STANDARD PROJECT FICHE

1. Basic Information

1.1 CRIS Number **2004/016-782.01.04**
1.2 Title **Integrated use of the thermo-mineral waters accumulated in the "Erma reka-Ilidza" geothermal system**
1.3 Sector **Environment**
1.4 Location **Bulgaria, South Central Region, Smoljan District; Prefecture Xanthi (Greece)**

2. Objectives

2.1. Overall Objectives

To continue the implementation of the EU environmental *acquis communautaire* with particular emphasis on water quality and quantity in respect of Directive 2000/EEC for establishing of framework for Community action in the field of water policy and in particular in respect of a new Directive COM(2003)550 for groundwater protection.

2.2. Project purpose

The project purpose is integrated and sustainable long-term use of thermo-mineral waters accumulated in Erma reka - Ilidze geothermal system.

2.3. Accession Partnership (AP) and NPAA priority

- Accession Partnership Medium -Term Priority

  - ✓ Complete transposition and implementation of framework and sector legislation according to pre-defined timetable.
  - ✓ Integrate sustainable development principles into the definition and implementation of all other sector policies.

- Accession Partnership Short Term Priority

  - ✓ Continue transposition of framework legislation in the water, air and waste sectors, prepare and implement detailed directive specific approximation programmes; strengthen implementation structures, particularly at the regional level.

2.4 Contribution to National Development Plan
N/A

2.5 Cross Border Impact

The project has direct cross-border impact and will be developed in a cross-border region of Erma reka – Elidze cross-border thermo-mineral system. Partnership for thermo-mineral water management will be established on both sides of the border. A co-operative system for integrated monitoring will be created.

The proposed project will provide:

- Sustainable integrated long-term direct utilization by Bulgaria and Greece of the geothermal waters accumulated in Erma reka geothermal field for different purposes (spas, swimming pools, hot water supply for recreation needs, etc.);
- Possibilities of utilization of the thermo-mineral waters in Bulgaria in the flow rates which will not cause negative impact on the Greek side;
- Continue the implementation of the EU environmental *acquis communautaire* with particular emphasis on groundwater quality and quantity in respect of Directive 2000/EEC for establishing of framework for Community action in the field of water policy and in particular in respect of a new Directive COM(2003)550 for groundwater protection;
- Creation of possibilities for developing of balneotherapy-tourism;
- The exploitation of low temperature geothermal waters is regarded as a promising possibility of reducing the environmental impact of energy consumption.

3. Description

3.1. Background and justification

The new approach to water management requires, and recommends it with Third Countries, groundwater bodies within which groundwater flows across a Member State boundary to be managed in the way that will ensure sufficient information that will allow assessment of the quantitative and chemical status of the groundwater body.

Thermo-mineral waters have been traditionally used for different purposes: for drinking water supply, for greenhouses, swimming pools, balneotherapy, heating, etc.

The project's choice of the Erma reka – Elidze geothermal system has been made for the following reasons:

- The geothermal system is a trans-boundary water body located on the boundary with Greece and thus requires development of an integrated water management plan with international approach as well as to promote co-operation between the affected border regions and thereby to contribute to the establishing of co-operation networks among counterpart organisations and entities on both sides of the border;
- The water issue has a long history of discussion between the two countries and is considered as sensitive;
- The geothermal system is accumulating sufficient water resources (the static reserves were assessed to about 200 mil. m^3) that could be sustainable used by both countries in a long-term period;
- There is a support and willingness both from the local authorities to start the integrated use of thermo-mineral waters;
- There are intensive contacts between the Bulgarian and Greek partners from the local authorities, which creates a stable base for the project.

As Erma reka - Elidze geothermal system is a trans-boundary water system; the Water Framework Directive requires creation of an integrated water management plan. Bulgaria as a future Member State of the EU aims to introduce and implement the acquis in the water sector. The responsible local authority - Municipality of Zlatograd - is not sufficiently prepared to be adequate partner in the process of implementation of the complex requirements of the WFD. Thus, there is a need the local stakeholders to be better prepared and motivated to have an active participation in the future exercise related to the

implementation of the WFD. It is important the local communities, the water utilities, the industry and the commerce, the consumers and the environmental groups to play a full part in the discussions on the geothermal system management plans as they will be affected directly.

The project is oriented to: (1) the local population of Zlatograd; (2) the environmental NGOs, particularly dealing with water issues and related activities, (3) the decision makers on municipality level: local authorities of Zlatograd and Xanthi.

The project activities are designed with the intention to bring changes of attitudes and dealing with water as a worldwide wealth and naturally limited recourse to the local authorities of Zlatograd and Xanthi and the natural heritage accumulated in the joint Erma reka - Ilidze geothermal system to be used for improving the quality of life of the local population.

The Municipalities of Zlatograd and Xanthi will be directly involved in the project implementation and will benefit from it within its duration (a fraction of a group of people who will disseminate the project results and benefits to a wider target group). The potential direct beneficiaries of the thermal waters from the Municipality of Zlatograd are: three schools, the municipal hospital, a sport-healthy complex, three to four kindergartens, but their number will be clarified following the detailed assessment of the potential resources of the geothermal system, the elaboration and finally the approval of the integrated water management plan.

The project is directly related to the objective of the programme as follows:

- To introduce EU legislation and good European practices for management and sustainable use of water natural resources in the region of Erma reka - Ilidza geothermal system and to assist the implementation of the water legislation at local level;
- To establish a long-term partnership between Bulgarian and Greek local authorities dealing with water management resources in the region;
- To attract the public attention to the conditions, the activities and the possibilities for the development of water protection activities, including water protection areas;

The Erma Reka geothermal field belongs to the most interesting and prospective in Bulgaria with respect to reservoir conditions and utilisation. A big geothermal anomaly (200 mil. m^3, 90ºC) was discovered during the geological investigations of non-ferrous metals in the region of Erma reka village and Allamovtsi village, Zlatograd municipality. To clarify this anomaly, 60 deep structural hydro-geological drillings were made to a depth of more than 1500 m. As a result of the investigation, it was established that a thick marble horizon exists in the region of Erma and Malka rivers over an area of about 30 sq. km. from elevation +100 m down to elevation –2000 m. The upper part of the marble horizon is about 40 m thick and is strongly cavernous. The marble can be said to be unevenly enkarsted. Several drillings found vertical failures 500 m to 1250 m deep, filled with thermo-mineral water of about 90ºC temperature. The hot water in the region has a permanent piezometric level at elevation +490 m. On the Bulgarian territory, the geothermal water has no exit onto the surface, while on the territory of neighbouring Greece, the geothermal water overflows at elevation +430 m into the Elidze river bed, with a temperature of 70ºC.

As Erma reka - Elidze thermo-mineral system is cross-border geothermal system of underground thermo-mineral waters, the Directive requires the creation of an integrated water management plan. There is luck of exchange of information and experience between

Bulgarian and Greek stakeholders from the region. The monitoring of the Erma reka - Elidze geothermal system is not integrated and the results are not shared between the both sides of the border. The local experts are not familiar with the European standards for water management.

The project aims at ensuring integrated use of the underground thermo-mineral waters "Erma reka - Elidze" by the Bulgarian and Greek side by assessment of the effects of utilization of the two geothermal sources in Greece and Bulgaria, including monitoring of the effect of utilization of the thermo-mineral waters in Bulgaria on the springs' regime of the natural discharge of the aquifer in the valley of river Ilidza in Greece and development of a joint strategy.

There are still questions necessary to be answered before the elaboration of the integrated water management for integrated and sustainable utilisation of geothermal waters although a huge amount of investigation works have been carried out in the scope of the geothermal field and feasibility study was completed in practice. Because of the very complicated geological-hydro-geological structure of the region, it is necessary the following issues to be more precisely clarified:

- boundaries of the water-bearing complex, the area of spreading and the volume of the marble horizon;
- hydrodynamic parameters of the aquifer;
- the dynamic reserves (resources) of waters accumulated in the whole hydrothermal system including the sub-thermal waters accumulated in the gneisses series which discharges in the Elidza river valley on the Greek territory;
- the potential resources of the marble water-bearing aquifer that requires conducting of a new pump test in three different flow rates and duration about 6 months;
- where the utilised geothermal water is cooled down to 25ºC, it will be re-injected back in the aquifer, etc.

Additional feasibility study will be carried out under the Framework Contract for project "Technical Assistance for Erma reka - Ilidza geothermal system hydrodynamic and hydrochemical modelling"**,** that will be financed under the programme Phare-CBC 2002/000 PPF. The results of these detailed feasibility studies will be used by the Consultant in the preparation of the integrated management strategy for the thermo-mineral water utilisation.

The project for the sustainable, long-term, integrated utilisation of thermo-mineral waters of Erma reka - Elidze geothermal system will be implemented in two phases:

- **Phase I,** project will be financed under Financing Memorandum 2004, is subject of this Project Fiche**;**
- **Phase II**, project will be implemented and financed under Financing Memorandum 2006. It will be realization of the implementation project based on the prioritization of the possibilities of sustainable, integrated utilisation of the geothermal waters. The project will consist of three contracts: Service, Works and Supply.

This project is in compliance with the of the Joint Programming Document (JPD) and namely with Axis 3 – Improvement quality of life (in combination with upgrading of health services), environment and protection-promotion of cultural resources; Measure 3.2 – Protection, promotion and management of natural environment.

3.2 Sector rationale

N/A

3.3 Results

- Operational Erma reka - Ilidza geothermal system joint tasks force group (JTFG) created;
- Market's investigations and determination of the possibilities of the thermal waters utilization carried out;
- Assessment of existing and potential key barriers for utilization of geothermal water resources in Erma reka-Elidze geothermal system, Municipality of Zlatograd and Xanthi and develop recommendations to mitigate such barriers made;
- Joint BG/GR Geothermal Sources Utilization Strategy for the target boundary regions, incl. joint programme for integrated utilization of thermo-mineral waters, of Bulgaria and Greece available;
- Water Management Plan for integrated use of thermo-mineral waters agreed with the Greek side;
- Assessment of the necessity from monitoring equipment and prepared Technical Specification for the necessary equipment elaborated;
- Monitoring programme elaborated, approved and adopted by the Bulgarian authorities;
- Integrated monitoring system established;
- Tender Documents for the implementation of the investment project(s) for use of thermo-mineral waters based on the approved WMP ready;
- Increased public awareness and knowledge about the benefits of thermo-mineral water application in both boarder regions;
- Acquainted group of experts with the WFD 2000/60/EEC and with a Directive COM(2003)550 in terms of integrated utilization of the trans-boundary groundwater basin.

3.4. Activities

The upper results will be achieved through 2 components: technical assistance and for supply of monitoring equipment.

The following activities, under component No 1, will be developed:

Component 1

I. Assistance to the joint tasks force group (JTFG) of Erma reka - Elidze cross-border geothermal system in its operation. Organisation and conducting of JTFG meetings for discussion and agreement of the Water Management Plan for integrated water utilisation. Organisation of workshops and seminars for JTFG's training on the WFD and the Directive for groundwater. (The JTFG will be established before the commencement of the project implementation. Representatives from local authorities in Zlatograd, Smoljan, Xanthi, NGOs environmental bodies, stakeholders, etc, will be involved.)

II. Preparation of Strategy and Water Management Plan for Geothermal Sources Utilisation: based on the studies and reports about the effects of utilising the two geothermal sources in Greece and Bulgaria, a joint strategy will be developed. The Strategy will present the opportunities in both regions for geothermal sources utilisation; the possible application and beneficiaries; the utilisation effects: economic, social and environment; the system for coordination of both partners' activities and ways for

cooperation; time-schedule and priority in utilisation of geothermal sources; identification of problems to be overcome. It should cover technical, financial, environmental and social aspects. The WMP will be discussed and agreed with the Greek partners and relevant Bulgarian authorities will adopt it. It will be considered as a base for future investment projects concerning the integrated utilisation of geothermal waters for different purposes.

III. Evaluation of the existing monitoring system on the both sides of the border – the consultant will research the existing practice in Bulgaria and Greece on national, regional and local level. He will prepare a report with recommendations for improving and developing effective and not expensive system for monitoring on local level that will cover the requirements of the WFD for groundwater. The results will be presented and approved by the TFG;

IV. Preparation and approval of a plan for integrated monitoring – Analyses of the monitoring equipment and administrative capacity available and of the needs of supply of monitoring equipment and training will be carried out. Based on the analyses of existing monitoring system, the consultant will prepare a plan for establishing an integrated monitoring network in order to have effective monitoring of the water quantitative and qualitative status in accordance with the requirements of the WFD for groundwater. Following the sites visits; every point for water quality monitoring will be chosen and registered on a map. TFG will approve the plan. The programme will be approved and adopted by the respective Bulgarian authorities.

V. Evaluation and drafting of technical specification for the necessary technical equipment – The consultant will prepare technical specification of the monitoring equipment necessary for the successful conducting of regular monitoring according to the approved monitoring programme.

VI. Preparation of Tender Documents for the implementation of the investment project for use of thermo-mineral waters based on the approved Water Management Plan - The consultant will elaborate all necessary documents (design, incl. working drawings and technical specifications, and Tender Dossier) in order to proceed with Tendering procedures.

VII. Public awareness campaign: increasing public awareness and knowledge about the geothermal water utilization and promoting the public interest in the benefits from it.

Component 2

The necessary technical monitoring equipment under this component will be supplied. Indicatively, the supply will include the following equipment: Sampling Equipment for Groundwater and Surface Water, consisting of: **Groundwater sampling pump;** Groundwater sampler (baler) combined with level meter; Packer for groundwater sampling pump; Measuring system for controlled groundwater sampling; Measuring Equipment for Groundwater and Surface Water Quality Monitoring consisting of: Multi-sensor probe; Local Control Unit; vehicle.

3.5 Linked activities

Phare project BG9307-03-01 “Technical and Economic Assessment of Bulgarian Renewable Energy Sources”. Here are some conclusions:

”The RES theoretical potential in Bulgaria is considerable. According to the PHARE BG 9307-03-01 Project Final Report data, the RES potential is evaluated to 14387 OJ/year for geothermal energy; 77156,6 OJ/year for solid agricultural waste…”

”For the time being the basic difficulties are related to the lack of investments. The increase of foreign investments from the PHARE program and from some World Financial Institutions aimed for the numerous spas in Bulgaria create more favorable conditions for the expansion of the geothermal market. Besides the production of cheap thermal energy, the geothermal plants contribute to the reduction of the environment pollution, which is of great importance for the country.”

3.6 Lessons learned

The activities for thermal water utilisation in the Erma reka geothermal system has started in 2000 with the elaboration of a report for hydro-geological explorations and assessment of the exploitation resources of the thermo-mineral water and hydro-geothermal energy of the Erma reka deposit. Because of the uncertain boundaries of the water-bearing complex, the area of spreading and the volume of the marble horizon, the appraisals for the reserves (static and elastic) were assessed as “too conventional”. As the potential resources of the aquifer are limited, the thermal water exploitation practically should rely mainly on dynamic resources, which in the whole hydrothermal system amount to about 60 l/s. During the exploitation with horizons going down in deeper and with decreasing water level, oxidation of sulfates is speeded up. Thus, the increasing water aggressiveness would lead to changes in its quality.

The review of the report showed that the assessment of the regional exploitation resources should be made very carefully. There was no monitoring carried out for the water discharge on Greek territory and there was no information about the possible influence of the flow rate used in Bulgaria on the water discharge in Ilidza river valley and on the water quality as well. It became clear that it is not possible more than 10 l/s flow rate of water to be used before the integrated management plan is prepared and agreed with the Greek relevant authorities and the monitoring network to be set up and operating following the requirements of the WFD 2000/60/EC and a new Directive for groundwater COM(2003)550.

4. Institutional Framework

The Bulgarian CBC Implementing Agency is the Ministry of Regional Development and Public Works (MRDPW). The Municipality of Zlatograd will be responsible for the technical implementation of the project. A Joint Steering Committee with the participation of the Ministry of Environment and Water, the Ministry of Regional Development and Public Works, the Basin Directorate and representatives from the relevant local authority of Xanthi will be established in order to manage the project activities.

The Beneficiary Institution of the Project will be the Municipality of Zlatorgad.

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5. Detailed Budget MEUR

COMPONENT	Phare support		Total Phare (=I+IB)	National co-financing (*)	IFI	TOTAL
	Investment Support	Institution Building				
1. Elaboration of Water Management Plan for sustainable long-term integrated utilisation of thermo-mineral waters from Erma reka - Ilidza geothermal system		0.60	0.60			0.60
2. Supply of monitoring equipment	0.15		0.15	0.05		0.20
TOTAL	**0.15**	**0.60**	**0.75**	**0.05**		**0.80**

(*) The Investment component of the project will be co-financed by the Bulgarian National Fund.

6. Implementation Arrangements

6.1. Implementing Agency

The Project shall be managed under the Practical Guide to contract procedures financed from the General Budget of the European Communities in the context of external actions. The Bulgaria CBC Implementing Agency (IA) is the Ministry of Regional Development and Public Works (MRDPW), which retain overall responsibility for the implementation of the project (approval of terms of reference, preparation of tender documents, organization of the tender procedures; signature of contracts; financial management of contracts).

The project beneficiary institution is Municipality of Zlatograd. It is responsible towards the CBC Implementing Agency for the preparation of ToR; participation in Tender evaluation procedures and technical management of the contract in close cooperation with Phare CBC IA.

Overall project monitoring, project co-ordination and final project evaluation will be undertaken within the framework of a Steering Committee, in which will take part authorized representatives of Municipality of Zlatograd, MoEW, MRDPW, Basin Directorate and relevant Greek Local Authorities.

6.2 Twinning
N/A

6.2. Non-standard aspects

There are no “non-standards aspects”. The “Practical Guide to contract procedures financed from the General Budget of the European Communities in the context of external actions” will strictly be followed.

6.3. Contracts

The expected contracts are 2 as follows:
Service Contract – for technical assistance – 0.60 MEUR, 12 months
Supply contract –for supply of technical equipment for monitoring – 0.20 MEUR, 5 months

7. Implementation Schedule

	Service contract	**Supply**
Start of tendering /contract forecast	January 2005	May 2006
Start of project activity	December 2005	September 2006
Project completion	December 2006	February 2007

8. Equal Opportunity

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

9. Environment

The major environmental effect from the project will be integrated utilization of the thermo-mineral waters in full compliance with Water Framework Directive 2000/60/EU and in particular with Directive for groundwater COM(2003)550 ensured by proper management and integrated monitoring.

10. Rates of return

Not applicable.

11. Investment criteria

11.1 Catalytic effect

Bulgaria and Greece according to their geographical position share common basins of underground waters and in particular “Erma reka - Elidze” geothermal system. The project will considerably assist the Bulgarian local administration to adopt and enforce the EU environmental acquis legislation relating to the water sectors. This will result to utilization of geothermal waters accumulated in the marble aquifer of the “Erma reka-Elidze” geothermal system, the natural heritage, for different purposes by the Municipality of Zlatograd, following the requirements stated in WFD. Additionally this will lead to

environmental improvement, cross-border fellowship and to development of project financial management skills. The preparation of such environmental project with importance for both countries is extremely important to sustainable utilization of geothermal waters, development of balneology, village tourism, heating of several municipal buildings, etc. that will lead to reducing of the environmental pollution. Without Phare assistance, the project could not be realised.

11.2 Co-financing

The Investment component of the project will be co-financed by the National Fund.

11.3 Additionality

No other financing sources from the private sector or from IFIs are expected for financing this project.

11.4. Project readiness and size

The preliminary studies are completed and the implementation of the project can start according to the implementation chart (Annex 2).

11.5. Sustainability

The project will be sustainable in the long term. The water management plan for integrated utilisation of water will lead to significant improvement of quality of life of local population in the town of Zlatograd, to sustainable development of the regions from both sides of the Bulgarian-Greek boundary, to fostering cross-border co-operation.

11.6. Compliance with state aids provisions

The project respects the state aids provisions.

11.7 Contribution to National Development Plan: N/A

12. Conditionality and sequencing

Before the start of the project the Municipality of Zlatograd will ensure three (3) appropriate experts to participate in the management of the project.

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.

LOGFRAME PLANNING MATRIX FOR Project:	2004/016-782.01.04	PHARE – CBC BG-GR
Integrated use of thermo-mineral water accumulated in the Erma river - Elidze geothermal system	Contracting period expires: 30/11/2006	Disbursement period (Year 1) expires: 30/11/2007
	Total budget: 0.8 MEUR	Phare budget: 0.75 MEUR

Overall objective	**Objectively verifiable indicators**	**Sources of Verification**	
To continue the implementation of the EU environmental *acquis communautaire* with particular emphasis on water quality and quantity in respect of Directive 2000/EEC for establishing of framework for Community action in the field of water policy and in particular in respect of a new Directive COM(2003)550 for groundwater protection.	• Working partnership between the MoEW, the Basin Directorate and Erma reka-Elidze geothermal system's Tasks Force Group formed between the Municipalities of Zlatograd and Xanthi	Written materials – plan, minutes from the meetings of the TFG; monitoring programme, Tender document for investment project, etc.	
Project purpose	**Objectively verifiable indicators**	**Sources of Verification**	**Assumptions**
The project purpose is integrated and sustainable long-term us of thermo-mineral waters accumulated in Erma reka-Ilidz geothermal system.	BG and GR relevant authorities accept the Water Management Programme for integrated use of thermo-mineral waters of Erma reka - Elidze geothermal system is adapted to the hydro-geological and hydro-geochemical model of the aquifer accumulated thermo-mineral waters	• Water Management Plan signed by BG & GR; • Final MRDPW report; • Ready Tender Dossier for the investment project	• The municipalities in Zlatograd and Xanthi are involved in the Tasks Force Group. • Collaboration with MoEW and Basin Directorate.
Results	**Objectively verifiable indicators**	**Sources of Verification**	**Assumptions**
• Operational Erma reka-Ilidza geothermal system joint task force group (JTFG) created; • Market's investigations and determination of the possibilitie of the thermal waters utilization carried out; • Assessment of existing and potential key barriers fo utilization of geothermal water resources in Erma reka Elidze geothermal system, Municipality of Zlatograd an Xanthi and develop recommendations to mitigate suc	• Tasks Force Group for Erma River thermal system is established. 2 sessions and one workshop are provided; • Water Management Programme (WMP) for integrated use of thermo-mineral waters of Erma River	• Protocols of the sessions of the TFG; • Monitoring equipment delivered; • Ready Tender Documents for investment project;	• Effective work of Erma River thermal system TFG; • Support from other relevant institutions; • Monitoring results are used for decision-making process;

barriers made; • Joint BG/GR Geothermal Sources Utilization Strategy fo the target boundary regions, incl. joint programme fo integrated utilization of thermo-mineral waters, of Bulgari and Greece available; • Water Management Plan for integrated use of thermo mineral waters agreed with the Greek side; • Assessment of the necessity from monitoring equipment an prepared Technical Specification for the necessar equipment elaborated; • Monitoring programme elaborated, approved and adopted b the Bulgarian authorities; • Integrated monitoring system established; • Tender Documents for the implementation of the investmer project(s) for use of thermo-mineral waters based on th approved WMP ready; • Increased public awareness and knowledge about th benefits of thermo-mineral water application in both boarde regions; • Acquainted group of experts with the WFD 2000/60/EE and with a Directive COM(2003)550 in terms of integrate utilization of the trans-boundary groundwater basin.	thermal system distributed among relevant BG and GR institutions / experts; • BG and GR institutions / experts acquainted with the programme for integrated monitoring of Erma River thermal; • Ready Tender Documents for investment project;		
Activities	**Means**		**Assumptions**
• Assistance to the tasks force group (TFG) of Erma reka-Elidze cross-border geothermal system in its operation; • Development of a Strategy and Water Management Plan for Geothermal Sources Utilization; • Evaluation of the existing monitoring system on the both sides of the border and needs assessment for supply of monitoring equipment; • Development and approval by the TFG and the relevant Bulgarian authorities of a programme for integrated monitoring; • Evaluation and drafting of a Technical Specification for the necessary monitoring equipment; • Preparation of Tender Documents for the	• Establishing PIU; • Skilled contractors; • Financial resources; • Mobile staff, cars, equipped office • Services contract – International restricted tender for technical assistance – 1 years • Supplies contract – local open tender procedures for monitoring equipment; • Working meetings of the partners – halls, translation, materials, transport, accommodation etc;	• Contracts for the different activities; • Training materials reports plans programs; • Approve – deliver protocols for the equipment; • Six-month project achievement reports and financial reports; • Information in media.	• PIU will provide fast and transparent procedures for the contracts; • The contractors will fulfil their obligations regularly; • The trained people will do their job adequately; • Cofinancing will be ensured

implementation of the investment project for use of thermo-mineral waters based on the approved Water Management Plan; • Public awareness campaigns; • Supply of monitoring equipment;	• Purchase of equipment		

Preconditions
Before the start of the project three appropriate experts to participate in the management of the project ensured by the Municipality of Zlatograd

Annex 2 – Detailed implementation chart

Project title "Integrated use of thermo-mineral water accumulated in Erma river – Elidze geothermal system"

Components	2005												2006												2007											
	J	F	M	A	M	J	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
1. Component 1 Technical assistance	D	D	D	D	D	D	D	D	D	D	C	I	I	I	I	I	I	I	I	I	I	I	I	I												
2. Component 2 Supply of monitoring equipment																	D	D	D	C	I	I	I	I	I											

D = Design/Tender preparation C = Contracting I = Implementation/works

Annex 3 – Contracting and disbursement schedule by quarter

Project title " Integrated use of thermo-mineral water accumulated in Erma river – Elidze geothermal system"

Components	**Cumulative contracting schedule by quarter in MEUR (planned)**												Total Allocation
	2005				**2006**				**2007**				
	I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	
Component 1 -Technical assistance				0,60	0,60	0,60	0,60	0,60	0.60				**0.60**
Component 2 – Supply of monitoring equipment							0,15	0,15	0.15				**0.15**
Total Phare contracting					**0.60**	**0.60**	**0.75**	**0.75**	**0.75**				**0.75**
National co-financing					**0.04**	**0.04**	**0.05**	**0.05**	**0.05**				**0.05**
Total contracting					**0.64**	**0.64**	**0.80**	**0.80**	**0.80**				**0.80**

Components	**Cumulative disbursement schedule by quarter in MEUR (planned)**												Total Allocation
	2005				**2006**				**2007**				
	I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	
Component 1 -Technical assistance					0,36	0,36	0..54	0.54	0.60	0.60			**0.60**
Component 2 – Supply of monitoring equipment								0.09	0,09	0,15			**0.15**
Total Phare disbursement					**0.36**	**0.36**	**0.54**	**0.63**	**0,69**	**0,75**			**0.75**
National co-financing					**0.03**	**0.03**	**0.04**	**0.05**	**0.05**	**0.05**			**0.05**
Total disbursement					**0.39**	**0.39**	**0.58**	**0.68**	**0.74**	**0.80**			**0.80**

ANNEX 4 - Reference to feasibility / pre-feasibility studies

Following studies and documents are prepared:

- Phare project BG 9307-03-01 “Technical and Economical Assessment of Bulgarian Renewable Energy Sources”;
- Report of the hydro-geological study and an appraisal of the operational resources of thermo-mineral water and hydro-geothermal energy of Erma reka field;
- Feasibility study for the extraction of underground thermo-mineral waters and hydro-geothermal energy and bases of the design flow rate;
- Business project for the utilization of the mineral water in Zlatograd - Consortium “Geothermia”, 2002;
- Investment project for the extraction and the utilization of the mineral water in Zlatograd – Consortium “Geothermia”, 2002