Standard Summary Project Fiche – IPA centralised programmes
(Regional / Horizontal programmes ; centralised National programmes)

1. Basic information

1.1 CRIS Number: 2007/19322

1.2 Title: Emissions reductions from the Nikola Tesla thermal power plants

1.3 ELARG Statistical code: 02.27

1.4 Location: Obrenovac, Serbia

Implementing arrangements:

1.5 Contracting Authority (EC) EC

1.6 Implementing Agency: N/A

1.7 Beneficiary (including details of project manager): Electric Power Industry of Serbia – EPS

Financing:

1.8 Overall cost: €12 million

1.9 EU contribution: €12 million

1.10 Final date for contracting: 3 years after the signature of the Financing Agreement
1.11 Final date for execution of contracts: 5 years after the signature of the Financing Agreement
1.12 Final date for disbursements: 6 years after the signature of the Financing Agreement

2. Overall Objective and Project Purpose

2.1 Overall Objective:

Fulfil *acquis* environmental obligations under the Energy Community Treaty, (Directive 2001/80/EC for large combustion plants).

2.2 Project purpose:

To reduce the emissions from thermal power stations in Serbia, in order to comply with the legal obligations under Serbian Legislation and EU Directives.

2.3 Link with AP/NPAA / EP/ SAA

Under the European Partnership Serbia is committed to "establish an independent Energy Regulatory Agency and carry out environmental audits on energy plants and address worst polluters." (p 12)

Under Article 111 (Environment) of the SAA, Serbia is obliged to halting further degradation and start improving the environmental situation with the aim of sustainable development. Serbian must strengthen its administrative structures and procedures to ensure strategic planning of environment issues and co-ordination between relevant actors and will focus on the alignment of Serbia's legislation to the Community acquis. Cooperation could also centre on the development of strategies to significantly reduce local, regional and trans-

boundary air and water pollution, to establish a system for efficient, clean, sustainable and renewable production and consumption of energy. (p59)

2.4 Link with MIPD

The main priorities and objectives in the energy sector (Meeting European Standards) are:
Energy: Compliance support to meet the needs of the Regional Energy Treaty, relevant Community Directives and regional market obligations; compliance of legislation with the acquis. The activities foreseen in the MIPD to address these priorities and meet these objectives are:

- Support energy sector restructuring, investment planning, and operation of mandatory institutions to meet the Regional Community Energy treaty and relevant Community legislation, including those concerning the improvements in energy efficiency, energy savings and the use of renewable energy sources. This should result in enhanced investments in environmental infrastructure (p.23)

2.5 Link with National Development Plan (where applicable)

N/A

2.6 Link with national/ sectoral investment plans (where applicable)

Sustainable development and environmental management measures were planned for the next ten years for the Republic of Serbia within the National Environmental Program of the Republic of Serbia (NEAP RS – Draft) adopted in accordance with the Environment Protection Law (Official Gazette RS № 135/04).

This programme is realised through action and refurbishment programs adopted by the Government for the period of five years.

One of the priority environmental objectives within the energy sector, between 2005 and 2014 is dust emission from large combustion plants such as TPP Nikola Tesla A, aimed at the alignment with EU regulations (Directive 2001/80/EC for large combustion plants).

EPS Development Plan and EPS Mid-Term Development Plan define the need to reduce dust emission from existing thermal power plants.

3. Description of project

3.1 Background and justification:

Pollution from lignite fired power stations has been and still is a serious problem in Serbia. In 2003 under CARDS funding, a study was undertaken to identify the causes of pollution from thermal power stations in Serbia and to identify the solutions to mitigate this pollution. These solutions were ranked by impact and cost. The priority areas for improvement were emissions from the thermal power stations and ash blow from the ash dumps. CARDS 2004 programme funding of €35 million financed two urgent projects, the first of which was the replacement of the air filter (electrostatic precipitator) at the Kostolac A power plant. Due to the poor condition of the filters, dust emissions were in the range of 800 -1200 mg/Nm^3. Following the completion of the €5 million project, these emissions were reduced to less than the 50 mg/Nm^3 limit under the Acquis.

Equipment for dust treatment of flue gases – electrostatic precipitators (ESP) was installed on most Units of Nikola Tesla Thermal Power Plants as an air protection measure when they

were constructed in the late 1970s and 1980s. In the case of Unit A6 (at Nikola Tesla A power plant) the precipitator was designed to reduce emissions down to a level of 400 mg/Nm^3 (i.e. 8 times higher than current EU limits), and at the newer Nikola Tesla Unit B2, the design performance was 100 mg/Nm^3 (i.e. twice the current limits). After about 30 years of operation, the present ESP separation rate is below design values.

The Energy Community Treaty introduces the legal requirement on Serbia to implement the Acquis on the Environment. Annex II of the Treaty sets the deadline of 31 December 2017 for implementation of Directive 2001/80/EC (the 'large power plant' Directive), which is a relatively short period for such a major programme of works, and with such a high cost.

As noted above, the CARDS 2003 funded study of pollution causes and solutions identified a very considerable list of measures needed to achieve compliance with the Environmental Acquis, with a total investment cost of over €500 million for Serbia's thermal power plants. The projects financed under the CARDS 2004 programme, together with investments funded by EBRD and KfW (based on the results of the CARDS funded study) have made a significant improvement in the pollution from these power plants, but much remains to be done. This project will significantly reduce the dust emissions (which have major health implications for the nearby population) from Unit A6 at the Nikola Tesla A power plant (a 305 MW power plant) and Unit B2 at the Nikola Tesla B power plant (a unit of 620 MW), and make a major contribution towards meeting the Environmental Acquis as required under the Energy Community Treaty.

3.2 Assessment of project impact, catalytic effect, sustainability and cross border impact (where applicable)

The large scale emissions from the thermal power plants due to the lack of effective ESPs leads in particular to significant depositions of heavy particles in the surrounding areas which experience a high incidence of respiratory illnesses, particularly among children.

This pollution also causes damage to crops and agricultural produce. Power station plumes can travel considerable distances with little dilution. The power plants included in this project are relatively close to fairly large concentrations of people – the municipality of Obrenovac in which the power plants are situated, has a population of about 75,000.

This project will significantly reduce the negative health impacts of the emissions from both the Nikola Tesla A and B power plants.

With proper maintenance, the new ESPs should last at least ten years operating at normal levels.

3.3 Results and measurable indicators:

Expected Results

- Compliance with Directive 2001/80/EC concerning dust emissions for this type of power plant.
- Pollution reduction of ambient air in the area of Obrenovac,
- Reduction of the number of people with respiratory illnesses, especially children,
- Reduction of soil and agricultural products contamination coming from arable land located in the area of the thermal power plant,

Measurable Indicators

- Measured emissions from the power plant
- Health statistics for the Obrenovac region

3.4 Activities:

The project involves the reconstruction of two electrostatic precipitators. The activities to be performed are:

- Preparation of technical specifications/ tender preparation (with assistance from external expert technical assistance)
- Contracting of tenders
- Implementation of the works contracts, commissioning and testing (with the assistance of Supervising Engineers).
- Continued monitoring and maintenance of the operation of the ESPs by the beneficiary.

The Project will be implemented through a service and works contract

3.5 Conditionality and sequencing:

It will be a condition that the technical specifications should be prepared by the beneficiary, with input provided through technical assistance. In addition the implementation of the works must be overseen by a qualified independent Supervising Engineer. For operational reasons (the need to operate the power plants during the peak winter period) works to replace the ESPs must be undertaken during the planned plant shutdown periods.

3.6 Linked activities

From 2000, EPS have taken a series of actions aimed at the improvement of operation of thermal units, as well as availability and reliability increase of units in operation.

By 2004, within the capital overhaul and regular overhauls, special attention was paid to the ESP, with the purpose to bring the existing ESP after ten-year operation to the maximum reliability level within the existing technologies. From 2004, alignment of EPS operation with legal regulations was started.

Other projects were also launched related to environment improvement around the TPP and on a broader level.

The project is linked to the following CARDS funded activities

Programme	Projects	Start	End	Budget
CARDS 2002	Major overhaul of Unit A3 of Nikola Tesla power plant	Oct 03	April 05	€64.5 m
CARDS 2003	Study of pollution from thermal power stations in Serbia and on pollution mitigation measures and their costs	Sept 03	Sept 04	€0.75 m
	Major overhaul of Unit A5 of Nikola Tesla power plant	Nov 04	Dec 05	€58 m
	Environmental clean up measures (based	Mar 06	Sept 08	€35 m

	on the study undertaken under the 2003 programme) (Electrostatic precipitators at Kostolac A and ash transport and storage at Nikola Tesla B power plant).			

In addition, the project is linked to the following activities funded by EPS, and by other donors:

- Major overhauls of units A5, A3, A2 and A1, TPP Nikola Tesla , through which ESPs were brought to design parameters, between 2003-2006
- Major overhaul of unit A4 at TPP Nikola Tesla including the reconstruction of the ESP which has started in 2007
- Two further ash handling systems, at TPPs Kostolac A and Kostolac B, are being financed by KfW and EBRD amounting to about €40 million in total based on the EAR's Feasibility Study in 2003.
- Ash handling system reconstruction at TPP Nikola Tesla A amounting to about €35 million is being planned.

3.7 Lessons learned

There have been three major lessons learned on previous large works contracts in the energy sector in Serbia. The first concerned the allocation of risk, including financial, technical and completion risks. Essentially, this means that the beneficiary, in this case EPS, as the owner/operator of the plant and major contributor to the preparation of the technical specifications is responsible for the consequences of cost overruns, variation orders and extensions of time, where they occur. Second, a strong and independent Engineer is appointed to direct and assist the successful conclusion of the project. Third, ownership of the project by the beneficiary means that their in-house resources may be made available to the contractor (within the limits of the contract) in the event of a significant short term problem.

4. Indicative Budget (amounts in million €)

Activities	TOTAL COST	SOURCES OF FUNDING										
		EU CONTRIBUTION				NATIONAL PUBLIC CONTRIBUTION					PRIVATE	
		Total	% *	IB	INV	Total	% *	Central	Regional	IFIs	Total	% *
Activity 1												
contract 1.1	1.0	1.0	100	*1*		0	0	*0*	*0*	*0*	0	0
contract 1.2	11	11	100	*1*	*11*	0	0	*0*	*0*	*0*	0	0
TOTAL	**12.0**	**12.0**	**100**	**1**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

* expressed in % of the Total Cost

5. Indicative Implementation Schedule (periods broken down per quarter)

Contracts	Start of Tendering	Signature of contract	Project Completion
Contract 1.1	T+1Q	T+2Q	T+11Q
Contract 1.2	T+1Q	T+3Q	T+12Q

All projects should in principle be ready for tendering in the 1ST Quarter following the signature of the FA

6. Cross cutting issues (where applicable)

Development Policy Joint Statement by the Council and the European Commission of 10 November 2000 establishes that a number of Cross-cutting Issues shall be mainstreamed into EC development co-operation and assistance.

Cross-cutting issues will be addressed in the project so as to comply with the best EU standards and practice in that area and in a way which demonstrates how they will be dealt with within the project's framework, its activities and outputs.

Cross-cutting issues will be addressed in a proactive manner, and will present a specific component of projects (at all levels of projects' development, starting from the project identification stage). Synergies between the projects and the objectives of will be identified and developed. Also, the projects' objectives and activities need to be screened in order to ensure they won't impact negatively on gender equality, minorities' inclusion and environment.

Finally, the beneficiary will make sure its objectives, policies and interventions have a positive impact on and are in line with the main principles of gender equality, minorities' inclusion and environment.

6.1 Equal Opportunity

The investments that will, as an end result, have reduction of large scale emissions from the thermal power plants which will contribute to overall improvement of health of the population, both male and female.

6.2 Environment

As noted above, the objective of this project is to help Serbia to achieve compliance with the Environmental Acquis, as required by the Energy Community Treaty. Detailed environmental analysis or EIA will identify a plan to manage and mitigate risks as well as identifying opportunities that make for a better intervention. During construction, international best standards will be applied so as to avoid and minimise potential risks to the environment and the surrounding communities. Furthermore, considerable environmental benefits related to this project outweigh all potential environmental risks which the implementation of the project may cause.

6.3 Minorities

N/A

ANNEX I: Logical framework matrix in standard format

LOGFRAME PLANNING MATRIX FOR Project Fiche		**Programme name and number** Emissions reductions from the Nikola Tesla thermal power plants	
		Contracting period expires 5 years after the signature of the Financing Agreement	Disbursement period: expires 6 years after the signature of the Financing Agreement
		Total budget: € 12 million	**IPA budget:** € 12 million
Overall objective	**Objectively verifiable indicators**	**Sources of Verification**	
Fulfilment of legal obligations related to dust emission into the atmosphere in accordance with the legal regulations and EU directives (Directive 2001/80/EC for large combustion plants);	Measured emissions from the power plant (before and after the works)	• Monitoring/ measurements taken by the beneficiary and the Engineer	
Project purpose	**Objectively verifiable indicators**	**Sources of Verification**	**Assumptions**
To continue the programme of significantly reducing the emissions from thermal power stations in Serbia, in order to comply with the legal obligations of both Serbian and EU Law.	Completed works and operating refurbished ESP.	Monitoring by the EC and the Engineer.	
Results	**Objectively verifiable indicators**	**Sources of Verification**	**Assumptions**
• Compliance with Directive 2001/80 EC • Pollution reduction of ambient air in the area of Obrenovac, • Reduction of the number of people with respiratory illnesses, especially children, • Reduction of soil and agricultural products contamination coming from arable land located in the area of the thermal power plant,	• Measured emissions from the power plant (before and after the works) • Health statistics for the region	• Monitoring/ measurements taken by the beneficiary and the Engineer • Ministry of Health	Cooperation of the beneficiary Competent contractors and Engineer (technical risk)
Activities	**Means**	**Costs**	**Assumptions**
Preparation of technical specifications/ tender preparation/ supervision (the Engineers) for the works contracts Contracting/ implementation of the works contracts, testing and commissioning. Continued monitoring and maintenance of the ESP.	Contract 1.1: one service contract, restricted procedure One works contract (two lots), open international tender procedure.		Input data and information from the beneficiary (to prepare tech specs) Full involvement of the beneficiary in the management of the project, and availability of the plant for the works (i.e. that the plants are shut down and hence available for the works as and when planned).

ANNEX II: amounts (in €) Contracted and disbursed by quarter for the project

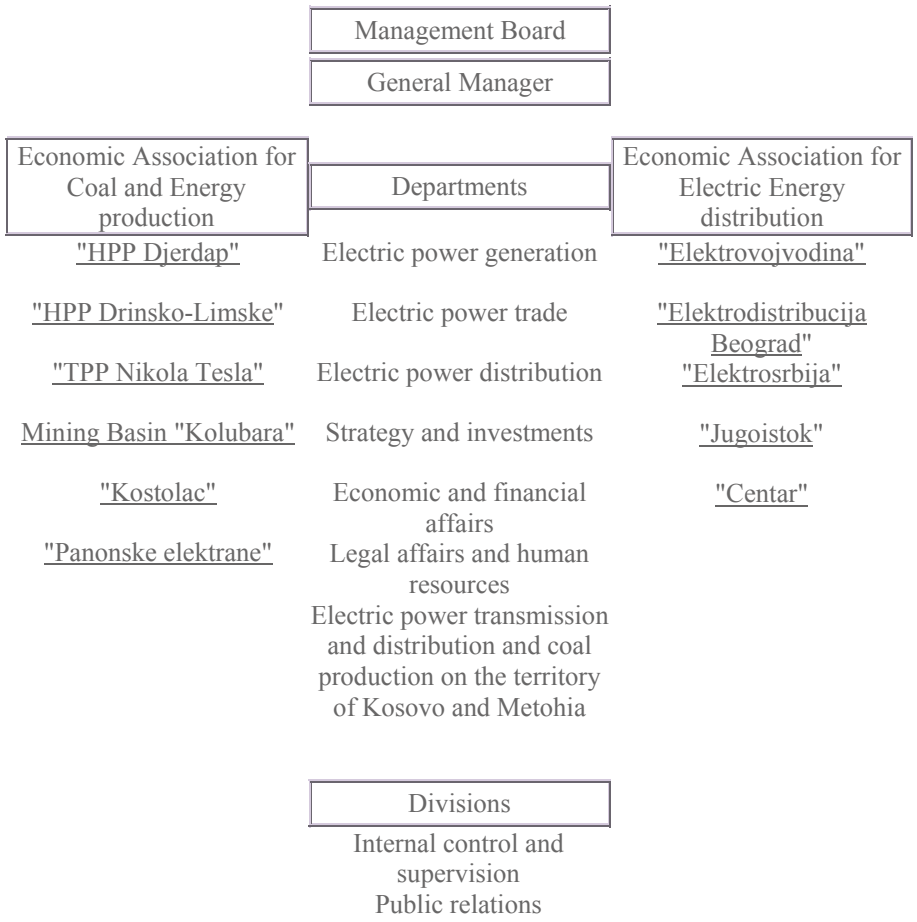
Contracted	**Q2 2008**	**Q3 2008**	**Q4 2008**	**Q1 2009**	**Q2 2009**	**Q3 2009**	**Q4 2009**	**Q1 2010**	**Q2 2010**	**Q3 2010**	**Q4 2010**
Contract 1.1	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	
Contract 1.2		0.00	0.00	11.20	11.20	11.20	11.20	11.20	11.20	11.20	
Cumulated	**0.80**	**0.80**	**0.80**	**12.00**	**12.00**	**12.00**	**12.00**	**12.00**	**12.00**	**12.00**	
Disbursed											
Contract 1.1		0.24	0.00	0.16	0.00	0.16	0.00	0.16	0.00	0.00	0.08
Contract 2.1		0.00	0.00	0.00	3.36	2.24	0.00	2.24	0.00	2.24	1.12
Cumulated	**0.00**	**0.24**	**0.24**	**0.40**	**3.76**	**6.16**	**6.16**	**8.56**	**8.56**	**10.80**	**12.00**

ANNEX III
Description of Institutional Framework

Public Enterprise Electric Power Industry of Serbia – EPS will be in charge of implementation and monitoring of this project. EPS was established by Decision of the Government of Serbia which entered into force on 1 July 2005. Its main task is meeting all the electric power requirements of the economy and citizens of Serbia.

Its main activities are:
Electric power generation; electric power distribution and distribution system management; electric power trade; coal production, processing and transport; steam and hot water production in combined heating processes; water power utilisation and services in river and lake traffic; wholesale trade in fuel and similar products; research and development; design, construction and maintenance of energy and mining plants; design, construction and operation of telecommunication facilities; engineering.

The organigramme of EPS[1]



[1] Taken from www.eps.co.yu

The relevant Ministry, in charge of public enterprises in the energy sector is the Ministry of Mining and Energy. The work, mandate and authorisations of the Ministry are regulated by the Law on Ministries (adopted on May 15, 2007 (Official Gazette of Republic of Serbia no. 48/07)) – i.e. Article 11.

The Ministry of Mining and Energy is comprised of the following sectors:
- Electrical Engineering Sector
- Oil and Gas Sector
- General Energy Sector
- Mining and Geology Sector
- Public Enterprises Sector

ANNEX IV
Reference to laws, regulations and strategic documents:
Reference list of relevant laws and regulations

- Energy Community Treaty
- Energy Law
- EU directive 2001/80/EC

Reference to AP /NPAA / EP / SAA

Under the European Partnership Serbia is committed to "establish an independent Energy Regulatory Agency and carry out environmental audits on energy plants and address worst polluters." (p 12)

Under Article 111 (Environment) of the SAA, Serbia is obliged to halting further degradation and start improving the environmental situation with the aim of sustainable development. Serbian must strengthen its administrative structures and procedures to ensure strategic planning of environment issues and co-ordination between relevant actors and will focus on the alignment of Serbia's legislation to the Community acquis. Cooperation could also centre on the development of strategies to significantly reduce local, regional and trans-boundary air and water pollution, to establish a system for efficient, clean, sustainable and renewable production and consumption of energy. (p59)

Reference to MIPD

The main priorities and objectives in the energy sector (Meeting European Standards) are:
Energy: Compliance support to meet the needs of the Regional Energy Treaty, relevant Community Directives and regional market obligations; compliance of legislation with the acquis. The activities foreseen in the MIPD to address these priorities and meet these objectives are:

- Support energy sector restructuring, investment planning, and operation of mandatory institutions to meet the Regional Community Energy treaty and relevant Community legislation, including those concerning the improvements in energy efficiency, energy

savings and the use of renewable energy sources. This should result in enhanced investments in environmental infrastructure (p.23)

Reference to National Development Plan
N/A

Reference to national / sectoral investment plans

Sustainable development and environmental management measures were planned for the next ten years for the Republic of Serbia within the National Environmental Program of the Republic of Serbia (NEAP RS – Draft) adopted in accordance with the Environment Protection Law (Official Gazette RS № 135/04).

This program is realised through action and refurbishment programs adopted by the Government for the period of five years.

One of the priority environmental objectives within the energy sector, between 2005 and 2014 is dust emission from large combustion plants such as TPP Nikola Tesla A, aimed at the alignment with EU regulations (Directive 2001/80/EC for large combustion plants).

EPS Development Plan and EPS Mid-Term Development Plan define the need to reduce dust emission from existing thermal power plants.

ANNEX V

Details per EU funded contract (*) where applicable:

The project involves the reconstruction of two electrostatic precipitators. The activities to be performed are:

- Preparation of technical specifications/ tender preparation (with assistance from external expert technical assistance)
- Contracting of tenders
- Implementation of the works contracts, commissioning and testing (with the assistance of Supervising Engineers).
- Continued monitoring and maintenance of the operation of the ESPs by the beneficiary.