

**PROJECT INFORMATION DOCUMENT (PID)  
CONCEPT STAGE**

Report No.: AB2246

<b>Project Name</b>	Dokan and Derbandikhan Emergency Hydro Power Project
<b>Region</b>	MIDDLE EAST AND NORTH AFRICA
<b>Sector</b>	Renewable energy (100%)
<b>Project ID</b>	P099059
<b>Borrower(s)</b>	GOVERNMENT OF IRAQ
<b>Implementing Agency</b>	Ministry of Industry and Electricity of Kurdistan Regional Government Iraq
<b>Environment Category</b>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> FI <input type="checkbox"/> TBD
<b>Date PID Prepared</b>	March 27, 2006
<b>Estimated Date of Appraisal Authorization</b>	May 15, 2006
<b>Estimated Date of Board Approval</b>	September 15, 2006

## A. BACKGROUND

### Country and Sector Background

1. Large oil reserves and abundant natural and human resources enabled Iraq to attain the status of a middle-income country in the 1970s. Income per capita rose to over US\$3,600 in the early 1980s. Today, Iraq's human development indicators are among the lowest in the region. Per capita income dropped to about US\$770-1,020 by 2001. Although 12% higher than in 2004, the US\$1,054 income per capita of 2005 is still about 28% of what Iraqis enjoyed 25 years ago. Recent surveys suggest that poverty has worsened in recent years and unemployment is estimated to be at least 30%.
2. Today most Iraqis have limited access to essential basic services, including electricity, water supply, sanitation, and refuse collection. Electricity supply, upon which essential services such as water supply, sanitation and hospitals rely on, remains unreliable.
3. In 1990, prior to the Gulf War, the total installed generating capacity was 9,295MW with a peak demand of about 5,100 MW. Approximately 87% of the population had access to electricity. A combination of wars, sanctions, looting and vandalism has however, severely affected the entire power system infrastructure in Iraq: during the 1991 Gulf War the electricity system suffered severe damage. Several transmission lines were put out of service, substations were damaged, and the power generation equipment was the most severely affected. The

available capacity was reduced to 2,325MW and power cuts of up to fifteen hours or more were common.<sup>1</sup> In some areas there was no supply at all.

4. While some of the damage of the 1991 war was repaired and about 4,500MW of generating capacity was available in 2002, power supply remained unreliable throughout the nineties and load shedding and unplanned power outages were frequent. After the most recent conflict, the situation deteriorated again and currently only 3,300MW of generating capacity is available. Power cuts became more frequent, particularly during the summer of 2004 when demand was at its peak.

5. In 1999, Iraq reorganized its electricity sector. The sector was separated from the Ministry of Industry, and the Commission of Electricity (CoE) was established on June 21, 1999. In 2003, the Ministry of Electricity (MoE) was created to replace the CoE. MoE is responsible for both the policymaking and the electricity supply throughout the country. The operational functions (power generation, transmission, load dispatch and distribution) are no longer autonomous corporatized entities, but were reorganized into 18 geographically based directorates within MoE. Total MoE staff is approximately 43,000. The two electricity departments in the Kurdistan Regional Government (KRG) –one covering Sulaimaniyyah and the other covering Dohuk and Erbil Governorates– with an estimated 7,300 employees became part of the Ministry of Industry and Electricity (MoIE) of KRG.<sup>2</sup> The MoE cooperates with the local MoIE.

### **The Electricity Sector in KRG<sup>3</sup>**

6. Prior to the imposition of sanctions on Iraq, the three northern governorates of Dohuk, Erbil and Sulaimaniyyah were supplied with electricity from the Iraq national grid. Two hydropower stations were constructed in the Sulaimaniyyah governorate to serve as peaking stations during periods of high demand: the Dokan and Derbandikhan power stations, with a maximum combined total generation capacity of 649 MW.

7. The three Northern Governorates were supplied with power from several high voltage 132 kV transmission lines from the governorates of Mosul and Kirkuk. These lines fed into 132-33 kV transmission substations from where the energy was then distributed.

8. As the electricity system of the three Northern Governorates was part of the Iraq national grid, technical support was centralized and provided from Baghdad. Teams located at either Mosul or Kirkuk provided maintenance of the system in the north and the northern staff carried out system operation and fault repair.

9. As a result of the Gulf War and the ensuing internal conflicts, the electricity supply system in the three Northern Governorates suffered severe damage. Several distribution and

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<sup>1</sup> “United Nations/World Bank Joint Iraq Needs Assessment: Electricity,” p. 1, October 2003.

<sup>2</sup> Following the separation from the grid in 1991, Local Electricity Authorities (LEAs) were established in Dohuk, Erbil and Sulaimaniyyah. The total staff of 7,300 comprised approximately 1,000 in the Dohuk Electricity Authority (DEA), 1,700 in the Erbil Electricity Authority (EEA) and 4,600 in the Sulaimaniyyah Electricity Authority (SEA).

<sup>3</sup> Sources: [www.enrp.undp.org/general/default.htm#background](http://www.enrp.undp.org/general/default.htm#background), and “United Nations/World Bank Joint Iraq Needs Assessment: Electricity,” October 2003.

transmission lines were put out of commission, many substations were destroyed, and the control panels at the Derbandikhan power station were ruined by explosives.

10. By early 1998, the electricity generation, substations and transmission and distribution systems became very weak and power cuts of up to five hours were a regular practice. In certain areas, supply was limited to three to five hours daily, further reduced to one hour per day or no supply in some areas. The governorates of Erbil and Sulaimaniyyah had been cut off from the national grid and had to rely on the hydropower stations of Dokan and Derbandikhan for their power supply. The generation capacity of these dams; however, was insufficient to meet the demand. Both dams and associated power stations sustained considerable damage and suffer from lack of spare parts and funds to ensure proper maintenance. They are in need of major and urgent rehabilitation. The governorate of Dohuk was still linked to the national grid and was able to obtain limited power from Mosul but received very little supply. The result was a combined shortfall in electricity supply for the three northern governorates of about 350 MW.

### **International Response**

11. In 2003, at the request of the international community, the World Bank and the United Nations Development Group produced a Joint United Nations/World Bank Iraq Needs Assessment (October 2003). The total reconstruction needs, excluding oil and security expenditures, were estimated at around US\$35.8 billion. The report served as a basis for an International Donor Conference in Madrid in October of 2003, where donors pledged about US\$32 billion for the period 2004-2007. Two Trust Funds were set-up at the United Nations (about US\$600 million) and the World Bank (about US\$400 million). Most of these funds have already been committed and projects are being implemented.

12. The major donor to the power sector is the US which has earmarked about US\$4.3 billion for the electricity sector.<sup>4</sup> About US\$1.6 billion is being spent on generation, US\$1.7 on transmission and controls and about US\$1 billion on distribution. Most of these funds are fully committed and they are expected to be fully disbursed by the end of 2006.

13. The United Nations Development Program through the Iraq Trust Fund (ITF) is spending about US\$170 million over various projects in the power sector and Japanese bilateral grant assistance is providing about US\$200 million. The Japan Bank for International Cooperation has in principle allocated up to about US\$1.5 billion to the electricity sector. The UK's Department for International Development currently has US\$120 million committed to emergency infrastructure projects in power, water, fuel supply, and sanitation in southern Iraq. In addition, the Government of Iraq (GoI) provided in 2005 about US\$299 million for investment expenditure from its own budgetary allocations.

14. While it is expected that the power supply situation will improve as a result of these investments, in particular if the fuel supply situation can be improved, there has been no focused allocation by the donors community to electricity projects for the KRG, which is in dire need of support and development initiatives, especially for the electricity network. While considerable

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<sup>4</sup> The original allocation was US\$5.5 billion, but US\$1.2 billion was reallocated to address security issues.

investments were made in the power sector in Iraq, the quantity and quality supply remains highly unsatisfactory and major investment are still needed to restore power supply to acceptable levels.

## **B. BANK RESPONSE AND STRATEGY**

### **Rationale for Bank Involvement**

15. The proposed project is fully consistent with the World Bank's Second Interim Strategy Note (ISN) for Iraq, which was prepared in consultation with the GoI, and submitted to the World Bank Board of Directors in September 2005. The ISN, guided by Iraq's National Development Strategy (July 2005), emphasizes the need for rapid rehabilitation of critical infrastructure services and institutional support as pre-requisites for long-term sustainable recovery.

16. The proposed project is also consistent with the GoI's and MoIE's current priorities to improve power supply and rehabilitate existing generation. Moreover, it has been proposed by the GoI to allocate funds to the electricity projects in KRG. The proposed project is in tandem with these visions as both hydropower stations are connected to the main grid, thus benefiting both KRG and the whole power system.

17. There are important other reasons for the Bank to be involved at this stage in rehabilitating KRG's electricity infrastructure, and more specifically, in this project:

- As mentioned above, and despite the relatively large amounts of financing for infrastructure from bilateral donors, there remains a huge financing gap for electricity rehabilitation and development, especially with regard to KRG. The Bank is also capable of attracting resources from other development agencies and/or Governments and can assist in the coordination of investments;
- The Bank is in a position to share international experiences and best practices based on its considerable international experience with infrastructure reconstruction projects and institutional building in conflict-affected areas (including Bosnia-Herzegovina, Ethiopia, West Bank and Gaza, and Afghanistan);
- Bank financing, unlike the financing of many other donors, will be implemented by Iraq through the country's own institutions (ministries and agencies), which will ensure Iraqi ownership and build Iraq's institutional capacity, both crucial for the country's sustainable development. Reverting to the Bank's procurement rules which allow for a broader competitive environment, and having Iraqi ownership, could help reduce the estimated cost of rehabilitation; and
- Funds for this project are neither available from other donors nor from the national budget. However, since (i) some of the equipment required has already been procured under the UN Oil for Food Program (OFFP), (ii) technical expertise is available on-site through sufficient domestic labor skills and experience, and (iii) the security conditions have been relatively stable in KRG;

this project will have the potential to add urgently needed capacity in a relatively short period of time, at an economical cost.

18. Given the needs in the sector, this project is seen as a first of a series of Bank operations for Iraq/KRG. The implementation of the proposed project would align other major funding around it. Thus, it could be seen as a catalyst to address other projects in this sector and other sectors, in addition to critical reforms in the KRG.

### **Lessons Learned in Iraq**

19. Recent experience in Iraq has highlighted the importance of professional due diligence on projects prepared by Iraqis, and the need to bring them to a level of a pre-feasibility study at an early stage of preparation. If possible, assistance should also be provided to the Iraqis to prepare final designs and bidding documents, so as to ensure quick disbursements and rapid impact.

20. Additionally, focusing on implementation arrangements during project preparation has proven to be of great importance. The Project Management Team (PMT) concept utilized in previous projects has proven to be quite effective and is even being considered by other donors. The PMT consists of staff seconded on a full-time and/or on a part-time basis from various departments within the implementing agency, and supported from time to time by consultants. In that regard, it is imperative to get the PMT and their consultants appointed as early as possible in the project preparation cycle.

21. In line with these lessons, the project design has been kept simple and the number of contracts will be kept to a minimum. Support and advisory services to the MoIE and the PMT are to be included. In addition, the Bank has conducted generic training, including project management, procurement, financial management, and environmental and social safeguards, for staff members of ministries associated with infrastructure. This will continue during the coming months to ensure client readiness prior to project implementation.

## **C. DETAILED PROJECT DESCRIPTION**

### **Current Situation**

22. Dokan and Derbandikhan, with a capacity of 400 MW and 249 MW respectively, are the two largest power stations in the KRG, and are connected to the national power grid. Each is part of a multipurpose scheme for power production and irrigation at each of the locations.

23. The Dokan Dam is located on the Lesser Zab River, approximately 220 km upstream from its confluence with the Tigris River. The site is located adjacent to the town of Dokan. As for the Derbandikhan Dam, it is located on the Diyala River, immediately upstream of the town of Derbandikhan. It is approximately 150 km upstream of the Hemren Dam. The site is approximately 285 km northeast of Baghdad and 65 km southeast of Sulaimaniyyah city. It is also within 15 km of Iran to the southeast.

24. Dokan Power Station became fully operational in 1979. Repair and maintenance have been substandard because of unavailability of spares and equipment. These factors have contributed to long outages and unreliable performance. Moreover, due to the long operational period (29 years) the power plant is now due for rehabilitation. This would need to be preceded by a detailed assessment of the plant's condition and the safety of the Dokan Dam. The work would also explore the feasibility of redesign of some of the equipment, in particular the turbine and generator, in order to increase the overall efficiency of the power plant. It would also take into account the unavailability of spares from the original manufacturer.

25. The construction of Derbandikhan Power Station was completed in 1983 but operation commenced in 1990 due to a delay in construction of the overhead line to connect the power plant to the national grid. Only one unit was commissioned by the contractor, who had to leave the site because of the Second Gulf War. The other two units came into operation without proper commissioning. A combination of this and faulty design of the hydraulic system are considered to have contributed to unsatisfactory performance of this power plant since its commissioning. The plant suffers from severe cavitation of the runners and draft tubes. It also needs complete rehabilitation preceded by investigation of the cause of cavitation and redesign. The Derbandikhan Dam has also suffered in its early days from a large slope failure on the right bank, approximately 100m upstream of the dam. As a result, subsequent modifications have been done since, and monitoring has indicated that additional slope movement is minimal, but the data record is scarce; and accordingly the operating restriction on the minimal pool level will be maintained during the project.

26. Due to shortage of power generation it is necessary that both power plants continue to operate. Therefore the rehabilitation work would be implemented in two phases. This project would constitute the first phase, consisting of urgent repairs to keep the two power plants operational, as well as studies and designs for the second phase which would involve rehabilitation.

### **Project Objective**

27. The objective of the project is to help alleviate the current power supply shortfall through urgent repair works, and prepare for the subsequent rehabilitation of the Dokan and Derbandikhan hydropower plants to restore their original capacity 400 and 249MW respectively. The following are the components of the project:

#### **Component 1: Repairs for Dokan (US\$10.43 million)<sup>5</sup>**

③ **Replacement of the excitation systems (US\$0.75 million):** The equipment for this work was supplied by ABB (Italy) under the UN OFFP and is in storage at the site. ABB would be contracted to install, test and commission the systems, and provide training for operation and maintenance staff of the power plant.<sup>6</sup>

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<sup>5</sup> Project cost estimates are indicative and are subject to further review.

<sup>6</sup> (Note: For this and the other contracts to be awarded on a sole-source basis, KRG should ensure that corresponding OFFP contracts which had a supply, installation and commissioning part are terminated, prior to

③ **Replacement of four compressors (US\$280,000):** The equipment for this work was supplied by CompAir (France) under the OFFP and is in storage at Dokan. CompAir would be contracted to install, test and commission the air compressor system, as well as provide training for operation and maintenance staff and spare parts.

③ **Repair of GIS for Unit No. 1 (US\$900,000):** This will involve the repair of compartment No. 1 of the GIS for Unit No. 1 and the provision of training for operation and maintenance staff. The work will be carried out by Siemens who have already supplied the equipment.

③ **Replacement of synchronous condenser (US\$300,000):** The equipment was also supplied under the UN OFFP, by Technopromexport (Russia) and is on site. The same contractor would install, test and commission the synchronous condenser system, as well as provide training for operation and maintenance staff.

③ **Replacement of control systems (US\$6 million):** This will involve the design, supply, installation and commissioning of a new control system, as well as training for operation and maintenance staff. KRG will require the services of a consultant to assist with design and other pre-award activities, as well as in supervision of the work. Procurement will be through International Competitive Bidding (ICB) for Supply and Installation.

③ **Detailed assessment of the rehabilitation needs (US\$1.5 million)**

③ **Design and preparation of bid documents for rehabilitation (US\$0.7 million)**

## **Component 2: Repairs for Derbandikhan (US\$22.45 million)**

③ **Replacement of the excitation systems (US\$0.75 million):** The equipment for this work was supplied by ABB (Italy) under the UN OFFP and is in storage at the site. ABB would be contracted to install, test and commission the systems, and provide training for operation and maintenance staff of the power plant.

③ **Derbandikhan Switchyard (US\$12 million):** This will consist of replacement of 11 kV vacuum switchgear, 33 kV SF6 switchgear, metering, control and protection equipment for the 132 kV GIS, a 63 MVA, 132/33/11 kV transformer, and 132 kV cables between the Generation Transformer 132 kV circuit breaker and the GIS switchgear, and the provision of spare parts for the

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award of a new contract for installation, testing and commissioning. This also applies to Sub-Component I for Derbandikhan).

GIS switchgear. The spare parts will be procured from the original supplier, Mitsubishi. The rest will be procured through ICB for Supply and Installation.

③ **Replacement of control systems (US\$6 million):** This will involve the design, supply, installation and commissioning of a new control system, as well as training for operation and maintenance staff. Technical specifications for Derbandikhan were prepared under the UN OFFP. KRG will require the services of a consultant to assist with design and other pre-award activities, as well as in supervision of the work. Procurement will be through ICB for Supply and Installation.

③ **Re-design of the hydraulic system to address the cavitation problem (US\$2 million).**

③ **Detailed assessment of rehabilitation needs, from the intake to the switchyard (US\$1 million).**

③ **Design and preparation of bid documents for rehabilitation (US\$0.7 million).**

### **Component 3: Environmental Assessment and Dam Safety (US\$4.6 million)**

The work will involve the repair or replacement of spillway and power intake gates, and instrumentation for monitoring the condition of the dams. At Derbandikhan, the work will comprise urgent repair to the spillway and power intake gates, repair or replacement of the embankment and upstream abutment instrumentation, restoration of the core and filters at the dam crest, and replacement of a 63 kVA transformer. At Dokan the work will comprise the replacement of spillway gate gauges, installation of an accelerometer to monitor seismic activity and provision of mechanical means of cleaning piezometers, drains, etc.

Second, the work will involve a hydrographic survey to determine the capacity of two reservoirs and if found necessary recalibration of the inflow/outflow models. Third, it comprises an Environmental Assessment for the project, including a complete assessment of the safety of the two dams.

28. It is anticipated that a small component would be included to be able to cover operating costs of the PMT, including the costs of fiduciary requirements such as audits. This will be further discussed during appraisal.

### **Project Cost and Financing**

29. The estimated cost of the project is about US\$37.5 million plus US\$2.5 million of contingencies for a total cost of about US\$40 million. The project is proposed to be financed from an IDA (International Development Association) Credit of US\$40 million. The Ministry of Finance will be the representative of the Recipient and MoIE of KRG will be the implementing agency. The KRG team agreed to seek clarification on how the IDA funds are to be passed on to



the KRG and what the necessary approval procedures will be, taking into account prevailing central government and IDA procedures.

## **D. INSTITUTIONAL AND IMPLEMENTATION ARRANGEMENTS**

### **Implementation Arrangements**

30. The project will be implemented by the MoIE, through a PMT reporting directly to the Minister of MoIE, with experienced staff seconded on a full time basis from existing technical and financial units. The PMT will closely coordinate its daily activities with the different departments of the MoIE, particularly with the Generation Directorates of the Ministry in both Erbil and Sulaimaniyyah. The Mission recommended that PMT staff attend training courses and workshops organized by the World Bank in order to become familiar with Bank procedures. The core PMT staff would comprise: a director, a procurement specialist with an engineering background, technical specialists as required, an environmental specialist, and a financial management specialist. The names of the proposed PMT staff would be sent to the Bank as soon as possible.

### **Procurement Arrangements**

31. Procurement for this project will be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD loans and IDA Credits" dated May 2004; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004. The Bank team provided the KRG team with the necessary background information and the Master Implementation Manual. Appropriate training of PMT staff is envisaged to be arranged in the near future. The Bank team will explore the possibility of providing the KRG with a consultant to help with the preparation of some of the tender documents.

32. Project works will be grouped into one ICB contract for supply and installation and one ICB for equipment supply to simplify implementation and facilitate direct disbursement of funds. It was agreed that project implementation could be accelerated by undertaking advance procurement actions using World Bank procedures before the Bank Board approval of the project. This includes actions such as pre-qualification of contractors, issuance of bid documents, selection of consultants, etc. World Bank financing should; however, be in place before signing of the contract.

### **Financial Management and Disbursement**

33. The Bank is required by its Articles of Agreement to ensure that the proceeds of any loan or Credit are used for the purposes for which the loan or credit were granted, with due regard to economy and efficiency. Accordingly, MoIE will be required, according to Bank policies and agreements, to maintain an appropriate and adequate financial management (FM) system, including records and accounts, and to provide independently audited financial statements that accurately reflect the project operations, resources, and expenditures. For this purpose, a financial management assessment is in progress to determine the capacity at the

MoIE. Based on the outcome of the assessment, the FM risk rating would be identified, and certain FM arrangements would be developed to manage the identified risks.

34. The proposed Credit is expected to be disbursed by June 30, 2009. The preferred method of disbursing funds is for direct payment by the World Bank to suppliers upon the instruction of the implementing agency and in accordance with the contract between the implementing agency and the supplier. Payments below the threshold of US\$20,000 normally will be made through payments by the Borrower from its own resources. These payments made from the Borrower's own resources will be reimbursed, on a periodic basis, by the World Bank to the MoIE upon presentation of relevant supporting documents, proof of payment, and a signed withdrawal application. The PMT and the main financial counterparts from the MoIE will be subject to intensive training on the Bank's financial management and disbursement procedures.

### **Environmental and Social Safeguards**

35. The project will only finance urgent repairs at the Dokan and Derbandikhan hydropower plants and prepare for the subsequent full rehabilitation of these plants. The project is therefore rated as a category "B" project. Based on the Environmental and Social Screening and Assessment Framework (ESSAF) applicable to the current emergency operations in Iraq, MoIE, with the help of consultants, will undertake the initial safeguards screening and prepare an Environmental Management Plan in accordance with the Bank's procedures. The Ministry will also agree prior to appraisal that it will ensure that: (i) standard environmental codes of practice will be included in the repair and reconstruction bid documents of all project components; (ii) all sort of wastes, specially hazardous ones and PCBs (if any) will be disposed of following environmentally and socially sound options; and (iv) appropriate staffing and adequate budget will be allocated for the effective implementation and monitoring of the management plan. . No resettlement issues are envisaged or expected for this project.

36. Previous reports on the safety of the dams indicated that some maintenance and repairs are needed, but there appear to be no immediate safety issues. However, a specific component has been included in the project to be able to undertake urgent immediate repairs at both dams. Moreover, during appraisal and prior to negotiations, a consultant will be contracted out to confirm and/or up-date the critical dam safety issues. One important aspect to be included in the TORs of the consultant is the assessment of the landslide at the Derbandikhan Dam. In addition to that, as part of the preparation of the rehabilitation studies and in light of the quick assessment conducted during appraisal, a dam safety assessment will be conducted and an appropriate course of action to address the safety of the dams will be developed.

37. A waiver/exception to the notification requirement under para. 7(a) of the O.P. 7.50 (the operational policy on International Waterways) is being sought, because the repairs are not expected to alter the water flow in the rivers or to have down stream implications. However, as part of the studies to be financed under this project for the subsequent rehabilitation of both hydropower plants a comprehensive Environmental and Social Assessment will be carried out. The need for notification of riparians will be reassessed once these studies are completed.

### **Project Supervision**

38. Considering the brief exposure of KRG counterparts to World Bank guidelines and procedures, strong supervision efforts including frequent field visits would be needed, particularly during the early stages of project implementation. Should the security situation prevent World Bank staff and international consultants from traveling to Iraq during project implementation, project supervision would primarily rely on local Iraqi consultants, supported by World Bank staff and international consultants working from outside Iraq. Regional consultants with branch offices in Iraq could also be recruited to assist with project implementation.

### **Monitoring and Evaluation**

39. Performance indicators for the project will be identified during project appraisal and will be measured annually during supervision. The MoIE will establish a monitoring baseline against which performance can be measured. Annual reviews by the KRG and the MoIE would be carried out to track compliance with IDA conditions and highlight lessons from implementation.

### **E. PROJECT BENEFITS**

40. Only after full rehabilitation, the output of both power stations would be completely restored; thus benefiting the three KRG Governorates of Dohuk, Sulaimaniyyah, and Erbil, with a total number of direct beneficiaries of about 490,000 households in KRG. Moreover, it will have an added value of supplying power to industrial consumers connected to the grid. The initial repairs financed under the project, will however improve the operating performance of both power stations.

### **F. MAJOR PROJECT RISKS**

41. This project will be implemented in a high risk environment. The major risks are the unstable political environment and the capacity limits of the KRG and GoI. However, the relative security in the Northern part of Iraq should not be underestimated, thus making the KRG a secure region for implementing vital projects. Yet, procurement and financial management risks exist, and they will be elaborated during appraisal.

Risk	Rating	Mitigation Measures
Transition to new Iraq government after December 2005 elections – unknown outcomes that could affect project preparation	H	Keeping project simple and focused on clear and obvious priorities. Working closely with senior MoIE officials to promote ownership and continuity. Project endorsed by the national government and the ISRB.
Delays in ratification of Financing Agreement by the National Assembly/Kurdistan Parliament leading to delays in effectiveness and implementation	M	Close follow up by Bank staff following Board approval. Also provision made for retroactive financing to minimize implementation delays.

Administration changes in MoIE senior staff leading to lower commitment to project design and implementation arrangements	M	Project design and implementation arrangements endorsed by senior and middle management levels to ensure continuity in event of change.
Deterioration of the security situation in KRG	M	Use of local sub-contractors with few internationals to install equipment.
Sectoral priorities – difficult to establish in current political setting. Possible disagreements between the MoIE and other controlling agencies (MoPDC, MoF). Priority changes within the MoIE	H	Ongoing communication with Bank counterparts working with MoF and MoPDC. KRG to make good case for the sector. Involving all stakeholders through PMT.
Changes in laws, regulations, and taxes which might have dire consequences on the strategic and policy directions of the sector	M	GoI/KRG to work closely through its sector's ministries and public institutions on building a policy consensus for the medium- and long-term schemes in order not to upset the rational steady state envisaged for the sector.
Deterioration of fiscal conditions – sustainability problems for operations	H	Avoiding capacity expansion that is likely to create budgetary constraints.
Lack of familiarity with Bank guidelines and procedures	H	Adoption of the PMT model to focus Bank training efforts to a manageable number of professional staff to lead project implementation, disbursements and monitoring.
Difficulty and delays in hiring expatriate support services consultants wherever local expertise is lacking	H	Support services will focus on local staff. Where possible, support services internationally will be provided through virtual meetings, and meetings in Amman. In the event that local capacity is initially not adequate for rapid implementation, the MoIE needs to use agents for relevant aspects of implementation and monitoring in the early stages.
The Bank's inability to carry out in-country supervision	H	Rely on local staff for supervision with the assistance of consultants who will be contracted. Specific procurement and financial management issues will be elaborated during project appraisal.

Safety of the two dams and specially the Derbandikham Dam	M	Undertake an independent dam safety assessment before negotiations and allocate a contingency sum for possible follow-up actions.
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H = High Risk; S = Substantial Risk; M = Modest Risk; N = Low or Negligible Risk.

## G. TIMETABLE FOR PROJECT IMPLEMENTATION

Sequence	Timing
Identification and preparation mission	February 13, 2006
Pre-Appraisal	April 7, 2006
Appraisal	May 15, 2006
Approval	September 15, 2006
Planned Effectiveness	October 15, 2006
Planned Closing Date	June 30, 2009

## H. NAMES OF STAFF/CONSULTANTS WHO WORKED ON THIS PROJECT

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