bureau for Crisis Prevention and Recovery at Grand Serail * LRF’s donors meeting at Grand Serail to present achievements and future outlook * Meeting with the Minister of Energy and Water in order to cooperate and coordinate related flood risks management activities * Organization of an international workshop **“**Water Harvesting Techniques and Practices and their Role in Enhancing Rural Livelihoods” with AARDO and Ministry of agriculture held between September 26 and October 2nd 2010 to exchange information * Contract termination with ARDA and pursue coordination with the Municipality of AArsal * Extension of two sub-contracts: Rafik El Khoury and Farhat Group | * Strengthened coordination with project stakeholders |
| * Coordination with Municipality of Ras Baalback for phase II implementation |
| * Design of flood risk management structures for Phase II |
| * Procurement of sub-contractors for the implementation of Phase II |
| * Submission of quarterly progress reports |
| **2. Flood Risk Management and Reduction** | 2.1 Data collection and identification of target area.  2.2 Modeling of target area and generation of maps.  2.3 Constructions for flood control and prevention.  2.4 Monitoring, evaluation and impacts assessment | * Designs for flood management structural measures for Phase II finalized and reviewed * 13 potential sites were identified to construct the retention ponds (hafeers) * Technical specs for ponds construction and maintenance developed * Expression of Interest documents for implementation of the flood structures for Phase II posted and collected for evaluation * Elaboration of TORs to implement the excavation of flood structures under preparation to select a contractor * Reviewing and re-designing of erosion control structures for phase II | * Design of flood risk management structures (Phase II) |
| * Initiation of excavations of flood water collection reservoirs (Phase II) * Initiation of construction of FRM structures (Phase II) |
| * Development of a flood mgt plan for Ras Baalback (phase II) |
| * Determine the number and locations of stone walls for phase II. |
| **3. Water Harvesting and Irrigation Networks** | 3.1 Field surveys and assessment of water resources  3.2 Identification of water-harvesting sites.   * 1. Constructions of reservoirs and irrigation networks   3.4 Selection of beneficiaries and technical advice | * Work in progress for the Deir El Ahmar Pond * Continuous follow-up of site operations * Supported local farmers to secure irrigation water in a sustainable way through establishing feeding pipes to an existing pond (SRAP project in Deir El Ahmar) | * Establishment of an artificial irrigation lake in Deir Al-Ahmar (Phase I) |
| * Installation of irrigation networks for target beneficiaries (Phase I) |
| * Rehabilitation and completion of reservoir initiated by the Army in Barka (Phase I) |
| **4. Land Cover Increase and Soil Erosion Reduction** | 4.1 Identification of erosion-sensitive areas  4.2 Establishment of nurseries for seedling production  4.3 Crop diversification and increased productivity  4.4 Forestation and forage cultivation | * Seed collection finalized and stored in cold condtions to be further raised in nurseries (Phase II) * Call for proposals for Reforestation posted and only one bidder participated * TORs for bidding of reforestation activity will be amended and reposted soon as Request for proposals * Site for reforestation was identified with the collaboration of the Municipality of Ras Baalback ; the parcel belongs to the municipality and is around 10 hectares; around 5000 seedlings will be cultivated composed of 37 species of wild trees and shrubs. * On-going collaboration with the UNDP MOE reforestation project to draft technical specification for reforestation activity and to coordinate the areas to be planed * Development of a demonstration setup for reforestation in order to test and demonstrate best techniques * Collaboration with MoA on banning and/or controlling grazing: Site and partner stakeholder identified (around 2 Km2 in Ras Baalback) * Agreement between UNDP and Municipality of AArsal to complete the reforestation process (phase I) is under discussion | * Forestation in Ras Baalback with wild fruit trees (Phase II) |
| * Development of plan to increase green cover in Ras Baalback (Phase II) |
| * Completion of reforestation in Aarsal (Phase I) |
| **5. Sustainability, capacity building and awareness raising** | 5.1 Empowerment of target beneficiaries.  5.2 Awareness raising on flood and water management.  5.3 Capacity building through training.  5.4 Alternative livelihoods | * Hands on training on flood management structure needs initiated on a one-on-one basis with some municipality members * Build the capacity of the Municipality of Ras Baalback in order to maintain the prevention flood and erosion control structures through offering a tractor and wheel loader machines. * The specs for the tractor and wheel loader identified and posted. Selection of best bidder is also done. * Grant agreement between UNDP and Municipality of Ras Baalback is under preparation * Article on flood impacts published in Beyond magazine * First SLM newsletter prepared * TORS for SLM website development under preparation * Documentary on SLM and flood prepared | * Building the capacity of Municipality of Ras Baalback in flood management. |

**1. Project management:**

Project management took place on a full time basis by the Project Management Unit (PMU). This involved project administration, field visits to Aarsal, Ras Baalback and Deir el Ahmar, supervision of and support to consultants and contractors, meetings with stakeholders and resource mobilization. Ongoing meetings took place with the project’s stakeholders and subcontractors: 2 meetings with Ras baalback municipality, 5 with the municipality of Aarsal, 8 meetings with the consultants ELARD to agree on the designs of the flood defense structures, and 7 meetings with the contractors Rafik El Khoury and Farhat Group that were contracted to carry out excavation works and construction of dams.

Moreover the PMU met with the Ministry of Energy and Water (MoEW) to cooperate and coordinate related flood risks and management activities. UNDP opened strong venues of cooperation with the Ministry of Energy and Water (MoEW): a presentation of the project was made to the Minister of Energy and Water in the presence of his advisors. Furthermore, flood management considerations were incorporated, based on the input provided by the project team, into the National Water Strategy developed by the MoEW.

An international workshop on **“**Water Harvesting Techniques and Practices and their Role in Enhancing Rural Livelihoods” was organized with AARDO and the Ministry of Agriculture held between the 26th of September and the 2nd of October 2010 to exchange information. The PMU co-organized with MoA and AARDO the workshop entitled “Water Harvesting Techniques and Practices and their Role in Enhancing Rural Livelihoods” held between September 26 and October 2nd 2010 to exchange to exchange and learn from the experience of the AARDO member countries. 40 participants from 15 different countries were present in the event.

**2. Flood Risk Management Phase:**

An international bidding process was launched for the modeling of the watershed in phase II and the contract was awarded to Earth Links and Advanced Resources Development ELARD. The PMU provided very close support to ELARD through provision of data, verification of assumptions and review of designs. Joint field visits were undertaken in order to gather site data and fieldtruth findings.

The design of reservoirs and walls for Phase II has been finalized and field truthing is ongoing. 13 potential sites identified and specifications developed. Given the issue related to land ownership, all the reservoir selected were located in the public domain such that there is no need for compensatory payments for expropriation of land. The large reservoirs were subdivided into smaller basins. This design will reduce the maintenance costs and improve the efficiency of the system. The first basin will act as a stilling basin and will take most of the sediment load without spreading it to the rest of the reservoirs. The water flowing out of the first basin will have lower solid content and will accordingly cause less blockage of the soil in the subsequent basins and thus will not reduce water infiltration.

Based on the designs developed for the reservoirs, an international invitation for expressions of interest (EOI) was launched by UNDP on both its national and international websites. 10 EOIs were received and evaluated; however the full invitation to bid will be launched in 2011.

The objectives of the flood project, in Phase 2, were expanded from the construction of infrastructure to a wider scope including institutional capacity development and non-structural measures. A historical perspective on all types of flood in Lebanon is being gathered through research and a timeline, starting 1293 A.D, has been drawn. This will help the project understand if there are changes in the flood patterns over time. So far the timeline shows an increase in the frequency of flooding.

A cost assessment of direct flood damages has been done through data collected from the published records of the Lebanese Higher Relief Council. It has been estimated that the direct costs of one flood event in Aarsal and Fakeha is equivalent to 2.5 M US$. The investments in infrastructure of the flood project have a return on investment (ROI) of just 2 years.

Improving green cover is one of the tools used in reducing flood risks and consequent damages. Increasing the green cover is strongly hindered by overgrazing. Accordingly, there is a need to address the issues related to grazing prior to reforestation. Consequently, the PMU has initiated grazing related work on several fronts. It has started collaboration with the Development Studies Association (DSA) and specifically through their GEF Small Grants Fund project on promoting the concept of inter-cropping for herdsmen. A presentation to the MoA staff was done by experts from the DSA. Further to the presentation, work was initiated between UNDP and MoA on grazing. A joint field visit was undertaken to Ras Baalback and Aarsal in order to assess the area for a joint project on sustainable grazing. The flood project has selected an area of land for a grazing demonstration plot in cooperation with the MoA. The MoA will provide seeds and the rest of the work will be undertaken by UNDP.

**3. Water Harvesting for extending irrigation periods:**

Rainwater harvesting is an important method of accumulating water before it reaching the aquifer preventing flooding to occur, and is an adequate method of storing water for irrigation purposes amongst other uses. Follow-up on the 33,000 m3 reservoir in Deir Al Ahmar that was constructed in 2009 was carried out on a weekly basis to monitor the modifications that have since been made to the defense structure due to constraints on the terrain. The project supported local framers in securing piping to upgrade the usage of an existing pond and improve its efficiency. The pond was fed by an earthen channel leading to major losses in water. The project provided a polyethylene pipe that carries water from a main feeding channel to the reservoir. This has significantly increased the irrigation potential of the reservoir.

**4. Land Cover increase and soil erosion reduced:**

**Phase II**

A significant contributing factor that causes flooding in the project region is the lack of vegetative cover and increasing soil erosion. This is because the land has lost the potential to retain water due to the lack of deep root network in the ground which in turn leads to excessively poor infiltration of water. This would result in rainwater simply running off the ground surface and into the valleys leading to towns and villages such as Aarsal. Therefore, one the objectives of the project is to increase the vegetative land cover of the region through reforestation activities to prevent soil erosion and increase soil absorption.

Suitable lands for reforestation were selected and finalised for Phase II. This was based mainly on the development of a soil erosion map that was prepared by the project GIS expert. This was overlaid with a land ownership map in order to identify the most suitable areas for reforestation.

A partnership was created with the Ministry of Environment (MoE) reforestation project for testing new reforestation protocols. The specifications manuals for reforestation of the MoE and MoA stipulate the planting of seedlings that are at least 18 months old. The practice has shown to be unsuccessful due to the curling of the root ball around the stem and the subsequent death of the tree. The two projects are testing the use of seedlings that are only 6 -8 month old. The projects are also testing “solid water” irrigation techniques. “Solid water” is an innovative irrigation technique using either rechargeable or non rechargeable gels that will hold and slowly release water close to the root zone for a long period of time. The aim of these pilot tests is to contribute to cost reduction and the improvement of the efficiency of reforestation projects. Reforestation is a costly endeavor due to the need for heavy works during planting and for irrigation at least for the first two years. The project is testing reforestation techniques using seeds and not seedlings. Seeds require minimal labor and no irrigation systems.

A bid for reforestation was launched but cancelled further to the receipt of only one and technically non-compliant bid. Requests for bids will be modified and re-launched in 2011.

**5. Sustainability, Capacity Building, and Awareness Raising:**

Preliminary talks have been engaged with the herders in Ras Baalback and Aarsal in order to try to find a solution to the problems of overgrazing affecting reforestation

A communication strategy was initiated by the Flood Project. It includes dissemination of information to all levels of stakeholders from decision makers to local communities.

An informative calendar including the flood project was designed, printed and distributed. It has been noticed by the PMU that the calendar has been used by many and it has helped raise the awareness of the different stakeholders on the flood project.

A documentary on the UNDP Sustainable Land Management (SLM) program with the Ministry of Agriculture, including the flood project was produced. The documentary is being used to raise the awareness of the different stakeholders. Latest it was projected during the World Food Day events organized by the FAO and the LRF donors meeting

Continuous meetings and hands on training was done by the project team for all stakeholders. This included members of the agriculture coops, Municipal board members and farmers. Meetings regarding Phase II were initiated with the municipality of Ras Baalback who is currently involved in each decision made by the project in order to ensure local support and sustainability of the activities of the project

The project actively participated in World Food Day event with a presentation on the flood project. Participated to the LRF donors meeting as an exhibitor, and published an article on flood risk was published in the winter edition of a local environmental magazine “Beyond Magazine”.

**Implementation Constraints**

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| ***Land ownership***: Land ownership is a serious problem in North Bekaa region. Selection of land areas for planting trees has been affected by land ownership. The project was faced with the issue of identifying the land owners and getting their approval for the use of the land to construct reservoirs for flood mitigation. The process of identification of owners is very tedious since these are almost abandoned and un-delimited lands and ownership has been passed from generation to generation without clear documentation. The process of approval has also taken its toll on time. The concept of flood mitigation is new in the area. Accordingly it took a certain length of time to explain to owners the objectives of the project in order to acquire the acceptance of some of them.  ***Overgrazing:*** The selection of planting sites has been strongly influenced by the capacity of the municipality of Aarsal to protect the planted areas from grazing herds. Aarsal has the largest herd of sheep and goats in Lebanon. Overgrazing is a major problem. Plots were selected close to Aarsal with a possibility to be viewed and wardened from the village. Far areas could not be planted because the municipality did not have enough capacity to guard the planted trees.  ***Availability of Data:***  the design of flood risk management structure depends on the availability of weather data. The lack of weather stations in the regions of Ras Baalback and Aarsal resulted in the need to use statistical modelling to develop the data needed in flood modelling.  ***Capacity of contractors:*** The design of the water harvesting pond in Deir el Ahmar is almost unique in Lebanon and does not follow the usual design criteria used commonly for ponds in Lebanon. The design most commonly used is a dug area of land covered with a lining membrane. The design of Deir el Ahmar is, first, unique in the fact that the pond is located on a slope and not in flat lands and this to ensure gravity feed for irrigation and second, the specification include drainage layers on slopes made of porous concrete and gravel. These drainage layers serve to protect the membrane and increase the time that the water is conserved in the pond in case of membrane failure. The design also includes a 13m by 170m dam structure. The uniqueness of the design and the fact that it has not been done before by contractors has had a major impact on the execution schedule and the need for very close supervision by the PMU and coordination between the contractor and the consultant who has designed the reservoir. |

**Key Partnerships & Collaboration**

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| A good partnership is established between UNDP, MoA, ACSAD and GiZ and the Municipalities of Aarsal and Ras Baalback. The project’s working group is meeting whenever needed to discuss all major implementation steps and ensure lessons learnt from the initial pilot project implemented by UNDP ACSAD and MoA in Aarsal are transferred.  Cooperation was initiated with the municipality of Ras Baalback and the decision making process involves the Mayor and the municipal council. Stronger partnerships were developed with the disaster risk management project, the MoEW and MoE. The previous partnerships are still kept strong. |

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| IV. Work plan per activity for the 4th quarter in 2010 (January – March 2011). |

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| **Key Milestones**  **Wks** | **Jan** | | | | **Feb** | | | | **March** | | | |
| **1** | **2** | **3** | **4** | **1** | **2** | **3** | **4** | **1** | **2** | **3** | **4** |
| **1. Project Management and Coordination** |  | | | | | | | | | | | |
| 1.1 Technical, Financial and operational mgt. |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.2 Promotion of synergies with other projects |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.3 Information exchange and coordination. |  |  |  |  |  |  |  |  |  |  |  |  |
| **2. Flood Risks Management and Reduction** |  | | | |  | | | |  | | | |
| 2.1 Data collection and identification of target area. |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.2 Modelling of target area & generation of maps. |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.3 Constructions for flood control and prevention. |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.4 Monitoring, evaluation & impact assessment. |  |  |  |  |  |  |  |  |  |  |  |  |
| **3. Irrigation Water Harvesting and Networking** |  | | | | | | | | | | | |
| 3.1 Construction of water harvesting pond in Deir el Ahmar |  |  |  |  |  |  |  |  |  |  |  |  |
| **4. Land Cover Increase & Soil Erosion Reduction** |  | | | | | | | | | | | |
| 4.1 Forestation and forage cultivation |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.2 Identification of planting areas in Ras Baalback |  |  |  |  |  |  |  |  |  |  |  |  |
| **5.Sustainability, Capacity Building & Awareness Raising** |  | | | | | | | | | | | |
| * 1. Empowerment of target beneficiaries. |  |  |  |  |  |  |  |  |  |  |  |  |
| * 1. Awareness raising on flood and water mgt. |  |  |  |  |  |  |  |  |  |  |  |  |
| * 1. Capacity building through training. |  |  |  |  |  |  |  |  |  |  |  |  |
| 5.4 Alternative livelihoods |  |  |  |  |  |  |  |  |  |  |  |  |