



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

VIENNA INTERNATIONAL CENTRE

P.O. BOX 300, A-1400 VIENNA, AUSTRIA

TELEPHONE: (+43 1) 260 26-0

FAX: (+43 1) 269 26 69

www.unido.org

unido@unido.org

29 September 2006

Dear Mr. Akililu,

Enclosed please find the requested final report "Rehabilitation of Chlorine Production Facilities in Iraq for Water and Sanitation" and the financial statement for the project FB/IRQ/04/002, as foreseen in the UNDG Iraq Trust procedures.

We thank you kindly for your assistance and hope to cooperate with you in the future, in line with this or other projects.

Sincerely yours,

A handwritten signature in black ink, appearing to read "D. Piskounov".

Dmitri Piskounov

Managing Director

Programme Development and
Technical Cooperation Division

Mr. Bisrat Akililu
Executive Coordinator
UNDG Iraq Trust Fund
828 Second Ave., 4th Floor, New York,
N.Y. 10017
USA



FINAL REPORT FOR PROJECT:

**REHABILITATION OF CHLORINE PRODUCTION FACILITIES IN IRAQ
FOR WATER AND SANITATION**

Summary

Participating UN Organisation: United Nations Industrial Development Organization (UNIDO)	Cluster: E Infrastructure Rehabilitation
Project No. and Project Title: C3-02 Rehabilitation of Chlorine Production Facilities in Iraq for Water and Sanitation	Project Location/Region/Province: Petrochemical plant Basra, Iraq
Reporting Period: Till July 2006	Report no: Final
Counterpart organizations/implementing partners: Ministry of Industry and Management of the petrochemical plant, Basra	Project cost: US\$ 7,000,016
Abbreviations and acronyms:	Project Duration: 22 months

I. Purpose

Main objectives and outcomes expected as per approved Project/Programme/Project Document:

Objectives

- Rehabilitation of the existing chlorination unit at the petrochemical complex in Basrah to ensure 50% of original capacity (20 to 25,000 tonnes of chlorine per year in terms of product);
- Assessment of the needs and costs of rehabilitation of chlorine plants in Suddah, Sadert El-Hindia and Tharthar;
- Plant operators trained in efficient process, environmental and financial management of the chlorine production plants;
- Resumed domestic supply of chlorine for water purification and sanitation.

Outputs as per project document

- An assessment of the physical condition of the plant in Basra.
- Preparation of detailed rehabilitation plan and budget, as also an implementation schedule.
- Preparation of specifications of equipment.
- Purchase and delivery of equipment.
- Installation of equipment.
- Start-up of the plant.
- Identification of training needs and preparation of the programme for the Basra plant and other chlorine facilities.
- Training of personnel.
- Assessment of demand for aluminium sulphate and of the physical conditions of aluminium sulphate facilities.

Reference to how the programme/project relates to the UN Assistance Strategy to Iraq 2005/5 and how it aims to support international and national development goals (revised National Development Strategy Dead Sea July 2005) including the Millennium Development Goals and other pertinent goals:

The project addresses the issue of provision of safe water for drinking and sanitation for the people of Iraq. While providing a basic chemical for the treatment and purification of water, the project will also ensure the environmental sustainability and safety of the rehabilitated chlorine production process.

The project thereby addresses:

- Target 10 of the UN-MDG, i.e. to *"halve by 2015 the proportion of people without sustainable access to safe drinking water and sanitation"*, and
- MDG Goal 7, i.e. to *"ensure environmental sustainability"*.

Main international and national implementing partners involved, their specific roles and responsibilities in project implementation and their interaction with the agency:

The main international partners are UNICEF and UNDP. Until recently UNICEF was the Cluster Manager for WATSAN. Both Agencies are helping with the logistics for work undertaken at the project site.

By virtue of the project being located at a specific industrial site, Basrah, international personnel had access to the site. However, this was extremely limited. In order to complement international inputs, the project drew extensively on the capabilities of national specialists, especially the technical personnel of the plant. In addition, for monitoring and baseline assessments, UNIDO relied on the services of an international NGO, which had the requisite capacity to mobilize local expertise on the ground. Difficulties were encountered with the flow of information, between Baghdad and the plant management, as there have been between Iraqi counterparts and external partners. These difficulties have been compensated for, in that project planning and assessment meetings were organized in Amman, Jordan. The assistance of the national counterparts and their engagement in the project have been adequate.

II. Resources

Total approved budget and summary of resources available to the programme/project from the UNDG Iraq Trust Fund and non-Trust Fund resources where applicable:

UNDG ITF funds received: US\$ 7,000,016
Amount disbursed: US\$ 662,977
Uncommitted amount: US\$ 22,000
US\$ 6,248,052 has been returned to the UNDG Trust Fund.

Originally it was anticipated that the existing cell technology could be rehabilitated. The plant assessment of February 2005, however, revealed that the existing plant and its' technology were outdated and in an acute state of disrepair. This necessitated a change in project strategy, whereby it was decided with project counterparts to install modern membrane technology, which meant a major change in project strategy. The Government of Iraq requested a fully operational chlorination plant with the capacity of 10,000-12,000 tonnes of chlorine. Funds for such a project were not available. Therefore, the project was interrupted and the balance of US\$ 6,248,052 was returned to the donor.

III. Results

An assessment of the extent to which the programme/project component/programme/project is progressing in relation to the outcomes and outputs expected for the year:

The project was prepared at the beginning of 2004 upon the request of the Government of Iraq and based on the rehabilitation scenario. That assumed that the chlorination plant would be put in operation utilizing the existing diaphragm technology and equipment through its upgrade, supply of the spare parts and training of personnel. That also implied that the existing technology and equipment were to be used for the plant rehabilitation. The final selection of technology would be made after completion of the baseline assessment of the existing plant conditions.

Due to specifics of the Iraq conditions the project strategy envisaged an assessment phase and implementation phase. After the assessment phase exact modality of operation and a blend of international and national experts/contractors were identified. Additionally, the exact funding requirements were also identified.

During the assessment phase specialists from UNIDO visited the facilities in December 2004 to inspect their physical condition and the plant operations. Following the assessment the specialists came to the following conclusions:

1. The existing chlorination plant should not be rehabilitated. The plant technology is obsolete and it was not recommended for further use, due to environmental reasons (UNEP concerns). From the technical and financial viewpoints it was advised that a new facility according to the best available technology (BAT) should be established instead. This is also preferable from an environmental viewpoint;
2. Membrane technology was proposed as the BAT for the new plant (World Bank recommendations).

In December 2004 the Government of Iraq at the Inception meeting independently requested to have the technology changed from diaphragm to membrane. The capacity of the new plant was estimated at

10,000-12,000 tonnes with a possibility of expansion up to 20,000-25,000 tonnes

The proposed change in technology necessitated an entire change in the project design and design of the plant starting from its basic engineering. Moreover, the project budget calculated for the plant rehabilitation was no longer sufficient to have the new plant equipment purchased and installed. With the budget that had been allocated to UNIDO, it could only supply the Basic Engineering package and the main part of the plant – the electrolyzer including its installation. The remaining equipment, including the civil engineering work, in this case, would have to be supplied by the Government.

This approach was discussed with the Government representatives at the progress review meeting in August 2005 in Jordan. During the meeting the Government representatives and the counterpart agreed on the option that UNIDO, due to the fact that the project had changed drastically, would supply only the Basic engineering package and the electrolyzer for the new plant. The rest would have to be supplied by the Government.

As such the bulk of the project on the term agreed upon in August 2005 could be completed in the first half of 2006.

However, the Government of Iraq was willing to have the functioning plant. The additional budget needed to make the plant fully functional is approximately US\$ 20 mln.

The project progressed according to the plan until November 2005. In November 2005 a letter was sent to the Minister of Industry of Iraq to confirm the project deliverables. A reply has not been received. After consultations with the Cluster and UNAMI, UNIDO decided to interrupt the project and to return the remaining balance to the UNDG Trust Fund. UNIDO would be ready to continue the project in the future on the condition that sufficient funding is provided and local civil engineering and infrastructure including power supply, water, steam, etc., are available.

Main activities undertaken and achievements/ impacts:

All major activities were funded by the UNDG ITF.

1. The initial assessment made it clear that the original rehabilitation strategy was unviable. Modern membrane technology therefore needed to be introduced;
2. In December 2004 the Government of Iraq at the Inception meeting independently requested to have the technology changed from diaphragm to membrane. The capacity of the new plant was estimated at 10,000-12,000 tonnes with a possibility of expansion for up to 20,000-25,000 tonnes;
3. In August 2005 at the Progress Review meeting in Amman, Jordan the Government of Iraq requested UNIDO supply a turn-key plant, which was a significant change to the project approach;
 - a. The Basic Engineering package to be used to introduce the membrane technology has been prepared;
4. The tender for the supply of the electrolyzer has been completed. However, the electrolyzer has not been ordered;
5. The costs for the turn-key plant have been calculated by UNIDO at US\$ 20 mln;
6. The project was interrupted by UNIDO and the remaining funds returned to the donor.

Implementation constraints, lessons learned from addressing these and knowledge gained from assessments, evaluations and studies that have taken place during the reporting period:

The design of industrial projects, such as this one, and the establishment of their budgets are very difficult without on-site visits and analysis of facilities. The initial project proposal was based on information that was available to national counterparts. That information was incomplete and therefore required further on-the-ground verification. The on-site assessment necessitated the adjustment of the project strategy and a change in the technological option, as follows:

1. It is not feasible to rehabilitate the existing chlorination plant. It has been proposed that the obsolete diaphragm technology be replaced by the best available membrane technology, with a capacity of 10,000 to 12,000 tonnes per year;
2. With the allocated budget, UNIDO could only supply the Basic Engineering package and the main part of the plant – the electrolyzer including its installation;
3. The Government is willing to have functioning facility. This however was decided only at the last moment. The inadequate flow of information and unclear lines of responsibility in counterpart institutions however, made it difficult to reveal this at an earlier stage. It is highly important to have a clear understanding among UNIDO, the Government and the donors about the deliverables of the project.

Key partnerships and inter-agency collaboration, impact on results:

Cooperation with UNDP/UNICEF and other multilateral and bilateral Agencies facilitates project implementation for UN Partners that do not have a permanent presence in Iraq. This cooperation at the field level greatly facilitated on-site work in Basra.

Highlights and cross cutting issues pertinent to the results being reported on, e.g. gender disaggregation, policy engagement and participation of the public:

Rehabilitation of the chlorine production would enable creation of additional employment at the plant. In addition, the project would provide an essential chemical for water purification. The technical and operating skills of the plant personnel could be upgraded, in conformity with current international standards.

IV. Future Work Plan

Priority actions planned for subsequent reporting periods to overcome constraints, build on achievements and partnerships, and use the lessons learned during the previous period:

N/A. The project has been interrupted. UNIDO would be prepared to resume the work if the necessary funding for the fully operational plant is solicited.

Indication of major adjustments to the strategies, targets or key outcomes and outputs:

As repeatedly mentioned, rehabilitation of the existing diaphragm cell technology was not feasible on technical as well as environmental grounds. Thus, a technology upgrade is necessitated. Within the allotted budget the project could only supply a basic engineering package for a 10 -12000 tonnes/year plant as well as the electrolyzer. If a fully operational plant is to be constructed the budget of the project should be increased to the total of US\$ 20 mln.

Estimated Budget required (including any major funding shortfalls):

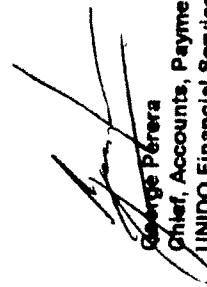
Estimated budget required for the fully operation plant is US\$ 20 mln.

UNDG IRAQ TRUST FUND
Summary Financial Statement
as at 30 June 2006

Agency: UNIDO
 Cluster: 3

Summary Financial Statement (US \$)

	C3-02 (FBIRQ04002)	Total
Funds Received	7,016,330.00	7,016,330.00
Fund Refunded in June 2006 Expenditure	6,245,000.00	6,245,000.00
Cumulative Programme Costs (from Schedule 2)	662,977.05	662,977.05
Indirect Support Costs (from Schedule 2)	45,176.39	45,176.39
Total Expenditure	708,153.44	708,153.44
Funds on Hand	63,176.56	63,176.56
Interest (not included in E)	201,488.86	201,488.86


 George Pérez
 Chief, Accounts, Payments and Treasury
 UNIDO Financial Services
 21 September 2006

UNDG IRAQ TRUST FUND

Detailed Financial Statement

as of 30 June 2006

Agency: UNIDO
 Cluster: 3
 Project Title: Rehabilitation of Chlorination Production Facilities for Water and Sanitation in Iraq
 UNDG ITF SC Project No.: C3-02
 Location: FBIRQ04002

	Approved Project Budget/Budget Rev	Previous periods Prior 2006 (A)	Current period Jan-Jun 2006 (B)	Total (C=A+B)
Programme Costs:				
Personnel	132,458.00	103,347.08	25,111.10	128,458.18
Contracts	500,069.00	500,069.00	-	500,069.00
Training of counterparts	30,381.00	25,381.23	-	25,381.23
Transport	-	-	-	-
Supplies and commodities	-	-	-	-
Equipment	-	-	-	-
Travel	15,704.00	5,826.26	1,877.63	7,703.89
Security	-	-	-	-
Miscellaneous	6,365.00	1,364.75	-	1,364.75
Total Programme costs: (Transfer to Schedule 1)	684,977.00	635,988.32	26,988.73	662,977.05
Indirect support costs (Transfer to Schedule 1)	47,948.39	43,287.18	1,889.21	45,176.39
Total Expenditure:	732,925.39	679,275.50	28,877.94	708,153.44
Interest Earned				
2004		\$9,863.67 **		
2005		\$181,625.18		

*: Balance after refund is: 7,016,330-6,245,000=771,330. Only \$732,925.39 of the 771,330 has been budgeted.
 The balance of \$38,404.61 is set aside for contingent expenditures.

** : Refunded to UNDG in 2005, therefore balance is now 0.


 Georg Perle
 Chief, Accounts, Payments and Treasury
 UNIDO Financial Services
 Date: 20 September 2006


 Akira Horo
 Chief, Financial Management of Technical Cooperation
 UNIDO Financial Services
 Date: 20 September 2006