



INTERIM PROGRESS REPORT

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	: January-March 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

FRM I 2.8 million USD	<ul style="list-style-type: none"> ➔ 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 maintenance of flood management structures.
FRM II 3.8 million USD	<ul style="list-style-type: none"> ➔ Establishment and Implementation of a flood risk management plan over an area of 250 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 maintenance 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.

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

International Partners: Spanish Agency for International Cooperation
German Society for International Cooperation (GIZ)

National Partners: Ministry of Agriculture
Ministry of Water & Energy, Bekaa
Local municipalities and communities

II. RESOURCES

	Amount (USD)	
	Phase I	Phase II
Total budget approved	2,843,881.00	3,800,000.00
Total disbursements –January to March 2011	2,568.00	71,296.78
Total disbursements as for March 2011	2,082,324.85	487,373.38
Commitments for next quarter	761,556.20	853,236.00

Budget and Expenditure Breakdown per LRF Category:

CATEGORY	Phase I			Phase II		Exp to date (March 2011)
	Total Budget (USD)	Exp. Jan to Mar 2011	Exp to date (March 2011)	Total Budget (USD)	Exp. Jan to Mar 2011	
1. Personnel (Incl. staff and consultants)	200,000.00	0.00	308,264.94	300,000.00	57,236.01	293,605.16
2. Contracts (Incl. companies, professional services)	250,000.00	2,400.00	156,397.07	250,000.00	0.00	102,173.80
3. Training (incl. AV printing / production)	50,000.00	0.00	8,741.20	50,000.00	0.00	2,343.00
4. Transport (local)	20,000.00	0.00	11,791.34	30,000.00	4,015.85	15,972.18
5. Supplies and commodities (Incl. IT equipment and rental & maintenance)	50,000.00	0.00	153,828.55	40,000.00	711.25	5,388.17
6. Equipment (including installation)	2,000,000.00	0.00	1,289,539.16	2,800,000.00	0.00	19,240.63
7. Travel	50,000.00	0.00	1,556.00	40,000.00	0.00	2,017.30
8. Miscellaneous	37,833.00	0.00	15,970.66	24,000.00	4,669.39	14,748.9
9. Agency Management Support (7%)	186,048.00	168.00	136,235.93	266,000.00	4,664.28	31,884.23
TOTAL	2,843,881.00	2,568.00	2,082,324.85	3,800,000.00	71,296.78	487,373.38

III. Results: Progress per activities

Project Outputs	Activities	Progress to date	Indicators	Targets for 2011
1. Project management	1.1 Technical, financial and operational Management.	<ul style="list-style-type: none"> Ongoing meetings with the project stakeholders, including the Ministry of Energy and Water and the Ministry of Agriculture, and subcontractors: Ras Baalback Municipality, Aarsal Municipality ELARD Rafik El Khoury & Farhat 	<ul style="list-style-type: none"> Coordination meetings Relevant projects identified Working groups established or existing groups used Information exchanged Timely completion of activities and reporting Effective networking 	<ul style="list-style-type: none"> Strengthened coordination with project stakeholders
	1.2 Promote synergies with relevant on-going projects in target area.	<ul style="list-style-type: none"> Preparation of a presentation on Flood Risks in Lebanon for the national flood committee organized by the Disaster Risk Management Project in view of the preparation of Standard Operating Procedures (SOP) for rescue action further to a flood event. 		<ul style="list-style-type: none"> Coordination with Municipality of Ras Baalback for phase II implementation
	1.3 Exchange of information and coordination meetings	<ul style="list-style-type: none"> Organization of a site visit for the LRF team Presentation to MoEW team on progress of works in Ras Baalback and provision of a complete design file for Ras Baalback for comments by the Ministry. 		<ul style="list-style-type: none"> Design of flood risk management structures for Phase II
				<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> Purchase of wheeled loader and tractor for Ras Baalback for maintenance purposes Review of the Expression of Interest of 10 contractors and selection of 4 for the excavation works in Ras Baalback Launching of invitation to bid for the selected contractors. 	<ul style="list-style-type: none"> Database created Target area defined Modeling maps developed Flood control structures constructed Preliminary assessment done and baseline created Monitoring and impact assessment reports submitted 	<ul style="list-style-type: none"> Initiation of excavations of flood water collection reservoirs (Phase II) Initiation of construction of FRM structures (Phase II)
	2.2 Modeling of target area and generation of maps.	<ul style="list-style-type: none"> Organization of a pre-bid site visit for contractors Finalization of the design of wall structures and preparation of the bid documents Preparation of TORs for the national flood hazard mapping consultant 		<ul style="list-style-type: none"> Development of a flood mgt plan for Ras Baalback (phase II)
	2.3 Construction for flood control and prevention.	<ul style="list-style-type: none"> Meeting with Litani River Authority for acquisition of river flow data in order to prepare the national flood risk maps 		<ul style="list-style-type: none"> Determine the number and locations of stone walls for phase II. Construct walls
	2.4 Monitoring, evaluation and impacts assessment			

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3. Water Harvesting and Irrigation Networks	3.1 Field surveys and assessment of water resources	<ul style="list-style-type: none"> • Work in progress for the Deir El Ahmar Pond • Water proofing membrane installation in progress • Continuous follow-up of site operations 	<ul style="list-style-type: none"> • Sources and quantities of superficial water identified • Contacts and meeting with concerned stakeholders established • Potential sites identified • Water reservoirs constructed • Irrigation system installed • Beneficiaries identified 	<ul style="list-style-type: none"> • Establishment of an artificial irrigation lake in Deir Al-Ahmar (Phase I)
	3.2 Identification of water-harvesting sites. 3.3 Construction of reservoirs and irrigation networks 3.4 Selection of beneficiaries and technical advice			<ul style="list-style-type: none"> • Installation of irrigation networks for target beneficiaries (Phase I)
4. Land Cover Increase and Soil Erosion Reduction	4.1 Identification of erosion-sensitive areas	<ul style="list-style-type: none"> • On-going collaboration with the UNDP MOE reforestation project • Finalization of new TORs for reforestation • Agreement between UNDP and Municipality of Aarsal • Collection of seeds from Ras Baalback and Aarsal for reforestation 	<ul style="list-style-type: none"> • Soil erosion risk map prepared • Nurseries for seedlings production established • New and marketable crops introduced • Crop yields and community income improved • Irrigated agriculture areas increased • Forested areas are increased 	<ul style="list-style-type: none"> • Forestation in Ras Baalback with wild fruit trees (Phase II)
	4.2 Establishment of nurseries for seedling production			<ul style="list-style-type: none"> • Development of plan to increase green cover in Ras Baalback (Phase II)
	4.3 Crop diversification and increased productivity			<ul style="list-style-type: none"> • Completion of maintenance works in Aarsal (Phase I)
	4.4 Forestation and forage cultivation			

<p>5. Sustainability, capacity building and awareness raising</p>	<p>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</p>	<ul style="list-style-type: none"> • Training programme development in progress. 	<ul style="list-style-type: none"> • Maintenance equipment provided to target beneficiaries and municipalities • Infrastructure for municipalities for flood management improved • Number of farmers trained • Farm income 	<ul style="list-style-type: none"> • Building the capacity of Municipality of Ras Baalback in flood management.
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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:

Continuous project supervision took place with 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:

Moreover the project team 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 a team of the MoEW including the advisors to the Minister, Director General Baroud and other staff to inform them of the progress of works in Ras Baalback. A complete study file was also sent to MoEW for comments, however no response was received.

The project organized a site visit to Ras Baalback and Aarsal for the LRF team Ms. Lyn Eid and Mr. Walid Nasr. The project works were explained to the team during the visit as well as inspection of works undertaken in Phase one and the location of works for phase two.

2. Flood Risk Management Phase:

The flood reservoirs require maintenance in the form of rubble removal further to flood events. The flood project has purchased one wheeled loader and one tractor to be given to the municipality of Ras Baalback for maintenance works. The equipment is in shipment and it is expected for delivery in June 2011.

An invitation to bid for the excavation of the reservoirs in Ras Baalback was sent to four pre-qualified contractors. A pre-bid site visit was organized to familiarize the selected contractors with the site conditions and respond to any inquiries they might have.

A strong partnership has been built with the Disaster Risk Management (DRM) Project at the Prime Minister's Office. The UNDP flood project will undertake the development of a national flood risk map for Lebanon. TORs for a consultant to develop the flood risk maps are being drafted. The DRM project is preparing standard operating procedures (SOP) for emergency responses in case of disasters such as floods. The flood project prepared a presentation on floods in Lebanon for the national committee responsible for drafting the SOPs.

3. Water Harvesting for extending irrigation periods:

A 30,000 m³ water reservoir is being constructed in Deir el Ahmar. The reservoir will contribute to the irrigation of more than 50ha of arable land in the plain of Deir el Ahmar. 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. The fence installation works have been started.

4. Land Cover increase and soil erosion reduced:

Phase I

15,000 seedlings have been planted in several locations in Aarsal. The maintenance of these seedlings is currently being undertaken by the Municipality of Aarsal through a grant agreement with the project.

Phase II

The reforestation in Ras Baalback will have several objectives:

- a. Increase green cover
- b. Test new irrigation techniques through the use of solid water irrigation systems
- c. Test the difference in result between planting 6-8 month old and 18-24 month seedlings
- d. Test reforestation techniques through planting seeds vs. seedlings

Reforestation is being undertaken in partnership with the GEF reforestation project at MoE. Solid water is a new irrigation technique reducing the need for frequent irrigation. There are two types of systems: Rechargeable and non-rechargeable. The rechargeable system is made of a granule like material that absorbs water and releases it over a period of 2 month. The non-rechargeable type is made of a gel like material in tube form that gets replaced when the gel is exhausted. Both systems will be tested in Ras Baalback. Currently, the reforestation specification manuals of MoE and MoA require the use of seedlings that are 18-24 month old. It seems, however, that at this age the seedlings have a low survival rate. The project will test the use of 6-8 month seedlings. Reforestation using seedlings is a costly endeavor. The project will test the use of the seeds and not seedlings in reforestation.

Currently the project is finalizing TORs for hiring a contractor to undertake the reforestation works in Ras Baalback

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.

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.

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 undertakes 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.

Stronger partnerships were developed with the disaster risk management project, 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.

Previous partnerships have been kept strong.

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

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												
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												