



## UNDG Iraq Trust Fund

### FINAL PROGRAMME<sup>1</sup> NARRATIVE REPORT

Programme Title & Number
<ul style="list-style-type: none"> <li>• Programme Title: "Rehabilitation and Conservation of Kahrez systems in Northern Governorates"</li> <li>• Programme Number: A5-21</li> <li>• MDTF Office Atlas Number: Project Number: 66925; Award Number: 54925</li> </ul>

Country, Locality(s), Thematic Area(s) <sup>2</sup>
Iraq: Agriculture and Food Security Sector Outcome Team

Participating Organization(s)
UNESCO

Implementing Partners
<ul style="list-style-type: none"> <li>• Ministry of Water Resources of both Central Government and KRG</li> </ul>

Programme/Project Cost (US\$)
MDTF Fund Contribution:
US\$ 1,600,628
Government Contribution <i>(if applicable)</i>
Other Contribution (donor) <i>(if applicable)</i>
<b>TOTAL: US\$ 1,600,628</b>

Programme Duration (months)	
Overall Duration	42 months
Start Date <sup>3</sup>	30 September 2007
End Date or Revised End Date, <i>(if applicable)</i>	31 March 2011
Operational Closure Date <sup>4</sup>	31 March 2011
Expected Financial Closure Date	30 June 2011

Programme Assessments/Mid-Term Evaluation
Assessment Completed - if applicable <i>please attach</i>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Date: 30/01/2012
Mid-Evaluation Report - <i>if applicable please attach</i>
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Date: _____

Submitted By
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<sup>1</sup> The term "programme" is used for programmes, joint programmes and projects.

<sup>2</sup> Priority Area for the Peacebuilding Fund; Sector for the UNDG ITF.

<sup>3</sup> The start date is the date of the first transfer of the funds from the MDTF Office as Administrative Agent. Transfer date is available on the [MDTF Office GATEWAY](http://mdtf.undp.org) (<http://mdtf.undp.org>).

<sup>4</sup> All activities for which a Participating Organization is responsible under an approved MDTF programme have been completed. Agencies to advise the MDTF Office.

## **FINAL PROGRAMME REPORT**

### **I. PURPOSE**

The project aims to improve the supply of water for drinking and for irrigation in rural areas of the northern governorates through the rehabilitation and conservation of traditional aqueduct structures, called *karez*. The immediate objectives are to (1) rehabilitate and conserve karez water systems; (2) build technical capacity in the long-term rehabilitation and maintenance of traditional karez systems; and (3) build networking with concerned institutions in the region to share the information and experience in the traditional water systems.

#### **Outcomes of the Programme/Project:**

1. karez water systems rehabilitated and conserved;
2. technical capacity enables long-term rehabilitation and maintenance of traditional karez systems; and
3. Information and experience shared in the northern region of Iraq on the rehabilitation, conservation and management of karez systems.

#### **Outputs of the Programme/Project:**

- 1.1. Selected karez systems rehabilitated
- 1.2. Rehabilitation and conservation plan developed for further rehabilitation and long-term conservation
- 1.3. Short-term employment created
- 2.1. Selected community members trained to operate and maintain the system
- 2.2. Awareness raised on the proper use of the system
- 2.3. Technical capacity of experts, technicians, enhanced
- 2.4. Operating policies and procedures for managing the rehabilitated sections put in place
- 3.1. A network with regional and international experts established in order to ensure continuous exchange of information and expertise on Karez systems for the long term conservation

#### **Strategic (UN) Planning Framework guiding the operations of the Fund.**

This project's objectives fall within the Water and Sanitation and Agriculture Clusters of the joint UN Assistance Strategy for Iraq by promoting an increased sustainable access to safe water for urban and rural populations, especially for the most vulnerable (Outcome 1); supporting the rehabilitation and extension of water systems (Output 1.1.); enhancing capacities for effective management of WATSAN (Outcome 3); and developing capacities at national and governorate level for planning, implementation, monitoring and evaluation (Outcome 3.2.). In agriculture, the project promotes the enhancement of production and productivity in the agricultural sector (Outcome 1) and the rehabilitation of irrigation and infrastructure in selected areas (Output 1.1.).

## **Key partnerships and collaborations**

UNESCO has been implementing project activities in close collaboration with the KRG Ministry of Agriculture and Water Resources (formerly the Ministry of Water Resources). Engineer staff from the Ministry's Directorate of Irrigation and Surface Water are the key recipients of technical training, and have been instrumental in implementation. The project has relied on the training services and technical advisory capacities of UNESCO's Institute for Qanats and Historical Hydraulic Structures (ICQHS) in Yazd, Iran. ICQHS also provided expert advice and surveying services for the preparation of and supervision of the restoration of the Sheikh Mamudian karez. UNESCO also worked with IOM in the rehabilitation of Karez.

## **II. ASSESSMENT OF PROGRAMME/ PROJECT RESULTS**

### **a. Report on the key outputs achieved and explain any variance in achieved versus planned results.**

#### **Output 1.1:**

##### **Selected Karez systems rehabilitated**

Building on restoration efforts which began 2 November 2009, the project continued targeting vulnerable karez communities in Erbil and Sulaymaniyah governorates. By 31 December 2010, some 16 karez were completed, bringing the total to 17 karez in the overall project. Restoration of the remaining 3 karez were completed in February 2011.

#### **Output 1.2:**

##### **Rehabilitation and conservation plan developed for further rehabilitation and long-term conservation**

Due to the urgent need to update the understanding of Karez in the region and to address the limited capacity and understanding held by the KRG, a comprehensive "Survey of Infiltration Karez of Northern Iraq" was undertaken from June to August 2009. The survey found that Iraq's karez are far more numerous than previously expected (683 in total), most (85%) are located in the Sulaymaniyah Governorate, and most lie in disrepair (only 115 karez are still flowing in August 2009). Furthermore, it was revealed that a loss of 70% of the active karez have dried up since the onset of drought in 2005, causing the displacement of an estimated 100,000 people. The survey also estimates that 36,000 people still depending on karez are on the verge of being forced to evacuate if conditions do not urgently improve. The survey identified 50 communities that meet the criteria for immediate restoration, which can help alleviate the insecurity and pressure to evacuate. The urgent situation was confirmed by the project manager through several visits to some of the villages. For example, the isolated village of Kuna Flusa was observed to have an output of 60L/day, or about 4L per family per day. The survey findings and conclusions help reorient the project to target karez most in need of intervention. The survey provides a basis for government restoration projects in the future and a baseline for the restoration plan. The plan was delivered to KRG MoAWR on 15 Sept 2009.

The survey's results generated a significant amount of interest in the Iraqi and international press, including the New York Times, the Toronto Star, Al Jazeera, BBC, ABC, Reuters and AFP.

**Output 1.3:**

**Short term employment created**

Employment of 25 (skilled) and 85 (unskilled) local persons created so far.

**Output 2.1:**

**Selected community members trained to operate and maintain the system and awareness raised on the proper use of the system**

710 community members trained till the end of the project in March 2011. .

**Output 2.2:**

**Technical capacity of experts, technicians, enhanced**

Team of 25 Iraqi experts have received training on basic and advanced karez restoration techniques and database management. Training took place in July 2008 and December 2009 at ICQHS (Yazd, Iran).

**Output 2.3:**

**Operating policies and procedures for managing the rehabilitated sections put in place**

Training on database and karez registry completed in 2008. Survey report (delivered to KRG MoAWR in September 2009) provides a comprehensive database of karez and their attributes, as well as guidelines for policies and management. Guidelines have been adopted by team of karez engineers of the General Directorate for Irrigation.

**Output 3.1:**

**A network with regional and international experts established in order to ensure continuous exchange of information and expertise on Karez systems for the long term conservation**

KRG MoAWR now represents Iraq on the technical board of the UNESCO International Center on Qanats and Historical Hydraulic Structures (Iran), ensuring a network and exchange of practices and expertise. Training, karez survey and the preparations for Karez Phase II project (2010-2012) have allowed for knowledge and experience to be exchanged among KRG experts and international counterparts.

- b. Report on how achieved outputs have contributed to the achievement of the outcomes and explain any variance in actual versus planned contributions to the outcomes. Highlight any institutional and/ or behavioural changes amongst beneficiaries at the outcome level.**

Outputs expected as per approved project document	Explanation
1.1. Selected karez systems rehabilitated	Restorations suspended from 5-10/2009 to complete karez survey and plan. Restoration of model karez began 2 Nov 2009, 20 Karez restoration was completed in February 2011.
1.2. Rehabilitation and conservation plan developed for further rehabilitation and long-term conservation.	Survey of karez in the region (their location and condition were studied) completed, identifying karez for long-term plan. Plan delivered to KRG MoWR on 15 Sept 2009.
1.3. Short-term employment created for rehabilitation.	Employment of 30 local persons (skilled worker) 85 unskilled workers created short-term labour jobs created through the maintenance of karez.
2.1. Selected community members trained to operate and maintain the system, and their awareness raised on the proper use of the system	710 community members were trained
2.2. Technical capacity of experts, technicians, promoted by training programs and workshops	A team of 25 Iraqi experts have received training on basic karez restoration and functionality, and database management. Advanced training postponed until March 2010 (July course was delayed due to recent instability in Iran and availability of trainers).
2.3. Operating policies and procedures for managing the rehabilitated sections put in place	Training on database and karez registry completed in 2008. Survey report (delivered to KRG MoWR in September 2009) provides a comprehensive database of karez and their attributes, as well as guidelines for policies and management. Guidelines have been adopted by team of karez engineers of the General Directorate for Irrigation.
3.1. Network with regional and international experts established in order to ensure continuous exchange of information and expertise on Karez systems for the long term conservation	KRG MoWR now represents Iraq on the technical board of the UNESCO International Center on Qanats and Historical Hydraulic Structures (Iran), ensuring a network and exchange of practices and expertise. Training, karez survey and the preparations for Karez Phase II project (2010-2012) have allowed for knowledge and experience to be exchanged among KRG experts and international counterparts.

**c. Explain the overall contribution of the programme to the Strategy Planning Framework or other strategic documents as relevant, e.g.: MDGs, National Priorities, UNDAF outcomes, etc**

This project contributes to MDG Goal 7, “Ensure the environmental sustainability”, by promoting the use of traditional karez systems in the rural areas as a sustainable technology. In particular, the project addresses the loss of environmental resources and promotes the access to sustainable, safe drinking water.

The project addresses the following goals within the ICI:

*4.4.1.5 Environment, Water & Sanitation, Housing:*

Goal: improve access to water and sanitation by one third

2. Undertake specific measures to ensure universal access to services (wat/san, housing, etc.)

*4.6. Agriculture and Water Management Strategy*

Goal: To support the development of the agriculture sector to achieve food security, generate employment, diversify the economy and preserve the countryside

4. Improve institutional and regulatory underpinnings of public agriculture

*Iraqi National Development Strategy*

The project addresses the following goals within the NDS (2007-2010):

(Target) (8): Full access to water and health services for all people

*Support for future plans in agriculture:*

11. Using renewable underground water in all agricultural and livestock breeding fields without being consumed through digging wells in promising areas.

*Main priorities in agriculture:*

b. Restoration of irrigation infrastructure

f. Rehabilitating irrigation, drainage and soil maintenance projects as a base for production increase in one hectare

i. Organizing irrigation projects in a way securing agriculture requirements and achieving sound irrigation system

*Main priorities in water and sanitation:*

d. Improve water quality and upgrade the water distribution networks.

f. Provide adequate crude water resources for all regions of Iraq.

**d. Explain the contribution of key partnerships and collaborations, and explain how such relationships impact on the achievement of results.**

UNESCO has been implementing project activities in close collaboration with the KRG Ministry of Ministry’s Directorate of Irrigation and Surface Water are the key recipients of technical training, and have been instrumental in implementation.

The project has relied on the training services and technical advisory capacities of UNESCO’s Institute for Qanats and Historical Hydraulic Structures (ICQHS) in Yazd, Iran. Furthermore, training of local community members takes place on site and through the recruitment of labour.

- e. Who have been the primary beneficiaries and how they were engaged in the programme/ project implementation? Provide percentages/number of beneficiary groups, if relevant.

Please refer to item (I.b.) where the number of beneficiaries has been clearly reflected.

- f. Highlight the contribution of the programme on cross-cutting issues pertinent to the results being reported.

*Employment:* A key element for tackling unemployment is through the development of karez restoration and maintenance skills that should lead to job opportunities. Engineers and hydraulic companies will be skilled to contribute to the budding karez technical workforce.

- g. Has the funding provided by the MDTF/JP to the programme been catalytic in attracting funding or other resources from other donors? If so, please elaborate.

No.

- h. Provide an assessment of the programme/ project based on performance indicators as per approved project document using the template in Section IV, if applicable.

Please see below

### III. EVALUATION & LESSONS LEARNED

- a. Report on any assessments, evaluations or studies undertaken relating to the programme and how they were used during implementation. Has there been a final project evaluation and what are the key findings? Provide reasons if no evaluation of the programme have been done yet?**

The project undertook a comprehensive scientific survey of the location, state and condition of karez in the region from July to September 2009. The significant results of the survey not only provided a baseline for both the project and government programs, but also provide a new impetus for the project to target karez on the basis of urgency, need and feasibility.

An external evaluation was accomplished and submitted to UNESCO Iraq office in January 2012 (A copy of the External Evaluation Report is attached)

- b. Explain, if relevant, challenges such as delays in programme implementation, and the nature of the constraints such as management arrangements, human resources, as well as the actions taken to mitigate, and how such challenges and/or actions impacted on the overall achievement of results.**

The main challenges to the project thus far have been related to severe drought which caused the project's main partners (KRG MoWR engineers) to be occupied with other more important tasks; planning for quality control of the renovation works, and procurement (the Ministry misplaced part of the equipment procured by the project). Other factors include untimely response and difficult communication with the MoWR. The absence of a sitting KRG Minister of Water Resources from June to October 2009 has contributed to some delays in getting some feedback and collaboration. In the fourth quarter of 2009, the return of the rains slowed restoration of the Shekh Mamudian karez only slightly.

**c. Report key lessons learned that would facilitate future programme design and implementation, including issues related to management arrangements, human resources, resources, etc.,**

- UNESCO faced some difficulties in the coordination with the Ministry of Water Resources in Iraq, so it is very important that the ministry assign a Project Focal point responsible to follow up with UNESCO staff on the implementation of the project.
  
- Monitoring and Evaluation process is an essential part that needs to be done during the implementation of project.

## VIII. INDICATOR BASED PERFORMANCE ASSESSMENT

	Performance Indicators	Indicator Baselines	Planned Indicator Targets	Achieved Indicator Targets	Means of Verification	Comments (if any)
<b>IP Outcome 1: Karez water systems rehabilitated and conserved</b>						
<b>IP Output 1.1</b> Selected Karez systems rehabilitated	<b>Indicator 1.1.1</b> Number of Karez rehabilitated	0	20	20	Progress reports, payments, photos, field missions	
	<b>Indicator 1.1.2</b> Change in quality and quantity of native water supply	0	70%	70%	Baseline and post-rehabilitation surveys	It must be noted that the correlation between a rehabilitated Karez system and a positive change in water quantity and quality is not 100% established
<b>IP Output 1.2</b> Rehabilitation and conservation plan developed for further rehabilitation and long-term conservation	<b>Indicator 1.2.1</b> Number of Karez identified for further rehabilitation	0	20	20	N/A	Based on Survey results and recommendations
	<b>Indicator 1.2.2</b> Strategy for longer term rehabilitation and conservation	0	1	1	General survey of the existing Karez systems and its situation	Based on Survey results and recommendations
<b>IP Output 1.3</b> Short-term employment created	<b>Indicator 1.3.1</b> Unskilled labour created	0	50 persons x 90 days	85	Progress reports, invoices, contracts	Recruitment of unskilled workers was undertaken by the contracted party implementing the works
	<b>Indicator 1.3.2</b> Skilled labour created	0	10-12 persons x 40 days	25	Progress reports	Skilled labour provided mostly by the MoWR engineers who will work closely with the contractor. In this case, labour is not necessarily 'created'.

<b>IP Outcome 2: Technical capacity built in the long-term rehabilitation and maintenance of traditional Karez systems</b>						
<b>IP Output 2.1</b> Selected community members trained to operate and maintain the system	<b>Indicator 2.1.1</b> Number of community members trained	0	750	710	Community training participants list, MoWR report	
<b>IP Output 2.2</b> Awareness raised on the proper use of the system	<b>Indicator 2.2.1</b> Number of beneficiaries with improved awareness on the use of the Karez	0	20 communities	20	Community training participants list, MoWR report	MoWR to provide training at handover of karez to community once restoration is complete
<b>IP Output 2.3</b> Technical capacity of experts, technicians, enhanced	<b>Indicator 2.3.1</b> Number of technical workshops	0	2	2	Workshop reports	ICQHS, Oman workshops
	<b>Indicator 2.3.2</b> Number of Ministry staff trained in workshops	0	15	25	Participants list	ICQHS, Oman workshops
	<b>Indicator 2.3.3</b> Number of experts receiving practical experience	0	20	25	Progress reports, records from Ministry and/or contracting party	Selected MoWR experts will be involved in the renovation works with the contracted construction firm and guided by an outside expert. Experts will also receive training on use of surveying equipment
<b>IP Outcome 3: Information and experience shared in the region on the rehabilitation, conservation and management of Karez systems</b>						
<b>IP Output 3.1</b> A network with regional and international experts established in order to ensure continuous exchange of information and expertise on Karez systems for the long term conservation	<b>Indicator 3.1.1</b> Number of regional and international experts connected with MoWR trained staff	0	10	10	Workshop reports, participants list	Cooperation by neighboring countries (Workshop on data management organized by the Omani Government)