

STANDARD SUMMARY PROJECT FICHE

1. Basic Information

Désirée Number: BG 01.06.03

Title: “Improvement of the joint operation of Bulgarian and Greek power systems”

Sector: IN – Infrastructure (Energy)

Location: Bulgaria - Blagoevgrad, Sofia;
Greece - Thessaloniki.

2. Objectives

2.1. Overall Objective(s):

- To fulfil the necessary requirements for Bulgarian power system to realise a UCTE (Union for the Co-ordination of the Transport of Energy) membership;
- To enhance reliability and quality of electric energy supply to Balkan countries;
- To improve the relations of both countries by reducing the disputes regarding the operational parameters.

2.2. Purpose of the project:

- 1.To improve stable parallel operations of both energy power systems.
- 2.To enhance the energy traffic and permit a stable work of energy production, transport and distribution branches.

2.3. Accession Partnership and NPAA priority:

Accession Partnership – short-term priority: revise energy demand forecasts on the basis of more realistic growth and energy intensity scenarios.

Accession Partnership – medium-term priority: preparation for the internal energy market. This project is a necessary part of the preparation for the internal market through the preparation of Bulgarian electricity systems for interconnection with the UCTE interconnected Western and Central European networks.

2.4. Cross Border Impact:

The project has a substantial cross border impact through the improvement of electricity interconnection on both sides of the Greek and Bulgarian border. It will improve the relations of both countries by reducing the disputes regarding the operational parameters. Personnel and groups of people involved in day-to-day operation at those sides would benefit from improving of their relations. This project which is a mirror project with a Greek project, will assist in improving the reliability of the electricity networks in both countries, and has implications for wider electricity trade through membership in the synchronised European UCTE network.

3. Description

3.1. Background and justification:

This project is part of a joint project within the framework of the PHARE Cross Border Co-operation Programme which has been agreed by both the Greek and Bulgarian authorities as a priorities.

NEK's electric power system is interconnected to the electric power systems of neighbouring countries. It creates the infrastructure for bulk electricity exchanges. Furthermore, transmission lines at 400, 220 and 110 kV interconnect NEK's network with Romania, Ukraine, Moldavia, Serbia, FYROM and Greece.

The dominant trend in the Balkan region, including Bulgaria, is the interconnection of all national grids with UCTE (Union for the Co-ordination of the Transport of Energy). Increasing the number and the capacity of interconnections between the countries of the Balkan region and the countries of UCTE has a dual significance: politically the Central and Eastern European countries are seeking their integration to the European Union and therefore, are moving to a full participation in the Trans-European Energy Networks in accordance with the Maastricht Treaty; economically, UCTE countries are interested in co-operating with the non-member Balkan countries.

Moreover, the synchronous interconnection of power networks of different countries within the UCTE revealed considerable benefits in the form of investment savings, increased reliability and quality of supply, reduction of transmission system losses and opportunities for electricity trade which can be beneficial to all involved countries.

In 1996 under the project BG9402-02.01 "Improvement of the joint operation of Bulgarian and Greek power systems" financed by Phare CBC Programme, a feasibility study was prepared by KEMA-ECC which included the necessary conditions of parallel operations between NEK-AD and the Greek power system in accordance with the UCTE regulations. Tender dossiers were produced including technical specifications. Given the fact that the am tender dossier was produced in 1997 and that according to the new Energy Law the structure of NEK has been changed last year, tender dossiers need to be revised.

In the scope of supply is foreseen to be delivered equipment and performed engineering work, necessary for realisation of real time information exchange between the dispatching centres of Bulgaria and Greece power companies, allowing the parallel operations of both power systems and fulfilling the requirements for UCTE membership.

The proposed project is in compliance with the priorities established in the Joint Programming Document (JPD), agreed during the Joint Co-operation Committee (JCC) between Greece and Bulgaria (Athens, 20 Nov. 2000) and especially with the Axis 1 Cross Border Infrastructures, Measure 1.3 Complementary cross-border infrastructures (Projects to modernize and harmonize energy networks). The Greek side will finance the mirror project either by means of INTERREG III or by other funds.

3.2. Linked activities:

The project is part of a major project to prepare the Bulgarian power system to be interconnected with the Western European Grid UCTE, according to the requirements of the Catalogue of Measures elaborated by the UCTE Technical Committee for Bulgaria. The Catalogue of Measures has been agreed by Bulgarian side and by the members of the UCTE Technical Committee. Other projects are:

- PHARE CBC BG9402-02.01 “Improvement of the joint operation of Bulgarian and Greek power systems” for performing a feasibility study in favour of NEK-AD, preparing the necessary conditions of parallel operations between NEK-AD and the Greek power system in accordance with the UCTE regulations. Finished 1997.
- PHARE Cross Border Co-operation Bulgaria-Romania: “Development of Telecommunication infrastructure of the Bulgarian and Romanian electricity companies for improvement of data exchanges between their Dispatching Centres and UCTE”. Included in FM 2000.
- SECI – “Teleinformation System among the National Dispatch Centres in the SECI countries”. Will be finished 2001.

3.3. Results:

- On-line real-time information from s/s Thessaloniki to National Dispatching Centre of NEK;
- On-line real-time information from seven Blagoevgrad region substations and power plants to Regional Dispatching Centre "West" of NEK;
- Improved High-Voltage Line (HVL) protection on HVLs in Blagoevgrad region; on the HVLs connecting NEK's power grid with Greek power grid; on part of NEK's energy ring HVLs;
- Improved data exchange between Bulgarian and Greek National Dispatching Centres.

3.4. Activities:

For fulfilling the objectives stated below the proposed project must be developed in two phases:

- **Phase 1 - Revision and update of the existing tender dossier**

Revision and update of the existing tender dossier will be performed by NEK.

- **Phase 2 – Implementation of the project** through procurement and equipment assembling, supervision, commissioning and training. The following investments are foreseen under this project:
 - Optical fibres mounted inside in groundwires on the power transmission line - OPGW (Optical fibre Ground Wire) type and where it will be mounted will be solved during the revision and update of the existing tender dossier (Phase 1).
 - SDH-1 Terminal equipment for fibre optic telecommunications - 4 pcs and Network Control and Management System
 - Telemetry and Power Line Carrier equipment for Blagoevgrad region - 7 RTUs and metering equipment for each one; one Data Concentrator for these RTUs; 6 PLC-channels with coupling devices for each one.
 - RTU for tie-line data acquisition in s/s Thessaloniki - 1 RTU and metering equipment

4. Institutional Framework

The Supplier will be appointed through an open tender procedure according to the “Practical Guide to Phare, Ispa and Sapard contract procedures”.

The Phare CBC IA in Sofia, Bulgaria will organise the Tendering procedure for the Supplier (procurement, assembling, testing and commissioning). It will be one supply contract including 5 (five) lots according to the needs of the project.

Overall project monitoring, project co-ordination and final project evaluation will be undertaken jointly within the framework of a joint Committee (specially formed for the implementation of the project and will include representatives from NEK, SEERA, Phare CBC IA and from Public Power Company - Greece).

The Beneficiary Institutional of the Project according to the Bulgarian National legislation will be NEK-EAD . NEK-EAD will cover all operational and maintenance of the monitoring system and will become owner of the asset after completion of the project, i.e. after delivery, installation and acceptance of the equipment. A team of experts established at the beneficiary company will support CBC IA. Members of those teams must be full-time highly qualified experts in the field of the project.

Project Manager:

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5. Detailed Budget, in Meuro

COMPONENTS	Phare support		Total Phare (=I+IB)	National co- financing [*]	TOTAL
	Investment Support	Institution Building			
Revision and update of existing tender dossier				0.1	0.1
Procurement and equipment assembling, supervision, commissioning, training			3.0	0.9	3.9
TOTAL			3.0	1.0	4.0

(*) from NEK

6. Implementation Arrangements

6.1. Implementing Agency

The Project shall be managed under the Decentralised Implementation System (DIS). The Implementing Agency is the Ministry of Regional Development and Public Works (MRDPW). A Programme Authorising Officer (PAO) will be nominated for the Programme by the National Authorising Officer (NAO) after consultation of the National Aid Co-ordinator (NAC).

The CBC Implementing Agency retains overall responsibility for the implementation of the whole programme. This includes approval of terms reference, of tender documents, of evaluation criteria, of evaluation of offers, signature of contracts, authorisation and payments of invoices.

The project beneficiary institution is NEK EAD. The project beneficiary institution is responsible towards the CBC Implementing Agency and the State Energy and Energy Resources Agency for the operational management of the project: preparation of terms of reference, of tender documents, of evaluation criteria, of evaluation of offers, of contracts, of invoices for payment. For works contracts under FIDIC rules, an official of NEK acts as the Employer and the invoices have to be certified by an independent Engineer contracted and financed by the Programme.

NEK reports every three months to the CBC Implementing Agency and the State Energy and Energy Resources Agency (with direct copies to the EC Delegation) with monthly disbursement and commitment schedules and with sufficient detail to allow assessment of progress made and remaining work to be accomplished.

NEK liaises with the EC Delegation through the State Energy and Energy Resources Agency for all issues related to the operational management of the project.

The project team within NEK will be adequately staffed with 2 qualified full-time experts. Appropriate technical assistance to the project team is to be ensured, financed by the Programme.

6.2 Non-standard aspects

There are no “non-standards aspects”. The “Practical Guide to Phare, Ispa and Sapard contract procedures” will strictly be followed

6.3. Contracts

For Phase 1: Will be made by NEK in assistance with KEMA's experts. (no PHARE contracts)

For Phase 2: One supply contract including five (5) lots including

1. Optical Fiber - 2,5 MEURO
2. Terminal Equipment and Network Control and Management System – 0,5 MEURO
3. Power Line Carrier equipment and coupling devices – 0,5 MEURO
4. Telemetry equipment – 0,3 MEURO
5. RTU equipment for tie-line – 0,1 MEURO

7. Implementation Schedule

Start of Revision	Completion of Revision	
03.2001	06.2001	
Start of tendering	Start of project activities	Completion
09.2001	03.2002	11.2003

8. Equal Opportunity

Equal opportunity for men and women to participate in all the components of the project will be ensured.

9. Environment

None of the works contained in this project would have any significant environmental effect. This project does not involve the construction of new transmission facilities, but rather the upgrading of communication equipment and lines, which will utilise existing interconnection lines.

10. Rates of return

Concerning similar projects proposed for the national electricity transmission network (as opposed to this interconnection with Romania) a recent study (‘Study of CONEL’s Transmission Reinforcement Requirements’. ESBI Engineering Ltd. December 1999 (funded by EBRD loan)) concluded that computer based dispatch of generation, and the minimization of the system losses which stem from this improved dispatch, can yield savings of 2-5% in generation costs. In addition labor costs can be reduced through the improved telecommunications and national dispatch. Taken together the ESBI study concluded that a

program of investment in improved telecommunications and a national dispatch (SCADA) upgrade would yield an IRR of 10%. This did not include any allowance for leasing of unused fiber optic capacity to third party users.

NEK's experts estimates major items of the project efficiency as follows:

- Improved reliability of the parallel operation of the electric power systems (EPS) of Bulgaria and Greece - 56400 EU/year.
- Savings of expenditures for telecommunications operators services -605280EU/year

The IRR is estimated on 10.9%.

11. Investment criteria

11.1. Catalytic effect:

The implementation of such project is extremely important for both countries representing a necessary step to be accomplished for UCTE interconnection and for the increasing of the operation reliability of both power systems.

11.2. Co-financing:

The project is co-financed by Bulgaria, which will provide 25% of the total cost of the project.

11.3. Additionality:

No other financing sources from the private sector or from IFIs were available for financing this project.

11.4. Project readiness and Size:

The preliminary studies are completed. The revision required will be finished by NEK till the end of 06.2001 and the implementation of the project can start according to the implementation chart (Annex 2). The project complies with the 2 Meuro minimum Phare allocation requirement.

11.5. Sustainability:

The investments funded under this project will become an integral part of the interconnected electricity transmission systems for the two countries, and as such the project is fully sustainable after the end of the project. Ongoing maintenance and operation costs will be borne on the Bulgarian side by NEK, as the national transmission and Dispatch Company.

11.6. Compliance with state aids provisions

The project respects the state aids provisions.

12. Conditionality and sequencing

- Bulgarian authorities undertakes the obligation to cover any additional cost, above the envisaged Meuro 4.0, necessary for the completion of the whole project during its implementation timeframe.

- Every infrastructure project will be publicized according to a publicity action plan to be prepared by the Ministry of Regional Development and Public Works and endorsed by the Commission before tendering the works.

ANNEXES TO PROJECT FICHE

1. Logical framework matrix
2. Detailed implementation chart
3. Contracting and disbursement schedule by quarter
4. Reference to feasibility /pre-feasibility studies.

Annex 1 : Logframe Matrix for project: “Improvement of the joint operation of Bulgarian and Greek power systems”		Contracting period expires:	Disbursement period expires : 30/11/2004
		31/10/2003	
		Total budget : 4,0Meuro	Phare budget : 3,0Meuro
Overall objective	Indicators of Achievement	Sources of Information	
- To fulfil the necessary requirements for Bulgarian power system to realise a UCTE membership. - To enhance reliability of electric energy supply to Balkan countries; - To improve the relations of both countries by reducing the disputes regarding the operational parameters.	UCTE’s membership.	UCTE	
Project purpose	Indicators of Achievements	Sources of Information	Assumptions
- To improve stable parallel operations of both energy power systems. - To enhance the energy traffic and permit a stable work of energy production, transport and distribution branches.	The tie-line between Greece and Bulgaria meets requirements of the Catalogue of Measures, elaborated by the UCTE Technical Committee for Bulgaria	UCTE Technical Committee for Bulgaria.	- Realisation of such type of projects with other neighbouring Power grids - Synchronous inter-connection and power exchange with other neighbouring Power grids of Romania, FYROM, etc.
Results	Indicators of Achievement	Sources of Information	Assumptions
- On-line real-time information from s/s Thessaloniki to National Dispatching Centre of NEK; - On-line real-time information from seven Blagoevgrad region substations	On-line information from the two power systems at both NDCs.	The equipment will be mounted in each power systems, the on-line information will be available to be checked	- The personal will be trained to work with new equipment - The on-line information will be reliable and enough

and power plants to Regional Dispatching Centre "West" of NEK; • Improved High-Voltage Line (HVL) protection on HVLs in Blagoevgrad region; on the HVLs connecting NEK's power grid with Greek power grid; on part of NEK's energy ring HVLs; • Improved data exchange between Bulgarian and Greek National Dispatching Centres..		at both National Dispatching Power;	
Activities	Means		Assumptions
• Optical Fibber • Optical Terminal Equipment • RTU for bordering substation • Telemetry Equipment • PLC Channels	Procurement and equipment assembling, supervision, commissioning and training.		• The experience and ability of the contractor for the stage two, to perform all the tasks within the established requirements, time schedule and project funds.

Annex 2 – Detailed implementation chart

“Improvement of the joint operation of Bulgarian and Greek power systems”

Components	2001						2002						2003						2004													
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D		
Tender Period								D	D	D	D																					
Signature of Contract(s)												C																				
Supply, Installation, Commissioning, Testing and Training													I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	R	R
D = Design/Tender preparation C = Contracting I = Implementation/works R = Review/evaluation																																

Annex 3 – Contracting and disbursement schedule by quarter															
“Improvement of the joint operation of Bulgarian and Greek power systems”															
Components	Cumulative contracting schedule by quarter in Meuro (planned)														Total Phare Allocation
	2001		2002				2003				2004				
	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	
Supply, Installation, Commissioning, Testing and Training				3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3.0
Total contracting:				3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Components	Cumulative disbursement schedule by quarter in Meuro (planned)														Total Phare Allocation
	2001		2002				2003				2004				
	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	
Supply, Installation, Commissioning, Testing and Training				1.8	1.8	1.8	2,7	2,7	2,7	2,7	2,7	2,7	3,0	3,0	3.0
Total disbursement:				1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	3.0	3.0	3.0

Annex 4 – Reference to feasibility /pre-feasibility studies

“Improvement of the joint operation of Bulgarian and Greek power systems”

Feasibility study under Phare–CBC program (BG9402-02-01) was performed for the improving of the conditions of parallel operation between the power systems of Greece and Bulgaria.