



## INTERIM PROGRESS REPORT

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

### 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

<b>FRM I</b> 2.8 million USD	<ul style="list-style-type: none"> <li>➔ Establishment and Implementation of a flood risk management plan over an area of 94 km<sup>2</sup> in Aarsal and Fakhe region.</li> <li>➔ Water harvesting in North Bekaa and installation of efficient irrigation networks.</li> <li>➔ Crop diversification and improved land cover in North Bekaa.</li> <li>➔ Improved public awareness on flood risks management and training of the target municipality on maintenance of flood management structures.</li> </ul>
<b>FRM II</b> 3.8 million USD	<ul style="list-style-type: none"> <li>➔ Establishment and Implementation of a flood risk management plan over an area of 250 km<sup>2</sup> in Upper Aarsal and Ras Baalback</li> <li>➔ Improved land cover in Ras Baalback and upper Aarsal mountains.</li> <li>➔ Improved soil conservation in Ras Baalback and Aarsal.</li> <li>➔ Improved public awareness on flood risks management and training of the target municipality on maintenance of flood management structures.</li> </ul>

## 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.

**The direct cost of a flood event in the region of Baalback –el Hermel amounts to approximately 2,500,000 US\$. The project will contribute to substantive cost reductions currently covered in damage costs by the Higher Relief Council.**

## Project Implementation Partners

Type of partner	Partner	Role
International Partners	Spanish Agency for International Cooperation	Provision of funds to project through the LRF
	German Society for International Cooperation (GIZ)	The GIZ had executed a pilot project on Flood over a pilot area of 18 km <sup>2</sup> . GIZ is the intellectual partners of UNDP for phase one. UNDP benefitted from the same experts and lessons learned from the GIZ project
National Partners	Ministry of Agriculture	Current host of the project. Provides support and follow-up on project activities
	Ministry of Water & Energy, Bekaa	Provides ad hoc support when needed and is a link to MoEW
	Local municipalities and communities	They are the direct beneficiaries of the project. They provide advice, follow-up, local contacts, facilitation, administrative papers, etc...

Further to a decision by the LRF steering committee on April 4, 2011 major expenditures in the project were frozen pending the results of an external evaluation.

The evaluation was requested by the LRF further to an extension request filed by UNDP for the phase 2 of the Flood Project. The purpose of the evaluation was to assess the need for the project in terms of its objective, approaches, feasibility and socio-economic impact as well as the capacity of UNDP to implement the project and its sustainability strategies.

This extension was requested by the UNDP because there was a delay in the project implementation and the project objectives could not be delivered on schedule.

These delays were result of:

- Meteorological data non-existent in region
- Excavation of 2 million cubic meters 13 reservoirs
- Additional time to conduct training sessions on maintenance of ponds and reforestation

## II. RESOURCES

	Amount (USD)	
	Phase I	Phase II
<b>Total budget approved</b>	2,843,881.00	3,800,000.00
<b>Total disbursements –January to June 2011</b>	0.00	136,835.00
<b>Total disbursements as for June 2011</b>	2,788,367.00	551,347.00
<b>Commitments for next quarter</b>	64,500.00	300,000.00

### Budget and Expenditure Breakdown per LRF Category:

CATEGORY	Phase I			Phase II		
	Total Budget (USD)	Exp. Jan to Mar 2011	Exp to date (March 2011)	Total Budget (USD)	Exp. Apr to Jun 2011	Exp to date (Jun 2011)
<b>1. Personnel</b> (Incl. staff and consultants)	200,000	0	186,003	300,000	57,667	338,171
<b>2. Contracts</b> (Incl. companies, professional services)	250,000	0	185,847	250,000	0	15,600
<b>3. Training</b> (incl. AV printing / production)	50,000	0	3,930	50,000	2,840	
<b>4. Transport</b> (local)	20,000	0	11,821	30,000	0	15,809
<b>5. Supplies and commodities</b> (Incl. IT equipment and rental & maint)	50,000	0	38,557	40,000	454	22,317
<b>6. Equipment (including installation)</b>	2,000,000	0	2,102,143	2,800,000	0	103,903
<b>7. Travel</b>	50,000	0	1,556	40,000	290	2,307
<b>8. Miscellaneous</b>	37,833	0	122,270	24,000	0	17,171
<b>9. Agency Management Support (7%)</b>	186,048	0	136,238	266,000	4,288	36,069
<b>TOTAL</b>	<b>2,843,881</b>	<b>0</b>	<b>2,788,367</b>	<b>3,800,000</b>	<b>65,539</b>	<b>551,347</b>

### III. Results: Progress per activities

Project Outputs	Activities	Progress to date	Indicators	Targets for 2011
<b>1. Project management</b>	1.1 Technical, financial and operational Management.	<ul style="list-style-type: none"> <li>Project management has been ongoing in Q2 the main focus was on finalizing the pond in Deir el Ahmar technically and administratively and following up with the evaluator.</li> <li>Soft assistance on other projects has been carried out by the project staff</li> </ul>	<ul style="list-style-type: none"> <li>10 Coordination meetings each year</li> <li>Two relevant projects identified</li> <li>1 Working group established or existing groups used</li> <li>Information exchanged</li> <li>Timely completion of activities and reporting</li> <li>Effective networking</li> </ul>	<ul style="list-style-type: none"> <li>Strengthened coordination with project stakeholders</li> </ul>
	1.2 Promote synergies with relevant on-going projects in target area.			<ul style="list-style-type: none"> <li>Coordination with Municipality of Ras Baalback for phase II implementation</li> </ul>
	1.3 Exchange of information and coordination meetings			<ul style="list-style-type: none"> <li>Design of flood risk management structures for Phase II</li> </ul>
				<ul style="list-style-type: none"> <li>Procurement of sub-contractors for the implementation of Phase II</li> </ul>
				<ul style="list-style-type: none"> <li>Submission of quarterly progress reports</li> </ul>
<b>2. Flood Risk Management and Reduction</b>	2.1 Data collection and identification of target area.	<p>Phase Two</p> <ul style="list-style-type: none"> <li>The wheeled loader was received and expecting the tractor in first week of July 2011.</li> <li>Inspection of the flood of 1/6/2011 in Ras Baalback and evaluation of impact</li> <li>Tendering process for the excavation of flood risk management structures completed. Issuance of contract pending approval of project extension by LRF</li> <li>Design of stone walls specifications underway</li> </ul>	<ul style="list-style-type: none"> <li>Database created</li> <li>Target area defined</li> <li>Modeling maps developed</li> <li>Flood control structures constructed</li> <li>Preliminary assessment done and baseline created</li> <li>Monitoring and impact assessment reports submitted</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>Initiation of excavations of flood water collection reservoirs (Phase II)</li> <li>Initiation of construction of FRM structures (Phase II)</li> </ul>
	2.2 Modeling of target area and generation of maps.			<ul style="list-style-type: none"> <li>Development of a flood mgt plan for Ras Baalback (phase II)</li> </ul>
	2.3 Constructions for flood control and prevention.			<ul style="list-style-type: none"> <li>Determine the number and locations of stone walls for phase II.</li> <li>Construct walls</li> </ul>
	2.4 Monitoring, evaluation and impacts assessment			
<b>3. Water Harvesting and Irrigation Networks</b>	3.1 Field surveys and assessment of water resources	<p>Phase One</p> <ul style="list-style-type: none"> <li>The Deir el Ahmar pond and irrigation network are finished and commissioned</li> </ul>	<ul style="list-style-type: none"> <li>Sources and quantities of superficial water identified</li> <li>Contacts and meeting with concerned stakeholders established</li> <li>Potential sites identified</li> <li>Water reservoirs constructed</li> <li>Irrigation system installed</li> </ul>	<ul style="list-style-type: none"> <li>Establishment of an artificial irrigation lake in Deir Al-Ahmar (Phase I)</li> </ul>
	3.2 Identification of water-harvesting sites.			<ul style="list-style-type: none"> <li>Installation of irrigation networks for target beneficiaries (Phase I)</li> </ul>
	3.3 Constructions of reservoirs and irrigation networks			
	3.4 Selection of beneficiaries			

	and technical advice		• Beneficiaries identified	
<b>4. Land Cover Increase and Soil Erosion Reduction</b>	4.1 Identification of erosion-sensitive areas	Phase One	<ul style="list-style-type: none"> <li>• Soil erosion risk map prepared</li> <li>• Nurseries for seedlings production established</li> <li>• 2 New and marketable crops introduced</li> <li>• Crop yields and community income improved by 20%</li> <li>• Irrigated agriculture areas increased 100 ha</li> <li>• Forested areas are increased by 20 ha</li> </ul>	• Forestation in Ras Baalback with wild fruit trees (Phase II)
	4.2 Establishment of nurseries for seedling production	<ul style="list-style-type: none"> <li>• Maintenance of seedlings is ongoing in Aarsal in partnership with the Municipality</li> <li>• Preliminary success in reforestation using seeds instead of seedlings. This has major implications on cost of reforestation</li> </ul>		• Development of plan to increase green cover in Ras Baalback (Phase II)
	4.3 Crop diversification and increased productivity	Phase II		• Completion of maintenance works in Aarsal (Phase I)
4.4 Forestation and forage cultivation		<ul style="list-style-type: none"> <li>• Terms of reference for the reforestation activities completed. Tendering process to be launched</li> </ul>		
<b>5. Sustainability, capacity building and awareness raising</b>	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	Phase One	<ul style="list-style-type: none"> <li>• 2 Maintenance equipment provided to target beneficiaries and municipalities</li> <li>• Infrastructure for municipalities for flood management improved</li> <li>• 50 farmers trained</li> <li>• Farm income increased by 20%</li> </ul>	• Building the capacity of Municipality of Ras Baalback in flood management.

## **Overall Project Impact**

The project will contribute to the reduction of risks and damages, direct and indirect, of floods in the region of Baalback el Hermel. It will also improve livelihoods through increased availability of water for multiple uses through direct harvesting such as through the water collection reservoir of Deir El Ahmar or through infiltration of the water collected in the flood reservoirs to the water table further to a flood event. The project will also contribute to the increase in green cover in both Aarsal and Ras Baalback. Currently, the Higher Relief Council incurs 2.5M US\$ as damage compensation further to a flood event; "Flood" will contribute to the reduction of these compensation payments. Finally the project will contribute to the creation of a national flood risk map and of knowledge and expertise in flood risk management.

### **1. Project Management**

Project Management of the second quarter was restricted to administrative work to finalize phase one, prepare for phase two and coordinate with the project evaluator as requested by the LRF steering committee. The project assisted the LRF assigned evaluator in compiling data about the project, responding to technical queries and coordinating for site visits to the project sites.

### **2. Flood Risk Management:**

The designs of the flood risk management reservoirs of Ras Baalback were finalized and the tendering process completed. Following the expression of interest undertaken at the end of last year, 4 companies showed interest; however, only 2 companies were found to be technically compliant. Based on this process, the detailed invitation to bid containing all the technical specifications for works was distributed and offers were received in April 2011. A technical committee reviewed the proposals and the most compliant company with the lowest offer was selected. The procurement file has been submitted to UNDP headquarters for final approval as required by UNDP procurement procedures. The issuance of the contract is pending approval by the LRF of the project extension.

The design and BOQ for the stone walls and small flood risk management structures are in process.

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

The Deir el-Ahmar reservoir of 30,000 m<sup>3</sup> has been completed and commissioned (phase I). The reservoir will contribute to the irrigation of more than 50ha of arable land in the plain of Deir el Ahmar and will benefit approximately 300 farmers. The construction of the reservoir has gone through different phases from excavation to the building of a 13m high dam, lining with gravel and porous concrete, construction of water supply and irrigation works, the installation of water proofing membrane and finally fencing.

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

#### **Phase I**

The maintenance of the 15,000 seedlings that were planted is on-going by the Municipality of Aarsal through a grant agreement with the project. Inspections on site have been carried out by the project team. Preliminary success in reforestation using seeds instead of seedlings is observed as the seedlings are growing and in good health. If a complete success is achieved further to an inspection past the summer season then this finding will have positive cost reduction implications on reforestation techniques.

#### **Phase II**

The TORs for reforestation in Ras Baalback as part of the second phase are ready; the procurement process will be initiated. Works will begin in October and will last until for 18 month.

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

A capacity development program is being prepared by the project for implementation in parallel to the execution of works on site. The program will include awareness raising sessions on floods and their impact, means to reduce flood risk such as the built reservoirs, deforestation and reforestation and the role of forests in reducing overland flow and increasing water table recharge, the importance of maintenance of the reservoirs further to flood events, and response to flood events. The target groups will consist of the Ras Baalback municipal members and workers who would be responsible to maintain the flood structures. These individuals will be trained on the technical aspects of maintenance and on the importance and need to maintain the structures. In addition, awareness raising events are planned that target the local community in the region about the importance of the works undertaken by the project. Brochures will also be produced.

## 6. Implementation Constraints

**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 warded 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.

**Evaluation.** On April 4, 2011, the LRF steering committee requested an evaluation of the project progress to decide on its future of the project. A consultant was selected and the contract signed on the 21<sup>st</sup> of June 2011. The evaluation was completed by the end of July 2007. Results were positive and the recommendations will be taken into account for the upcoming phase.

## Key Partnerships & Collaboration

A good partnership is established between UNDP, MoA, 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. The municipalities have become fully involved in the flood works. In Aarsal the staff of the municipality undertake routine checks on the reservoirs and perform needed maintenance works. The municipality is undertaking the maintenance of the seedlings planted by ARDA. In Ras Baalback the municipality has supported the project in land selection for the location of the reservoirs, the land for reforestation and all matters related to logistics with the consulting firm doing the design of the flood structure and the contractors bidding for the excavation. As regards the MoA the ministry has extended all the support required by the project in terms of logistics, administration and technical support.

Strong partnerships were developed with the the Ministry of Energy and Water and the Ministry of Environment. The MoEW personnel are currently aware of all the activities undertaken by the project and have been providing all the required support and advice needed for the execution of the project.

A strong partnership has been created with the UNDP disaster risk management project where the flood project will work on the development of a flood risk map for Lebanon. The project has been involved in the development of the Standard Operating Procedures for the early response by the army, civil defence and the Red Cross teams in case of a flood event. The project is also involved in the DisInventar database for floods in Lebanon. Finally the project will be involved in developing the national flood risk map for Lebanon.

No changes in partnership structure.



**IV. Work plan per activity for the 3<sup>rd</sup> quarter in 2011 (July-Sept 2011).**

Key Milestones Wks	Jul				Aug				Sept			
	1	2	3	4	1	2	3	4	1	2	3	4
<b>1. Project Management and Coordination</b>												
1.1 Technical, Financial and operational mgt.												
1.2 Promotion of synergies with other projects												
1.3 Information exchange and coordination.												
<b>2. Flood Risks Management and Reduction</b>												
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.												
<b>3. Irrigation Water Harvesting and Networking</b>												
3.1 Construction of water harvesting pond in Deir el Ahmar												
<b>4. Land Cover Increase &amp; Soil Erosion Reduction</b>												
4.1 Forestation and forage cultivation												
4.2 Identification of planting areas in Ras Baalback												
<b>5. Sustainability, Capacity Building &amp; Awareness Raising</b>												
5.1 Empowerment of target beneficiaries.												
5.2 Awareness raising on flood and water mgt.												
5.3 Capacity building through training.												
5.4 Alternative livelihoods												