

Project Profile (Project Summary)

Sector	Electricity
Project Name	Rehabilitation Plan of Central Workshop at Taji
Background (current state, necessity of immediate action & the needs)	<p>Taji Gas Turbine Maintenance Workshop, which is located near Taji Gas Turbine Power Plant, was constructed by a group of Japanese firms on a full turnkey basis in 1983.</p> <p>The workshop had been operated by the Establishment of Electricity Production (GEEP) of Iraq since its commissioning, but GEEP's breakup after the war against Iraq has resulted in handing its authority over to the nation's Ministry of Electricity (MOE). During its 20-plus years of operation, large portions of the workshop's operational functions have been deteriorated or lost due to wars and conflicts, economic sanctions, and social disorder after the war against Iraq. The workshop contains a variety of maintenance equipment including special machines and tools for maintaining gas turbines and other types of power plants and power facilities.</p> <p>The rehabilitation project is to be implemented in three stages to recover its original maintenance capability. This project as a first stage is to rehabilitate F5 type gas turbine units, most widely used gas turbine types in Iraq. The workshop has the following features:</p> <ul style="list-style-type: none"> • Total plant area: 15,000 square meters • Contains major buildings such as workshop buildings, administration buildings, gatehouse, etc. • Number of staffs <ul style="list-style-type: none"> - Engineers: 14 - Office staff: 23 - Workers: 81 <p>All electrician power from the existing power plants in Iraq is generated by utilizing steam turbines, hydro turbines, or open-cycle gas turbines. Power plants using gas turbines are the largest in number amongst these types. It is expected that Iraqi staffs can successfully carry out maintenance works by themselves if the plant is operative. It is important to establish an organization to allow proper maintenance works to the gas turbines that are currently under operation and also those to be procured in the future. The renovated workshop can also provide an opportunity for maintaining and improving maintenance technologies as well as staffs' maintenance skills. It is expected that the proposed project will provide a significant impact on the Iraq reconstruction project. The implementation of the project, therefore, is recommended.</p>
Counterpart and Executing Agencies	Ministry of Electricity (MOE) of Iraq
Description of the Assistance	<p>1) Equipment Procurement</p> <p>The project will mainly provide the following equipment, which is categorized by their functions. (Refer to the attachment for detailed equipment procurement list)</p> <ol style="list-style-type: none"> a. Machine tools <ul style="list-style-type: none"> - Lathe - Grinding machines - Miller - Drilling machines - Other tools b. Measuring equipment and tools <ul style="list-style-type: none"> - Balancing machines - Defect detection equipment - Other measuring tools c. Other equipment <ul style="list-style-type: none"> - Transporting equipment - Heating furnace - Air compressor

	2) Installation works <ul style="list-style-type: none"> - Installation of above-mentioned equipment - Testing and adjustment - Training of workshop engineers and technicians - Dismantling of some of the existing facilities
Project Site	See attachment
Effectiveness/Benefit (beneficiary)	1. Benefited areas: Mosul city 2. Benefited population: it is difficult to quantify the benefited population due to the project's nature, but the following benefits can be expected; <ul style="list-style-type: none"> • Expansion of domestically-produced goods • Expansion of local employment opportunity • Maintenance technologies are handed over to the new generations of the people as the country's assets.
Presumed Project Period	<ul style="list-style-type: none"> - Manufacturing: 9 months before FOB after contract verification - Transportation period: 2 months - Installation works, testing and adjustment: 1 month
Presumed Contract Manner (competitive bid, nominated contract)	Competitive bidding or nominated contract
Expected Transit Method	Transportation by container and conventional ship is under consideration. Usually, a route selected from Jordan, Kuwait, or Dubai/Umm-Qasr port is used for transit from Japan. Addition of war agreement to an insurance and use of armed security services are recommended since transportation inside Iraq still comes with high risks.
Necessity of the Installation of Machinery	Required
Profile of Engineer responsible for the installation (nationality & capability)	It is assumed that the installation will be contracted to a local installation firm. The manufacturer will provide technical training to the local installation firm either in a country near Iraq or in Japan.
Operation and Maintenance (O&M) Structure	The Taji workshop currently employs 14 engineers, 23 office staffs, and 81 workers. The staffs have managed to keep the plant under operation for many years and it is assumed that they possess high level of maintenance and management skills. Therefore, it is considered that the workshop can be properly operated and maintained after the project completion.
Necessity of O&M Training	Required
Contents of Training	<u>Training at Workshop of the Manufacturer (location: Japan)</u> <ul style="list-style-type: none"> -Machine tools: 5 persons for 30days -Measuring tools: 3 persons for 30days -Transport equipment and others: 3 persons for 15days
Other remarks regarding O&M	None
Involvement of Other Donors	None
Other Considerations (environment, gender, etc)	No particular consideration is required for projected rehabilitation works of maintenance facilities at the existing workshop.

Location of Project Site



Map No. 3835 Rev. 3 UNITED NATIONS
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Department of Public Information
Cartographic Section

Rough Estimate of Project Cost

(Unit: 1,000 Yen)

Classification	Cost
Equipment Cost (incl. transportation and installation costs)	1,183,690
1. Procurement cost	882,000
2. Transport fee	108,690
3. Installation cost	193,000
Design and Supervision Cost	67,606
Total of Project Cost	1,251,296

Project Implementation Schedule

MONTH from Commencement	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13
Detailed Design (D/D)		Exchange of Notes													
Bidding Procedure															
Contract															
Commencement of Contract			Verification of contract												
Manufacturing															
Transportation										FOB					
Installation & Commisioning															

Project Profile (Project Summary)

Sector	Electricity
Project Name	Urgent Rehabilitation of Diyala Transformer Factory
Background (current state, necessity of immediate action & the needs)	<p>The Diyala Transformer Factory is the only transformer manufacturing factory in the middle east, and was constructed by the Iraq Ministry of Industry and Minerals under the supervision of a Japanese firm. The factory manufactured a number of power and distribution transformers since its commissioning in 1983.</p> <p>Current condition of the factory is as follows:</p> <ul style="list-style-type: none"> • Location: city of Baquba, Diyala governorate, about 90km north-northwest of Baghdad • Total plant area: 180,000 square meters Total floor area for major buildings: 33,000 square meters (major buildings include power transformer plant, distribution transformer plant, and administration building, etc.) • Number of staff (as of January 2004) <ul style="list-style-type: none"> - Power transformer plant: 187 - Distribution transformer plant: 356 • Manufacturing capacity <ul style="list-style-type: none"> - Power transformer: 3,000MVA per year - Distribution transformer: 3,400MVA per year • Actual output (1991 through 2002) <ul style="list-style-type: none"> - Power transformer: 185MVA per year (6.2% of manufacturing capacity) - Distribution transformer: 488MVA per year (14.4% of manufacturing capacity) <p>Staff members of the Diyala Transformer Factory have acquired technical skills as required for the repair workshop, and they have carried out the rehabilitation works of transformers installed at Hartha, Mussaib, and Mosul power plants, as well as of transformers installed at substations in South Baghdad and West Baghdad. Engineers of the Diyala plant visited Sudan at its invitation in 1993 and implemented renovation works for 40 units of 63 to 2,500kVA distribution transformers.</p> <p>Since its first commissioning in more than 20 years ago, the factory's manufacturing capacity has been significantly decreased as wars and economic sanctions brought supply shortage of equipment and spare parts for production facilities and this situation has been preventing adequate plant operation.</p> <p>It is expected that demand for transformers, which will be on the increase as various power restoration projects move forward, will be met by domestically manufactured transformers. It is considered important, therefore, to rehabilitate the manufacturing factory by supplying machine tools and spare parts for the production facilities. Increased operation efficiency of the factory creates employment opportunity. Staffs can improve their skills and techniques on production and maintenance they have acquired. Despite that urgency is lacking for the implementation of the project, the proposed project has a significant meaning in Iraq reconstruction.</p>
Counterpart and Executing Agencies	Ministry of Industry and Minerals of Iraq
Description of the Assistance	<p><u>Equipment procurement</u></p> <p>Procured equipment for the project can be categorized according to their production facilities as follows (refer to the attachment for detailed equipments list).</p> <ul style="list-style-type: none"> - Equipment for rehabilitating coil winding machines - Equipment for rehabilitating winding dryer facility - Gang splitter and core boring machine

	<ul style="list-style-type: none"> - Equipment and parts for transport equipment - Rehabilitation of steel plate cutter - Rehabilitation of various welding machines - Others
Project Site	See attachment
Effectiveness/Benefit (beneficiary)	1) Benefited areas: Baqubah region 2) Benefited population: it is difficult to quantify the benefited population due to the project's nature, but the following benefits can be expected: <ul style="list-style-type: none"> • Expansion of domestically-produced goods • Expansion of local employment opportunity • Production technologies and related techniques are handed to new generations of the people as country's assets.
Presumed Project Period	After contract verification: 3.5 to 8.5 months (including transportation period of 2 months)
Presumed Contract Manner (competitive bid, nominated contract)	Competitive bidding or nominated contract
Name of Nominated Contractor	-
Reason for Adopting Nominated Contractor	-
Expected Transit Method	Container transportation is under consideration. Usually, a route selected from Jordan, Kuwait, or Dubai/Umm-Qasr port is used for transit from Japan. Addition of war agreement to an insurance and use of armed security services are recommended since transportation inside Iraq still comes with high risks.
Necessity of the Installation of Machinery	Not required
Profile of Engineer responsible for the installation (nationality & capability)	Engineers at the factory have more than 20 years of experience in manufacturing and facility maintenance, and thus are well versed with basic maintenance operations. Training will be provided at the original manufacturer's plant in Japan to local engineers who will get involved to replace equipment parts at the project factory. A training of inexperienced engineers is also under consideration.
Operation and Maintenance (O&M) Structure	Although the factory's management organization is currently under study, it is considered that the staff is capable of carrying out adequate operation and maintenance.
Necessity of O&M Training	Required
Contents of Training	<u>Training at Workshop of the Manufacturer (location: Japan)</u> Equipment maintenance <ul style="list-style-type: none"> - Electrical engineer: 1 person for 3 weeks - Mechanical engineers: 2 persons for 3 weeks Transformer design <ul style="list-style-type: none"> - Electrical engineers: 2 person for 6 weeks Manufacturing technology <ul style="list-style-type: none"> - Insulation, winding: 2 persons for 4 weeks - Assembly: 2 persons for 4 weeks - Sheet metal processing: 2 persons for 4 weeks - Testing: 2 persons for 4 weeks
Other remarks regarding O&M	None
Involvement of Other Donors	None
Other Considerations (environment, gender, etc.)	No particular consideration is required for projected rehabilitation works of the existing factory.

Location of Project Site



Map No. 3835 Rev. 3 UNITED NATIONS
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Department of Public Information
Cartographic Section

Summary of Project Cost

(Unit: 1,000 Yen)

Classification	Cost
Equipment Cost	1,017,878
1. Procurement cost	871,480
2. Transport fee	29,798
3. Installation Cost	116,600
Detailed and Supervision Cost	29,084
Total of project Cost	1,046,962

Project Implementation Schedule

MONTH from Commencement	-2	-1	1	2	3	4	5	6	7	8	9	10
Detailed Design (D/D)	Exchange of Note											
Bidding Procedure												
Contract												
Commencement of Contract			Verification of contract									
Manufacturing												
Transportation						FOB						
Installation, Commissioning & Training												

Project Profile (Project Summary)

Sector	Electricity
Project Name	Urgent Rehabilitation of Taji Gas Turbine Power Plant (Phase 2)
Background (current state, necessity of immediate action & the needs)	<p>Taji Gas Turbine Power Plant, located about 20km northwest of Baghdad, consists of seven 20MW gas turbine units and boasts its total installed capacity of 220MW. A Japanese firm supplied those gas turbine units. The power plant supplies electricity through the 132kV transmission lines to more than 8 million people living in Baghdad and to local public facilities including schools, water supply facilities, hospitals, and government offices.</p> <p>Elapse of 27 years of operation has decreased the generating capacity of the power plant. Shortage and inadequacy of equipment and spare parts that are vital to keep the power plant in good working conditions have also caused shortfall of electricity supply after the 1991 Gulf War and subsequent sanctions imposed by the United Nations. Some repairs were made to the power plant by using low quality materials and parts, only to further damage many parts of the power plant units, resulting in serious shortage of electricity supply.</p> <p>Current situation of the Taji Power Plant is as follows:</p> <ul style="list-style-type: none"> • Units 1 and 2: Under operation with 10MW output, about half of its rated output, due to defects in their cooling system and control system. • Unit 3: Not in operation due to rotor damage and defects in cooling system and control system. • Units 4 and 7: Not in operation due to rotor damage. • Unit 5: Not in operation and abandoned. A used unit was installed instead. • Unit 6: Under operation with 10MW output, about half of its rated output. <p>The current supply capacity of electricity in Iraq stays around 4,000MW. However, UN and WB report that electricity demand in Iraq is expected to go up to 6,500-7,000MW. USAID also estimates 6,000MW will be necessary by summer 2004. Under these circumstances, rehabilitation of Taji Gas Turbine Power Plant near Bagdad is significantly required due to the serious shortage in electricity.</p> <p>Rehabilitation of the Taji Power Plant is scheduled to be implemented in two phases, Phase 1 and Phase 2.</p> <p>Among the existing seven gas turbine units, four gas turbine units, namely Units 1, 2, 3, and 5, will be replaced with new units in Phase 1. In Phase 2, rehabilitation of the remaining three units, Units 4, 6, and 7, will be carried out.</p> <p>It is expected that the implementation of Phase 1 and Phase 2 projects will ensure the power plant to attain 160MW output, which is greater than its original output.</p>
Counterpart and Executing Agencies	Ministry of Electricity (MOE) of Iraq
Description of the Assistance	<p>Output recovery will be achieved by rehabilitating the targeted three gas turbine units, each of which requires equipment replacement at the local site. Major works of assistance include the following.</p> <p>Renovation of gas turbines Renovation of generators Renewal of control system Renovation of B.O.P See attachment for detailed list of equipment to be replaced.</p>
Project Site	See attachment
Effectiveness/Benefit (beneficiary)	<p>1) Benefited areas: Baghdad City and its suburban areas 2) Benefited population: about 150,000 to 180,000 people (about 30,000 households), based on;</p> <ul style="list-style-type: none"> • Capacity of power plant: 60MW (3 units * 20MW each)

	<ul style="list-style-type: none"> Electricity consumption per household: 2kW Number of persons in a household: 5 to 6 Number of households to which electricity is provided: <ul style="list-style-type: none"> - 60,000kW / 2kW / household = 30,000 households - 50,000 to 180,000 people (30,000 households * 5 to 6 persons/household)
Presumed Project Period	10 – 11 months after contract verification (including 2 months for transportation)
Presumed Contract Manner (competitive bid, nominated contract)	Nominated contract
Name of Nominated Contractor	-
Reason for Adopting Nominated Contractor	The Nominated Contract is for the work recognized by the consultants that would be clearly harmful for the function of existing equipment if the work would be conducted without the same contractor which has close connection for the utilities established in the past for the facility project including equipment.
Expected Transit Method	It is expected that all necessary equipment will be transported in containers. A route from Jordan, Kuwait, or Dubai/Umm-Qasr port is usually used for transit from Japan. Gas turbine units to be rehabilitated will be transported from the power plant to a maintenance workshop in a nearby country by road and upon completion of restoration, they will be transported back by road as well. Addition of war agreement to an insurance and use of armed security services are recommended since transportation inside Iraq still comes with high risks.
Necessity of the Installation of Machinery	Required
Profile of Engineer responsible for the installation (nationality & capability)	It is assumed that the rehabilitation works will be contracted to a firm(s) of a third nation, who will employ local Iraqi workers (Since Taji gas turbine maintenance plant is currently not in operation, local staffs who have experience in plant operation and maintenance will be employed). The manufacturer of the power plant is to provide technical training to the staff of the third nation at the project site.
Operation and Maintenance (O&M) Structure	The Taji Power Plant is currently staffed with about 30 engineers and 120 field and office workers. In spite of lack of supply of spare parts, they have managed to operate the plant for many years. This fact indicates their high operation, maintenance, and management skills, which will enable the personnel to adequately carry out the operation and maintenance of the rehabilitated gas-turbine units.
Necessity of O&M Training	Required
Contents of Training	Training at workshop of the manufacturer (location: Japan) <ul style="list-style-type: none"> -Gas Turbines 2 persons for 3 weeks -Generator/Control 2 persons for 3 weeks -Operation 2 persons for 3 weeks
Other remarks regarding O&M	None
Involvement of Other Donors	Taji Power Plant units 1, 2, 3 and 5 are to be replaced with new gas turbine units (Phase 1).
Other Considerations (environment, gender, etc)	Since the project objective is to recover the generation output of the existing power plant, environmental assessment that is normally required for power plant construction is not necessary.

Location of Project Site



Map No. 3835 Rev. 3 - UNITED NATIONS
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Department of Public Information
Cartographic Section

Rough Estimate of Project Cost

(Unit: 1,000 Yen)

Classification	Cost
Equipment Cost	2,285,352
1.Procurement cost	1,440,450
2.Transport fee	118,902
3.Installation cost	726,000
Detailed and Supervision Cost	136,442
Total of Project Cost	2,421,794

Project Implementation Schedule

MONTH from Commencement	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	Exchange of Note																									
Detailed Design (D/D)																										
Bidding Procedure																										
Contract																										
Commencement of Contract																										
Unit 4																										
Manufacturing & Transportation																										
Installation																										
Commissioning																										
Unit 6																										
Manufacturing & Transportation																										
Installation																										
Commissioning																										
Unit 7																										
Manufacturing & Transportation																										
Installation																										
Commissioning																										

Project Profile (Project Summary)

Sector	Electricity
Project Name	Urgent Rehabilitation of Mosul Gas Turbine Power Plant (Phase 2)
Background (current state, necessity of immediate action & the needs)	<p>The Mosul Gas Turbine Power Plant, which consists of twelve 20MW gas turbine units with a total installed capacity of 240MW, has been in operation since 1975. A Japanese firm supplied four out of the twelve gas turbine units.</p> <p>The power plant provides electricity to 1.5 million people living in Mosul City, the second largest city in Iraq and functions as one of the most important infrastructure facilities in northern Iraq.</p> <p>Elapse of 28 years of operation has decreased the generating capacity of the power plant. Shortage and inadequacy of equipment and spare parts that are vital to keep the power plant in good working conditions have also caused shortfall of electricity supply after the 1991 Gulf War and subsequent sanctions imposed by the United Nations. Some repairs were made to the power plant by using low quality materials and parts, only to further damage many parts of the power plant units, resulting in serious shortage of electricity supply.</p> <p>Current operation conditions of the four units supplied by the original manufacturer are as follows:</p> <ul style="list-style-type: none"> • Unit 1: Not in operation and the unit originally provided by the original manufacturer was replaced with a used unit. • Unit 2: Not in operation due to reduction gearbox vibration. • Unit 3: Under operation with 10MW output, which is about half of its rated output, and the unit originally provided by the original manufacturer was replaced with a used unit. • Unit 4: Under operation with 10MW output, about half of its rated output. <p>Rehabilitation of the power plant is scheduled to implement in two phases, Phase 1 and Phase 2.</p> <p>Among the four gas turbine units, two gas turbine units, namely Units 1 and 3, will be replaced with new units in Phase 1. In Phase 2, rehabilitation of the remaining two units, Units 2 and 4 will be carried out to attain original 40MW (20MWx2).</p> <p>It is expected that the implementation of Phase 1 and Phase 2 projects will ensure the four units to attain 90MW output.</p>
Counterpart and Executing Agencies	Ministry of Electricity (MOE) of Iraq
Description of the Assistance	<p>Power output recovery will be achieved by rehabilitating the two targeted gas turbine units, each of which requires equipment replacement at the local site. Major works of assistance include the following.</p> <ul style="list-style-type: none"> - Renovation of gas turbines - Renovation of generators - Renewal of control system - Renovation of BOP (balance of plant) <p>See attachment for detailed list of equipment to be procured.</p>
Project Site	See attachment
Effectiveness/Benefit (beneficiary)	<p>1) Benefited areas: Mosul City and its suburban areas</p> <p>2) Benefited population: about 100,000 to 120,000 people (about 20,000 households), based on;</p> <ul style="list-style-type: none"> • Capacity of power plant: 40MW (2 units * 20MW each) • Electricity consumption per household: 2kW • Number of persons in a household: 5 to 6 • Number of households to which electricity is provided: <ul style="list-style-type: none"> - 40,000kW / 2kW / household = 20,000 households - 100,000 to 120,000 people (20,000 households * 5 to 6 persons/household)

Presumed Project Period	At least 10 – 11 months after contract verification (including 2 months for transportation)
Presumed Contract Manner (competitive bid, nominated contract)	Nominated contract
Name of Nominated Contractor	-
Reason for Adopting Nominated Contractor	The Nominated Contract is for the work recognized by the consultants that would be clearly harmful for the function of existing equipment if the work would be conducted without the same contractor which has close connection for the utilities established in the past for the facility project including equipment.
Expected Transit Method	It is expected that all necessary equipment will be transported in containers. A route from Jordan, Kuwait, or Dubai/Umm-Qasr port is usually used for transit from Japan. Gas turbine units to be rehabilitated will be transported from the power plant to a maintenance plant in a nearby country by road. Addition of war agreement to an insurance and use of armed security services are recommended since transportation inside Iraq still comes with high risks.
Necessity of the Installation of Machinery	Required
Profile of Engineer responsible for the installation (nationality & capability)	It is assumed that the rehabilitation works will be contracted to a firm(s) of a third nation, who will employ local Iraqi workers (Since Taji gas turbine maintenance plant is currently not in operation, local staffs who have experience in plant operation and maintenance will be employed). The manufacturer of the power plant is to provide technical training to the staff of the third nation at the project site.
Operation and Maintenance (O&M) Structure	The Mosul Power Plant is currently staffed with about 40 engineers and 160 field and office workers. In spite of lack of supply of spare parts, they have managed to operate the plant for many years. This fact indicates their high operation, maintenance, and management skills, which will ensure the personnel to adequately carry out the operation and maintenance of the rehabilitated gas-turbine units.
Necessity of O&M Training	Required
Contents of Training	Training at workshop of the manufacturer (location: Japan) <ul style="list-style-type: none"> • Gas Turbines 2 persons for 3 weeks • Generator/Control 2 persons for 3 weeks • Operation 2 persons for 3 weeks
Other remarks regarding O&M	None
Involvement of Other Donors	It is recommended that the Phase 1 project be implemented through bilateral aid, and the Phase 2 project through the UNDP.
Other Considerations (environment, gender, etc)	Since the project objective is to recover the generation output of the existing power plant, environmental assessment that is normally required for power plant construction is not necessary.

Location of Project Site



Map No. 3835 Rev. 3 UNITED NATIONS
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Department of Public Information
Cartographic Section

Rough Estimate of Project Cost

(Unit: 1,000 Yen)

Classification	Cost
Equipment Cost	1,522,029
1.Procurement cost	960,300
2.Transport fee	79,268
3.Installation cost	482,461
Design and Supervision Cost	91,053
Total of Project Cost	1,613,082

Procured Equipment

Name of Equipment	Quantity
Parts for Gas Turbine: 1 set	For 2 Units
Parts for Central Equipment: 1 set	For 2 Units
Parts for Generator: 1 set	For 2 Units
Parts for Electrical Equipment: 1 set	For 2 Units

Project Implementation Schedule

MONTH from Commencement	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Exchange of Note																					
Detailed Design (D/D)																						
Bidding Procedure																						
Contract																						
Commencement of Contract																						
Manufacturing & Transportation																						
Installation																						
Commissioning																						

Project Profile (Project Summary)

Sector	Electricity
Project Name	Urgent Rehabilitation of No.2 Unit of Al Mussaib Thermal Power Plant
Background (current state, necessity of immediate action & the needs)	<p>Al Mussaib Thermal Power Plant is located about 75km south of Baghdad, and consists of four 300MW steam turbine generators with a total installed capacity of 1,200MW. A Japanese manufacturer supplied boilers, plant auxiliaries, and control system, while a Korean firm procured other equipment. This power plant provides electricity to more than 8 million people living in Baghdad, making it one of the most important power plants in the country.</p> <p>The power plant began its operation in 1987 and had been successfully operating until 1991 when the Gulf War started. During the war Units 1 and 2 were bombed and partially damaged, and were forced to cease its operation since then. But in 2001 as part of the United Nations "Oil for Food Programme," Iraqi engineers renovated the power plant and operation was resumed. Current situation of the power plant is as follows:</p> <ul style="list-style-type: none"> • Units 1, 3, and 4: Capable of generating electricity up to 200MW to 230MW • Unit 2: Capable of generating electricity up to 100MW <p>According to the needs assessment report by the United Nations/World Bank, Iraq's total demand for electricity in 2004 is estimated to be 6,500MW to 7,000MW, but current generating capacity remains only at 4,000MW. USAID stated that the country would need additional 6,000MW by this summer. Under these circumstances, where Baghdad's electricity shortage is especially severe, rehabilitation of this power plant that is located in the vicinity of Baghdad is considered crucial.</p> <p>Full renovation is required to recover the rated output of all of the four units, which is expected to take more than three years to complete. The Project aims at improving the output of the Unit 2 from the current 100MW to the targeted 200MW by recovering the rapidly deteriorating boiler and control system of Unit 2.</p>
Counterpart and Executing Agencies	Ministry of Electricity (MOE)
Description of the Assistance	<p>The Unit 2, under consideration for improvement, was renovated by Iraqi engineers under the "Oil For Food Programme"; however, it only yields maximum output of 100MW partly because the control system incorporated under the program is not compatible with the existing turbine control system. The Project will implement the following tasks to improve the generation output:</p> <ul style="list-style-type: none"> • Disassembling, inspection, and emergency repairs of boilers and boiler auxiliaries • Inspection and countermeasures for turbine generator vibrations • Disassembling, inspection, and emergency repairs of plant auxiliaries • Disassembling, inspection, and adjustment of control and instrumentation systems • Disassembling, inspection, and emergency repairs of electrical facilities • Equipment to be procured includes the following (see attachment for more detail): <ul style="list-style-type: none"> - Boiler parts - Turbine parts - Control system parts - Auxiliary parts
Project Site	See attachment
Effectiveness/Benefit (beneficiary)	<p>1)Benefited areas: Baghdad City and its suburban areas, and areas near the power plant</p> <p>2)Benefited population: about 250,000 to 300,000 people (about 50,000 households), based on:</p>

	<ul style="list-style-type: none"> • Capacity of power plant: 100MW • Electricity consumption per household: 2kW • Number of persons in a household: 5 to 6 • Number of households to which electricity is provided: <ul style="list-style-type: none"> - 100,000kW / 2kW / household = 50,000 households - 250,000 to 300,000 people (50,000 households * 5 to 6 persons/household)
Presumed Project Period	-Manufacturing period (after contract certification): about 2 months before FOB -Transportation: 2 months -Site works: about 4 months
Presumed Contract Manner (competitive bid, nominated contract)	Nominated contract
Name of Nominated Contractor	-
Reason for Adopting Nominated Contractor	The Nominated Contract is for the work recognized by the consultants that would be clearly harmful for the function of existing equipment if the work would be conducted without the same contractor which has close connection for the utilities established in the past for the facility project including equipment.
Expected Transit Method	Container shipping is expected. The transportation from Japan for this site is generally made via Jordan, via Kuwait, via Dubai or via Umm Qasr. To measure the transportation risk, war insurances and security force costs will be required additionally.
Necessity of the Installation of Machinery	Required
Profile of Engineer responsible for the installation (nationality & capability)	It is assumed that the installation will be contracted to an installation firm(s) of a third nation, who will employ local Iraqi workers. Some third-nation firms are well versed in gas-turbine installation and are expected to have adequate capabilities to undertake the assignment. A manufacturer(s) of the power plant is required to provide a technical training to the personnel of the third nation who are engaged in installation and trial operation during the pre-construction stage, who in turn will provide training for installation and trial operation to the local technicians.
Operation and Maintenance (O&M) Structure	MOE technicians have carried out operation and maintenance at the power plant. The existing organization will continuously be able to provide adequate operation and maintenance after renovation.
Necessity of O&M Training	Not required (trained installation supervisors dispatched by a manufacturer will provide on the job training at the site)
Contents of Training	-
Other remarks regarding O&M	None
Involvement of Other Donors	None
Other Considerations (environment, gender, etc)	Since the Project objective is improvement of the existing power plant's output, environmental assessment that is normally required for power plant construction is not necessary.

Location of Project Site



Summary of Project Cost

(Unit: 1,000 Yem)

Classification	Cost
Equipment Cost	4,513,277
1. Procurement cost	2,341,620
2. Transport fee	53,023
3. Installation cost	2,118,634
Design and Supervision Cost	118,483
Total of project Cost	4,631,760

Procured Equipment

NO.	Name of Equipment	Quantity
1-1	Parts for Boiler	1 Unit
1-2	Parts for Steam Turbine	1 Unit
1-3	Parts for Central System	1 Unit
1-4	Parts for BOP (Balance of Plant)	1 Unit

Project Implementation Schedule

MONTH from Commencement	1	2	3	4	5	6	7	8	9	10	11
Manufacturing	Verification of contract										
Transportation			FOB								
Installation (Unit-1)											
Commissioning											
Installation (Unit-2)											
Commissioning											

Project Profile (Project Summary)

Sector	Electricity
Project Name	Urgent Supply of Spare Parts for Pumping System at Almussaib Thermal Power Plant
Background (current state, necessity of immediate action & the needs)	<p>Almussaib Thermal Power Plant is located about 75km south of Baghdad, and consists of four 300MW steam turbine generators supplied by a Japanese firm with a total installed capacity of 1,200MW. The Japanese manufacturer supplied boilers, balance of plant (BOP), and control systems, and another Japanese firm supplied eight circulating water pumps. Units 1 and 2 began operation in 1987 and Units 3 and 4 in 1988.</p> <p>The power plant stays the newest and the largest thermal power plant in Iraq. Even under unsatisfactory operating conditions, this power plant accounts for more than 20% of total power output available in Iraq.</p> <p>Although its four units have a total rated capacity of 1,200MW as of October 2003, actual output remains about 740MW, around 60% of the total rated capacity. If defective parts and equipment are fixed, it is expected that the plant's capacity will be improved by 20%, which corresponds to construction of a new power plant rated at 240MW.</p> <p>The project aims at providing equipment and parts for plant feed water system, which directly affects power output, and needs to be implemented promptly.</p>
Counterpart and Executing Agencies	Iraqi Ministry of Electricity (MOE)
Description of the Assistance	<p>Procurement of Equipment:</p> <p>The project will supply impellers and their parts of the circulating water pumps since cavitation is detected on the impellers, resulting in significant reduction in the pump performance. Parts for six water pumps are to be procured as the MOE has already fixed two of the eight pumps.</p> <p>See the attached list of parts of equipment to be procured.</p>
Project Site	See attachment
Effectiveness/Benefit (beneficiary)	<p>1)Benefited areas: central Iraq (around Baghdad)</p> <p>2)Benefited population: about 180,000 to 220,000 people (36,000 household), based on;</p> <ul style="list-style-type: none"> • Capacity of power plant: 72MW (output is expected to increase by 6% after renovation of feed water system) • Electricity consumption per household: 2kW • Number of persons in a household: 5 to 6 • Number of households to which electricity is provided: <ul style="list-style-type: none"> - 72,000kW / 2kW / household = 36,000 households - 180,000 to 220,000 people (36,000 households * 5 to 6 persons/household)
Presumed Project Period	<p>After contract certification: About 13 months before FOB</p> <p>Transportation: 2 months</p>
Presumed Contract Manner (competitive bid, nominated contract)	Nominated Contract
Name of Nominated Contractor	-
Reason for Adopting Nominated Contractor	The Nominated Contract is for the work recognized by the consultants that would be clearly harmful for the function of existing equipment if the work would be conducted without the same contractor which has close connection for the utilities established in the past for the facility project including equipment.
Expected Transit Method	Container shipping is expected. The transportation from Japan for this site is generally made via Jordan, via Kuwait, via Dubai or via Umm Qasr. To measure the transportation risk, war insurances and security force costs will be required additionally.
Necessity of the Installation of	Not required (MOE will conduct the actual replacement works of the water

Machinery	pumps)
Profile of Engineer responsible for the installation (nationality & capability)	Technical staff of the power plant has acquired maintenance capability through many decades of regular maintenance. Special technical assistance will not be required for this project.
Operation and Maintenance (O&M) Structure	Although the power plant's management organization is currently under study, it is considered that the staff is capable of carrying out adequate operation and maintenance.
Necessity of O&M Training	No special training is necessary in implementing this project.
Contents of Training	-
Other remarks regarding O&M	None
Involvement of Other Donors	Two pumps have been already fixed by the CPA finance. Renovation of Unit 2 is under planning in another project that will be implemented by the UNEP. The pumps are part of the power plant, and therefore, implementation of the project through the UNDP is considered appropriate.
Other Considerations (environment, gender, etc)	Since the project objective is to improve part of the existing power plant, no other important considerations should be made.

Location of Project Site



Summary of Project Cost

(Unit: 1,000 Yen)

Classification	Cost
Equipment Cost	274,930
1.Procurement cost	270,000
2.Transport fee	4,930
3.Installation cost	0
Design and Supervision Cost	8,100
Total of Project Cost	283,030

Procured Equipment

No.	Qty.	Unit	Specification		
			Spare parts for water circulating pumps Manufacturer: Ebara Corporation (Drawing No. P8RE10660-01-911)		
		NOS	<u>P/No.</u>	<u>Part Name</u>	<u>Material</u>
1	6	PCS	021	Impeller (with impeller ring)	SCS 13
2	6	PCS	032	Shaft (L) (with key)	SUS 304
3	6	PCS	033	Shaft (U) (with key)	DITTO
4	6	PCS	048	Impeller Nut	SCS 13
5	12	PCS	652-01	Submerged Bearing (L)	SUS 304
6	12	PCS	652-02	Submerged Bearing (M), (U)	DITTO
7	6	PCS	195	Adjusting Nut	SS 400

Project Implementation Schedule

MONTH from Commencement	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Manufacturing	Verification of contract																		
Transportation																			
Site Works by MOE																			