Sector fiche – IPA National programmes / Component I

1. IDENTIFICATION

Title	**Strengthening system of Environmental Protection and Climate Change**
MIPD Sector Code	6. Environment and Climate Change
ELARG Statistical code	03.27
DAC Sector code	41010
Total cost (VAT excluded)[1]	EUR 69.25 m
EU contribution	EUR 55.15 m
Management mode	Centralised
Centralised mngmt: **EU Delegation in charge** *Decentralised mngmt:* **Responsible Unit or National Authority/Implementing Agency(ies)**	EU Delegation to the Republic of Serbia
Implementation management	Ministry of Energy, Development and Environmental Protection
Implementing modality	Sector Based Approach
Zone benefiting from the action(s)	Republic of Serbia

2 RATIONALE

2.1 LINKS WITH NATIONAL SECTOR OBJECTIVE(S) AND MIPD SECTOR OBJECTIVE(S)

The Environment and Climate Change sector corresponds to the Environment, Climate Change and Energy sector in the MIPD, and encompasses natural habitat, municipal waste, chemicals, water, noise and air, as well as greenhouse gas and ozone-depleting emissions.

[1] The total cost should be net of VAT and/or of other taxes. Should this not be the case, clearly indicate the amount of VAT and the reasons why it is considered eligible.

The ***Multi-annual Indicative Planning Document (MIPD) 2011-2013 of the Republic of Serbia*** sets the following specific objectives for the Environment, Climate change and Energy sector:

- To help Serbia align with the EU environmental and climate change *acquis*;
- To improve environmental standards in air, water and waste management;
- To contribute to Europe 2020 targets in energy and climate change;
- To improve environmental infrastructure;
- To prepare viable projects for investment and attract FDI;
- To strengthen regional and cross-border cooperation.

The recently published EC ***Opinion on Serbia's EU membership application***, under Chapter 27 on the Environment (pages 124-127), reflects some of the objectives set out in the MIPD. It points to the need to: strengthen institutional cooperation for implementation of the EU environmental *acquis*; increase public participation in environmental decision-making and public access to environmental information; integrate ambient air quality monitoring networks in order to further advance and continue with EU-compliant measuring methods; improve waste collection rates in rural communities; close thousands of illegal dumpsites and increase the number of treatment facilities for hazardous waste; tackle the lack of incinerators and composting plants; reduce biodegradable waste going to landfill; review the management of protected areas; and increase both administrative capacity and technical and financial resources considerably, in order for Serbia to be able to align with and implement all the requirements of the EU climate change policy and legislation.

The European Partnership with Serbia from 18 February 2008 (2008/213/EC) (*under: Sectoral policies – Environment)* sets out a number of short and medium term priorities, including: strengthening of the administrative capacity within the relevant government bodies and further alignment with EU standards in the environmental sector, with the emphasis on implementation of environmental policy. Under *Sectoral policies – Energy,* priorities includes fulfilling the commitments arising from the Energy Community Treaty as regards the full implementation of the *Acqui*s on environment; Continue environmental audits on energy plants, addressing the worst polluters.

The Stabilization and Association Agreement (*Title VIII, Cooperation policies, Article 111 – Environment*) states that cooperation shall be established with the aim of strengthening administrative structures and procedures to ensure strategic planning of environmental issues and coordination between relevant actors and shall 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 framework for efficient, clean, sustainable and renewable production and consumption of energy, and to execute environmental impact assessment and strategic environmental assessment. Special attention shall be paid to the implementation of the Kyoto Protocol. Under **Article 116,** financial assistance may cover all sectors of co-operation, paying particular attention to… "approximation of legislation, economic development and environmental protection". *Title VIII, Cooperation policies, Article 109 – Energy* states that cooperation shall focus on priority areas related to the Community *Acquis* in the field of energy and be based on the Treaty establishing the Energy Community, with a view to the gradual integration of Serbia into Europe's energy markets. Cooperation may include: The formulation and planning of energy policy, including modernisation of infrastructure; The formulation of framework conditions for restructuring energy companies and cooperation between undertakings in this sector.

The ***EC 2010 Serbia Progress Report*** (Section 4.2.3) states that "Serbia still lacks the capacity to ensure proper implementation of the integrated monitoring strategy."

The ***EC 2011 Serbia Analytical Report SEC(2011) 1208***, when referring to environment and climate change, highlights that further coordinated and sustained efforts will be needed to align with the EU *Acquis* and to implement it effectively. These should include substantial investments and strengthening of the administrative capacity for enforcement of legislation in order to achieve compliance in the medium term.

The ***Energy Community Treaty*** signed in 2005 multilaterally by the EU Commission and Balkan countries including the Republic of Serbia introduces the legal requirement for 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 Combustion Plant Directive) and Directive 96/59/EC for the existing thermo power plants. *According to the Treaty, "… the construction and operation of new generating plants shall comply with the acquis communautaire on environment"*[2]. This will mean that strict emission limits will have to be achieved through the application of best available technology as directed by the EU Directives on the limitation of emissions of certain pollutants into the air from large combustion plants and the IPPC Directive. It is directly linked to the project, i.e. emission reduction and compliance with the Directives.

2.2 SECTOR ASSESSMENT – POLICIES AND CHALLENGES

(1) Sector context/overview

The focus in the environmental and climate sectors in Serbia has recently been mainly on alignment with the EU *acquis*. However, capacity to implement and enforce environmental legislation remains to be significantly strengthened. In particular, the enforcement and implementation of the legislation, including the transposed environmental *acquis*, depends on better monitoring, which should also feed into improved decision-making, environment protection (see also air and water below) and climate action.

Environment protection

Protection of national habitats must be strategically planned since it is a potential revenue source for tourism, hunting and fishing. Land use requirements from agriculture, and major infrastructure projects, notably in the transport and energy sectors, may conflict with plans for the protection of habitats. According to the Law on Nature Protection and the Regulation on the Ecological Network, ecologically important areas of EU NATURA 2000 shall be identified and shall become the part of the European ecological network NATURA 2000 on the day the Republic of Serbia accedes to the European Union. The Regulation on the Ecological Network defines a detailed method of management and funding of the ecological network with a view to conservation of biological and landscape diversity, i.e. the habitat types of special conservation interest, renewal and/or improvement of damaged habitats and conservation of certain species. The list of 101 ecologically important areas is given in Annex I, while internationally important ecological corridors are given in Annex II, forming an integral part of this Regulation. They cover approximately 15% of the total area of Serbia. There is a need to strengthen the capacity and resource base of institutions responsible for identification and management of the areas important for conservation of endangered species and habitats. Protection mechanisms for NATURA 2000 areas include adoption of management plans and implementation of any plan or activity which may itself or in combination with other plans/activities significantly affect the conservation aims of any NATURA 2000 area. Monitoring of the qualification species and the status of habitats in NATURA 2000 areas must be implemented.

[2] Article 15 of Treaty.

In addition, **efficient wildlife trade control** is essential in preserving biodiversity on the local and global levels. Serbia has a significant number of species of wild flora and fauna protected by the CITES convention and national and EU legislation, and the country is located in a region considered to be strategically important for the illegal traffic of endemic and exotic wildlife in Europe. There is a need to significantly improve the capacities of all the enforcement authorities responsible for controlling international movement and trade, as well as the internal trade and possession of protected species of wild fauna and flora in Serbia.

Effective environmental **monitoring** is critical for the assessment of the state of the environment, policy formulation and measuring policy impact. Many priority areas are not covered by the existing monitoring system. Furthermore, integrated reporting on the state of the environment is inadequate. Self-monitoring by polluters is quite limited, primarily due to weak, non-aligned and unenforced legislation. In taking over the responsibilities of the Department for Supervision of Environmental Quality of the Republic Hydro-meteorological Service, the Serbian Environmental Protection Agency SEPA has created the conditions for merging the systems for monitoring and analysis of the state of the environment, and for establishing information systems and reporting on water quality Consequently, SEPA performs environmental monitoring of water and air at the national level. Through modernisation and integration of the state, provincial and local networks of automatic air quality monitoring systems and by establishing automatic monitoring of water quality (to replace manual sampling) the conditions will therefore be created to fully integrate these two previously separate areas of monitoring, and enhance SEPA's competence in managing the National Information System for environmental protection.

There is a lack of overall **environmental infrastructure** in Serbia (waste treatment and disposal, air pollution abatement and waste water treatment), and a particular problem with improper waste management. Serbia's population of around 7.3 million generates 2.4 million tonnes of **municipal waste** per year. Only about 70% of the municipal waste in Serbia is collected in an organised way and disposed at the 164 officially registered municipal landfills. Most landfills operate without valid permits, and are not equipped with a leachate collection system, bottom lining and landfill gas collection systems. Much of the municipal waste goes to unofficial dumpsites. The result is widespread pollution of soil, surface and groundwater with leachate from landfills. Air pollution is caused by uncontrolled burning of waste dumps and containers and by emissions of methane from landfills. Landscape degradation occurs as a result of improper disposal of waste. To improve waste management in Serbia, waste management plans at regional and local levels must be adopted and regional waste management centres established.

Air quality is deteriorating, especially during adverse weather conditions and in the heating season. The large lignite-powered thermal power plants of EPS are among the largest polluters in the country, emitting a wide range of pollutants. Primary causes of air pollution in agglomerations are traffic and local heating systems, but TTPs located near major cities affect local air quality and contribute to the overall pollution load and including transboundary pollution, due to the combustion of low-quality lignite and heating fuel. Lignite has a low calorific value and high moisture content, and its combustion produces large quantities of fly ash, sulphur and nitrogen oxides. Emissions from the energy sector, i.e. thermal power plants, contribute to respiratory illnesses especially among children, as well as to acid rain.

One of the priority environmental objectives in the energy sector is reducing dust emission from large combustion plants. The Regulation on Emission Limit Values of Air Pollutants (Official Gazette of RS, no. 71/10, corr. 6/11) was adopted in October 2010.

The environmental situation in Serbia can be improved by investing in environmental infrastructure – by constructing new regional waste management centres and reconstructing electrostatic precipitators in the thermal power plants. The economic and social benefits developing infrastructure can be to increase employment rates, to attract new productive investment, to raise

service standards for citizens and quality of life for residents. In terms of sustainable development it can improve the protection and enhancement of the environment and rational use of natural resources. This involves improving management, preserving and enhancing water quality, preserving and improving air quality (especially in urban areas and in the vicinity of major power and industrial plants) and proper waste management systems.

Climate action

The Republic of Serbia has since 2001 been Party to the United Nations Framework Convention on **Climate Change** (UNFCCC), while the Kyoto Protocol (the Protocol) entered into force in 2008. Ratification of the UNFCCC and the Protocol as a non-Annex I Party means that the Republic of Serbia does not have quantified emission reduction commitments in the period 2008-2012, but has a obligation to contribute to the achievement of the UNFCCC goals.

Initial National Communication (INC) with greenhouse gas (GHG) inventories for 1990 and 1998 and projections and mitigation scenarios until 2015, show that the energy sector makes the main contribution to GHG emissions.

Preliminary assessment made for the purpose of associating with the Copenhagen Accord indicates that it is feasible to begin reducing emissions in Serbia before 2020. The Serbian Government is therefore committed to combating climate change and limiting GHG emissions in the period up to the end of 2020, but there is a need for certain additional analyses, including on those that go beyond what is required under the UNFCCC for non-Annex I countries. This is particularly relevant because of EU *acquis* requirements being more stringent than those for non-Annex I Parties under the UNFCCC.

Even though the national Regulation on methodology for collection of data needed for preparation of GHG inventory has been adopted by the Serbian Government, a system for economy-wide and systematic data collection on GHG emissions is not yet fully established, and needs to be improved to align with EU requirements on monitoring, reporting and verification (MRV – in particular the proposed Monitoring Mechanism Regulation).

Also, preparation for and implementation of the EU Emissions Trading System is amongst the most demanding efforts to combat climate change, but would promote action in a cost effective manner. Installation-specific monitoring, reporting, verification and accreditation needs therefore be established. The obligation of MEMSP focuses especially on the Emissions Trading Directive, and according to the National Plan for Integration (NPI), it is planned to transpose the Commission Decision (2007/589/EC) establishing guidelines for the monitoring and reporting of greenhouse gases pursuant to Directive 2003/87/EC. This should however be completed with alignment with the Monitoring and Reporting, as well as Verification and Accreditation Regulations (which will be adopted at the EU level in May 2012) and will replace the above-mentioned guidelines.

According to the EC Analytical Report for 2011, with respect to the EU *acquis* on climate change, Serbia is still at an early stage. Serbia faces big challenges in implementing and enforcing the EU environmental and climate change *acquis*. It will be particularly important to create the conditions for building the technical and administrative capacity and resources necessary in this area, including for raising awareness at all levels in the country.

(2) Strategic and policy framework

The overarching policy orientation of the Republic of Serbia is contained in the ***National Programme for Integration of the Republic of Serbia into the European Union (NPI)*** 2009, which is a precise plan for how to meet all the criteria necessary for Serbia's accession. It spans from political and economic issues to the most detailed standards, including environmental protection (Chapter 27). This orientational / benchmark document is underpinned by the document

Needs of the Republic of Serbia for International Assistance in the period 20011-2013 (NAD) which presents detailed investment needs required for Serbia to meet the short-to-medium term objectives laid down in the NPI. Also reflecting objectives defined in the MIPD, the NAD focuses on the following environment sector priorities:

- Creating and strengthening policy, regulatory, financing and monitoring mechanisms for ensuring sustainable development;
- Enabling sound management of natural resources and reduction of pollution.

These two overarching documents are complemented by national strategies specifically related to environmental protection and climate change.

The ***National Sustainable Development Strategy of the Republic of Serbia (NSDS)*** (Official Gazette of the Republic of Serbia, no. 57/08), is a key document in establishing a balance between sustainable economic growth, economic and technological progress, sustainable social development and environmental protection, together with a rational use of natural resources. The NSDS sets broad objectives supported by an institutional framework, covering both the short-term (2009-2011) and longer term (2009-2017), and is accompanied by an Action Plan. The broad framework for implementing environmental policy is set by the ***National Programme for Environmental Protection 2010-2019*** (Official Gazette of the Republic of Serbia, no. 12/10), which lays down a set of objectives for Government policy over 2010-2019 at three levels: short-term (2010-2014); continuous (over the whole period of the National Programme); and medium-term (applying to the 2015-2019 period only). The NPEP covers all aspects of environmental policy and planning, financing and economic instruments, institutional capacity-building, education, legislation, monitoring and enforcement, and policy in the areas of water quality, waste management, chemicals and risk management, air quality & climate change, nature protection, biodiversity and forests, fisheries, soil protection, noise, radiation, industry, energy, agriculture, forestry and hunting. It treats the climate change problem as being very important, giving priority to the mitigation related activities.

The ***Environmental Approximation Strategy (EAS)*** was adopted in October 2011. EAS includes legislative, institutional and financial components and addresses the complexity of the challenge of applying EU environmental and climate change legislation in Serbia and providing a sound basis for the accession negotiations on Chapter 27. It aims to address the challenges that approximation will pose to legislation (including the response to deficiencies in the current legislative process in Serbia), the extent of change that will be required in organizing and operating institutions responsible for environmental protection, and the approach to closing the economic gap between 'business as usual' and full compliance with the *acquis*. EAS put preparation for the EU Directive 2009/29/EC among the highest priorities. It underlines that Ministry of Energy, Development and Environmental Protection (hereinafter:MEDEP) should prepare legislation to transpose Directive (2009/29/EC), together with the associated EU legislation on monitoring, reporting and verification of GHG emissions and should start preparing Serbian industry to join the EU ETS. The highest priorities in the air quality and climate change field for transposition of the Emissions Trading Directive (2009/29/EC) are knowledge and capacity building at the national level.

Energy Development Strategy of the Republic of Serbia by 2015 contains Objectives, Priority programs and appropriate Measures and Instruments for their realization and that of the objectives of the new Serbian Energy Policy/Strategy. These encompass specific technological and environmental objectives that aim to address the inherited situation in energy facilities/systems and technologies with reduced operating performances and harmful environmental effect, so as to increase the operational safety of facilities and the functional reliability of the equipment and vital systems of energy installations. The priority of technological modernization of energy facilities and installations, *including the installation of equipment for reducing the emission of harmful effluents from energy sources*, targets not only a significant increase in the production capacity of a large part

of existing energy sources, but also a reduced threat to the environment *(page 17).* Increasing energy effi ciency and the use of renewable energy resources by 2015 that directly contribute to greenhouse gasses emissions reduction are two from five main priorities in this Strategy.
The ***National Biodiversity Strategy 2011-2018*** sets out principles of biodiversity conservation and describes Serbia's species, ecosystem and genetic biodiversity; the legal, institutional and financial framework; and pressures, threats and their causes. It also defines strategic areas and objectives and activities for conservation, including an Action Plan.
The ***National Strategy for the inclusion of Serbia in the Clean Development Mechanism under the Kyoto Protocol*** was adopted by the Government in February 2010 for the agriculture, forestry and waste management sectors, and identifies how to use opportunities offered by the Kyoto CDM.

The ***First National Communication under the United Nations Framework Convention on Climate Change*** (UNFCCC) was adopted in 2010. An inventory of the gases having greenhouse effect was set up for 1990 as the reference year and for 1998. An Initial National Communication defines mitigation and adaptation-related programmes, as well as plans for capacity building and awareness raising, scientific research and climatic observation.

The ***Waste Management Strategy 2010-2019*** (Official Gazette of the Republic of Serbia, no. 29/10) is the basic document that provides conditions for rational and sustainable waste management at national level, and establishes fundamental principles. The Strategy proposes to establish 12 regional waste management centres in Serbia by the end of 2013, and defines 26 waste management regions. It also proposes to refurbish existing unsanitary landfills, which represent the greatest risk to the environment, and environmental "hot spots" of historical hazardous waste pollution, and to establish a hazardous waste management system.

(3) Sector and donor coordination

The coordination and harmonisation of donor activities in Serbia, with a particular focus on country ownership over coordinating aid-funded activities, will be ensured under the leadership of the Serbian European Integration Office (SEIO) – Sector for Planning, Programming, Monitoring and Reporting on EU funds and Development Assistance.

As a monitoring tool, the EU Delegation and NIPAC have also created monthly "bottleneck meetings" between EUD, NIPAC and line ministries to discuss the progress of IPA funded projects and to ensure their smooth implementation.

The NIPAC and NIPAC Technical Secretariat have eight Sector Working Groups (SWGs) to prepare the "Needs Assessment Document for international assistance in 2011-2013", as the basis for identifying annual IPA I programmes, multi-annual IPA III-V programmes and bilateral donor projects. These SWGs consists of representatives from Line Ministries and other beneficiaries as the main actors in programming and project identification. The SWGs contribute to the identification and prioritisation of projects, ensuring co-financing and analysis of project implementation, and include a SWG for Environment and Energy. Within the donor community itself, Sweden leads the Aid coordination group for the Environmental Sector.

The action plan for programming and reporting on international assistance is prepared annually by the NIPAC Technical Secretariat, to ensure synchronization with national planning and budgeting processes, and to consider IPA programming specific requirements. By defining activities, timeframes and the roles and responsibilities of the institutions involved, it serves as a tool for coordination and an instrument for aligning donor activities. ISDACON, as both a website and database of development assistance and priority projects, serves as a programming, reporting and communication tool.

Within the recently improved Aid Coordination Mechanism, informal donor coordination groups (previously mostly donor driven) have been rearranged and their work formalised on the basis of

increased national leadership. The environment aid coordination group is led by the MEDEP and the Swedish International Development Cooperation Agency (SIDA) as the lead donor, while as participating donors the group also contains: EUD, The Netherlands, Norway, WB, EBRD, German Government (GIZ and KfW) , Italy, Hungary, UNIDO, WHO, UNDP, Spain, Czech Republic, JICA, IFC. In addition to sector aid coordination groups, the mechanism envisages the following four cross-sector groups: Local Development, Regional Development, Roma Integration and Gender Equality.

(4) Sector budget and medium term perspective

According to the Memorandum on the Budget and Economic and Fiscal Policy for 2011 with Projections for 2012 and 2013 (December 2010), the following funds are planned to be allocated from the state budget in the next two years[3]:

Total budget expenditure limits for 2011-2013 (in EUR)*

Institution	2011	2012	2013
Ministry of Environment, Mining and Spatial Planning	64,87	47,988,890	49,596,000
EP Fund	50,22		
SEPA	0,45		
Ministry of Infrastructure and Energy	24,265,896	24,953,141	25,530,192
State Administration for Hydrometeorology	11,654,131	12,010,719	12,349,332
Electric Power Industry of Serbia	1,602,925,360	1,694,553,079	1,733,651,871

** Converted at the rates used in the preparation of the Memorandum on Budget and Economic and Monetary Policy for 2011, with the projections for 2012 and 2013*

The Republic of Serbia implements an integrated approach to planning, budgeting, monitoring and reporting at the central level. Under this approach, an annual operational planning process methodology ("GOP") is implemented, following the definition of mid-term development framework (objectives) as opposed to the realisation of long term commitments of the government (national strategies) and the needs assessment for international assistance.

(5) Sector monitoring system

Sector monitoring is currently under development, based on a system of performance indicators that have been developed to accompany the document"Needs of the Republic of Serbia for International Assistance 2011-2013". Sector performance will be represented by sector outputs and consequent impacts that will be monitored on continuous basis. A result-based system of indicators will define baseline and target values (benchmarks) for a three-year period and will be revised annually. These benchmarks will provide a basis for comparisons and therefore the basis for making a judgement on

[3] The budget expenditure limits have not been amended since the reconstruction of the Government in May 2011; The Economic and Fiscal Program 2012-2014 based on the Report on Fiscal Strategy for the same period – does not present expenditure limits, but it is expected that they will be consolidated and published in the amended Report which will coincide with the budget rebalance for year 2012 and will match the composition of the new Government structure (established upon the 2012 Parliamentary elections).

the quality of sector performance. Using available data is the key to benchmarking and monitoring sector performance. This involves establishing appropriate data collection and reporting systems. The use of international sources of data will be important, while when using national statistics, attention will be given to the appropriateness of the particular statistics being used (like reliability, availability, timeliness, etc).

(6) Institutional setting

According to the Law on Ministries, the environmental policy of the Republic of Serbia is predominantly addressed by the following institutions: the Ministry MEDEP the Ministry of Natural Resources, Mining and Spatial Planing, the Ministry of Agriculture, Forestry and Water Management,, the ministry in charge of regional development, the Ministry of Health, the Serbian Environmental Protection Agency (SEPA) as an authority within the MEDEP, Climate Change Division (CCD) within the MEDEP, the Institute for Nature Conservation of Serbia, the Provincial Institute for Nature Conservation, the Chemicals Agency (SHemA), the Serbian Environmental Protection Fund (SEPF), the Hydro meteorological Institute, the Regional and National Public Health Institutes, the Secretariat for Environmental Protection of the Province of Vojvodina, the Statistical Office, Public Utility Companies and municipalities. MEDEP has key responsibility in climate change field. Also, it is the UNFCCC and the Kyoto Protocol Focal Point. The Ministry of Energy, Development and Environmental Protection is responsible for implementation of environmental policy in the energy sector together with the Public Enterprises.

(7) Macro-economic context and Public Financial Management

In line with the Government of Serbia's Budget Memorandum, the objectives of economic policy in the aftermath of the global economic crisis include macroeconomic stability, sustainable economic growth and development of a competitive economy, increasing employment and living standards, and balanced regional development. Key structural reforms will be necessary in the following areas of government: administration, health, education, pensions and social allowances. Long-term sustainable economic growth depends as much on privatisation and the creation of a competitive environment, as on conditions for a free market on a level playing field, with minimum transaction costs and adequately regulated monopolies. It anticipates a change of the overall economic growth model from consumption and import to investments and export.

Monetary policy will remain focused on maintaining low and stable inflation, maintaining financial stability, and managing the floating exchange rate while maintaining a adequate level of foreign exchange reserves. The return to sustainable public finances includes a significant fiscal recalibration, primarily through a reduction in public sector costs and, if necessary, appropriate tax adaptation. Fiscal priorities are: implementing the fiscal rules contained in the changes to the Budget System Law; applying strong limits on current public spending; lowering the fiscal deficit and its non-inflationary financing; strengthening tax discipline and lowering the tax burden; increasing public investment, especially in transport corridors; and strengthening financial discipline in public companies on state and local levels.

As of 2015, the Budget System Law foresees that the national budget should be drawn up according to the programme-based model for all budget beneficiaries, with phased introduction for some of them. This will enable more efficient management and utilisation of funds, based on the programmes and activities of budget beneficiaries, contributing to the achievement of strategic objectives in accordance with national economic policy. Since 2008, the programme for developing programme-based budgets has been implemented in five ministries.

Public Financial Management (PFM) in the Republic of Serbia has recently been reassessed in accordance with the Public Expenditure and Financial Accountability (PEFA) methodology[4]. A basis is therefore now available for information and monitoring of PFM, for planning of the reform strategy and capacity development programme. Assessment of the PFM institutions, processes and systems has been carried out in several important areas: budget credibility; transparency and comprehensiveness; policy-based budgeting; predictability and control in budget execution; accounting, recording and reporting; external scrutiny and audit; and donor practices. A standardised scoring system is applied in the structure (sub-elements) of each of the topics, so that weaker scoring directly signals the necessity to concentrate efforts on improvements in a medium-term perspective. The PEFA Report recognises the dependency between PFM reforms and the EU accession agenda and recommends a more systematic approach and stronger specific leadership to ensure consistency of future PFM reforms.

(8) Sector assessment

A sector-based approach is essential for environment protection and climate action. Environment pollution or climate change do not respect borders, geographically or institutionally. Untreated waste water and landfill leachate does not stop at the riverbank; polluted rivers and air and greenhouse gas emissions do not halt at national or municipal borders; improper waste management causes contamination of groundwater and surface water. These sectors have a direct impact on the quality of life of each resident, through the benefits of protecting the natural habitat and resources, land, forests, rivers and biodiversity, and by minimising the damaging effects on soil, water, air and public health from economic development and everyday life. Mitigation of climate change is essential for the long-term survival of the mankind. Adaptation to the consequences of climate change is needed, as Serbia is located in a region which is already badly affected by climate change. The careful management of scarce environmental resources is vital to underpin the economy's future growth and competitiveness. A well functioning /integrated monitoring mechanism for environmental indicators, which is a prerequisite for successful management of environmental resources, is still lacking in Serbia. Early climate action will bring benefits to the citizens and to the Serbian economy, through energy savings, energy security, improved competitive positioning, and creation of green jobs.

Further assistance needs of the environment and climate sectors for 2011-2013 have been articulated by the Sector Working Group for Environment, and described in the "Needs of the Republic of Serbia for International Assistance 2011-2013", adopted by the Government in February 2011. What is more, the Environment Working Group has been meeting since September 2009 to prepare measures for IPA component III, based on detailed analysis of the sector's needs within the framework of national policy and strategies and EU priorities. A part of the proposed measures identified in the Operational Programme under IPA III, which have now been moved to this Sector Fiche, will contribute to meeting the environment and climate sectors' needs for infrastructure investment, in particular in regional waste management and the improvement of air quality.

3 DESCRIPTION

3.1 OVERALL OBJECTIVE OF THE IPA SECTOR SUPPORT

The overall objective of IPA sector support in 2012 is **to improve environment protection and climate action through strengthening the administrative capacity and resource base to**

[4] The Republic of Serbia PEFA Assessment and PFM Performance Report 2010 has been published in November 2010

implement EU policies and legislation pertaining to nature protection, environmental monitoring and climate change, and investments in environmental infrastructure.

This objective of IPA sector support will contribute especially to the relevant **MIPD** sector objectives, as well as **NAD** priorities, described in Annex 3.

The EU support through the identified **selected sector interventions** will directly contribute to the fulfilment of the overall sector objective. First, the selected support will strengthen the identification and management of the EU ecological network which includes areas important for conservation of endangered habitats and species (NATURA 2000) in line with the EU *acquis*. It will also develop the administrative capacities to enforce the CITES Convention on trade in wildlife, as well as the national legislation harmonised with relevant EU Regulations (see Annex III), ensuring that Serbia meets its international commitments, through effective controls at the international border crossings and within the internal market.

Second, the selected support will help Serbia to make real and practical progress with implementing Directives 2009/29/EC amending Directive 2003/87/EC and Monitoring and Reporting as well as Accreditation and Verification Regulations (which will be adopted at the EU level in May 2012) relating to climate change, by introducing necessary monitoring, reporting and verification systems for reducing installation-specific GHG emissions, with benefits which extend beyond Serbia's borders. Preparations to ensure economy-wide monitoring, reporting and verification in line with EU *acquis* will also be promoted, together with other international donors.

Third, the selected support will improve the provision of real-time information on the state of air and water quality, by establishing an integrated environmental monitoring system resulting in better information to policy-makers and citizens. The setup of automatic stations for surface water monitoring contributes to this system as well as towards the implementation of monitoring requirements enshrined in the EU Water Framework Directive (2000/60/EC). More effective monitoring is a vital step to better environmental management and improving the quality of life and the health of the population.

Furthermore, the infrastructure activities planned under Measures 2.1 and 2.2 will also contribute to the fulfilment of the overall SF and the MIPD objectives. Investments in environmental infrastructure envisaged under this SF in support of waste management and air protection will help Serbia converge with EU environment and climate *acquis*, in turn leading to a better state of environment and promote better public health.

3.2 SPECIFIC OBJECTIVE(S) OF THE IPA SECTOR SUPPORT

The overall objective of IPA sector support will be achieved by focusing on the following MIPD sector objectives:

- **To help Serbia align with the EU environmental and climate change *acquis*, to contribute to Europe 2020 targets in energy and climate change and to promote adaptation to climate change;**

This objective will be achieved through implementation of proposed Measures 1.1 and 1.3. These will assist with the gradual implementation of the EU *acquis* in nature protection (Council Directives on Conservation of Wild Birds, Conservation of Natural Habitats, and Wild Fauna and Flora), the CITES Convention on legal and illegal wildlife trade and ambient air and surface water monitoring.

In addition, this objective will be promoted through Measure 1.2 and 1.3 that will support preparation of legal and policy acts, as well as building capacities of competent authorities for planning, implementation and full enforcement of the transposed legislation, i.e. in initiation and coordination of climate change related activities.

- **To improve environmental standards in air quality and waste management and to improve environmental infrastructure;**

Achievement of this objective is based on the implementation of Measures 2.1 and 2.2 that will secure development of environmental infrastructure – construction of Regional Waste Management Centre Kalenic, construction of the Subotica Regional Waste Management Centre and reconstruction of electrostatic precipitators in the thermal power plants. This will support achievement of key requirements of EU Directives and standards.

3.3 RESULTS

Result 1: Improved management and monitoring system for effectively implementing and enforcing transposed environmental and climate change *acquis* and related international commitments

Results will be measured through a range of indictors that relate to the following:

- List of potential NATURA 2000 sites established (that is harmonised with relevant database from EMERALD network);
- Information system for NATURA 2000 operational;
- Management plans prepared for selected Natura 2000 areas;
- Illegal wildlife trade significantly reduced;
- Draft legislation and work plan for efficient EU ETS implementation developed and ready for adoption;
- Improved national monitoring, reporting and verification capacities, including with respect to the national GHG Inventory report prepared in line with EU requirements;
- Collection of data for air and water quality standardised;
- Integrated Information Systems (software) for specific components (air and water) installed and operational and users and operators trained;
- Automatic water quality monitoring stations operational.

Result 2: Upgraded environmental infrastructure through investments into waste management and improvement in air quality

Results will be measured through a range of indictors that relate to the following:

- Regional waste management centre for Kolubara district – "Kalenic" (covering 11 municipalities Valjevo, Lajkovac, Ub, Osecina, Ljig, Mionica, Koceljeva, Vladimirci, Lazarevac, Obrenovac and Barajevo) constructed;
- Regional waste management centre for Subotica district (covering 7 municipalities Subotica, Backa Topola, Mali Idjos, Kanjiza, Senta, Novi Knezevac and Coka) constructed;
- Reconstructed electrostatic precipitators at TPP Nikola Tesla A unit A3 and at TPP Morava and reduced dust emissions to 30 mg/Nm^3 and 50 mg/Nm^3 respectively.

3.4 MEASURES/OPERATIONS[5] TO ACHIEVE RESULTS

[5] As defined in Article 6(2) of the IPA Implementing Regulation No 718/2006. IPA Component I programmes are subdivided into sectors (priorities), each of which define a global objective to attain and which shall be implemented

Of the options considered for IPA sector support in 2012, the following 'soft' measures represent the current priorities in meeting *acquis* requirements on Serbia's path to EU accession, and the natural progression of past and ongoing projects financed under IPA. They also complement the 'hard' environmental infrastructure measures planned under measure 2.1 and 2.2. IFI and other donor assistance were also reviewed, in order to avoid overlap and ensure complementarities.

Measure 1.1: Capacity-building to implement *acquis* standards and conventions in nature protection

This measure responds directly to the NATURA network and is essential in order to meet the EU standards in nature protection (Council Directives on Conservation of Wild Birds, Conservation of Natural Habitats, and Wild Fauna and Flora), and to ensure implementation of the CITES Convention on legal and illegal wildlife trade, in line with EU regulations. The ongoing IPA 2007 twinning project is helping to create pre-conditions for the establishment of a nature protection management system, by harmonising legislation with the *acquis*, identifying the NATURA 2000 network and introducing pilot management plans. First drafts of Natura 2000 areas have been prepared in line with EU requirements based on available data and a preliminary list of Natura 2000 sites is drafted.

In accordance with Addendum no. 1 to the IPA 2007 Twinning project, it was agreed to prepare an exemplary list for NATURA 2000 sites based on the already available list of Emerald network sites for Serbia, considering that the Emerald network greatly facilitates and prepares the conditions for the implementation of Natura 2000. However, the effort now should be put to taking measures for gathering data on habitat types, fauna and flora of EI importance across the whole Serbia.

The state administration does not have capacity for implementation and enforcement of EU nature conservation directives. There is a particular lack of data on habitats and species, and a lack of capacities for collection and analysis of this data needed for mapping habitats.

The IPA 2007 Twinning project prepared an assessment of the current state of the IT system for nature conservation in Serbia. This revealed that there is no common database, neither for all plants nor all animal species in Serbia. For different groups of species there are several independent databases – institutional or private ones. The quality of data is not uniform and not available for the whole of Serbia. Most of the existing data have been recorded in the Institute for Nature Conservation. It is reasonable to establish a NATURA 2000 system that will use data that have already been collected. Species inventories only can be compiled by merging such data. In order to facilitate the exchange of data and to produce comprehensive maps of potential NATURA 2000 sites, all available data should be gathered in one database, in the requested format. This database should be connected with GIS technology.

Also, protection mechanisms for NATURA 2000 areas include preparation of management plans. This is an obligation according to the Law on Nature Protection, designed to preserve a favourable conservation status and to monitor species and habitat status in NATURA 2000 areas. Through the currrent IPA 2007 project two pilot management plans for National park Tara and Natural reserve Obedska Bara have been drafted. There is a need to prepare management plans for the other NATURA areas from the list in the coming period. Selected management plans will be prepared through this project.

Appropriate Assessment (AA) of plans and projects likely to affect NATURA 2000 sites is a legal instrument given by the provisions of Article 6 of the Habitats Directive 92/43/EEC. This by-law on Appropriate Assessment has been prepared within the ongoing IPA 2007 twinning project and will

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through measures, which may be subdivided into operations, or directly through operations. Operations shall comprise a project or a group of projects (implemented by the Commission or the beneficiary country).

be adopted before the end of 2012. There is a need for training and guidelines for Appropriate Assessment that will be realised through this project.

The information system for the NATURA 2000 project should be based on a relational database Server. The requested primary query languages have to be compatible with existing databases. Also required is GIS Server Software- a server for spatial data, as these are technologies that are standard in the subject area, and should be capable of using existing compatible information. The system is designed in such a way that the main location will be at the Institute for Nature Protection of Serbia (Belgrade), and that a disaster recovery (backup) point will be located at the Provincial Institute for Nature Protection (Novi Sad). The sites must be connected, also to other institutions with fast Internet links, to allow data replication in real time. It is essential that both points are equipped with the same hardware-software platform. Based on the above description, an indicative list of equipment in Annex 4 presents the IT equipment needs doubled for two equal databases (central and backup points) as well as GIS Server Software, but the GIS software has to be compatible with Database server.

There is a need for expertise and equipment in the enforcement section of wildlife trade control. In relation to CITES, the service contract will support the improvement of knowledge and the development of skills in all enforcement authorities in conducting their tasks and duties regarding wildlife trade. Necessary equipment (see NA for measure 1.1 in Annex), vehicles and tools will be acquired in order to improve control measures in regulating the possession of and trade in protected species.

This measure will be implemented through one service or twinning contract and one supply contract. With regards to NATURA 2000, the service or twinning contract will support the setting up of the NATURA 2000 preliminary list through mapping habitat types and designated SACs (Spatial Areas for Conservation) and SPAs (Spatial Protected Areas). Mapping covers the following activities: identification and collecting of information on habitat types and species listed in Annex I and II of the EU Habitat and Bird Directive within each bio-geographical region of the country. The next step is selection and description of potential SACs and SPAs based on the criteria established by this Directive. This will result in maps of selected species and their habitats and habitat types in the Geographical Information System (GIS). Finally the Natura 2000 data base will be completed and delivered to the EC for checking and integration in the European database.

The choice of whether a Twinning or service contract is the more appropriate solution will be made in close consultation with the beneficiary once the needed activities are known in more detail and having assessed available human and material sources at the level of the beneficiary.
The scientific work that will be undertaken under this Project includes the engagement of experts to identify and collect the required information from the field. The scientific team includes experts from the fields of biology and forestry: their specific knowledge is needed for recognition of species and their habitats and habitat types in the field according to the EU Directives, as well as their knowledge of the NATURA 2000 database. Part of TA budget is planned to be allocated for mapping activities. In addition, the service contract will support development of NATURA 2000 site management plans, preparation of guidelines for mapping habitats and preparation of assessment guidelines, an upgrade of the NATURA 2000 website, public awareness raising, and providing extensive stakeholder training related to NATURA 2000 as well as to the CITES component.

The supply contract will enable the procurement and commissioning of IT equipment, in line with software that will be purchased to exchange and process data for the NATURA 2000 sites. The information system will support the production of comprehensive maps for NATURA 2000 sites. TOR for both NATURA 2000 and CITES components will be prepared by the beneficiary assisted by experts to be recruited under existing IPA allocations.

Measure 1.2: Creation of a monitoring, reporting and verifying system for the successful implementation of the EU Emissions Trading Scheme

According to the Law on Ministries, the Ministry of Energy, Development and Environmental Protection is the UNFCCC and the Kyoto Protocol Focal Point, and the institution responsible for climate change issues at the national level. The Climate Change Division (CCD) within the MEMSP has responsibility for initiation and coordination of climate change related activities, and supervises their implementation. This division has developed its cooperation with the Ministry of Agriculture, Forestry and Water Management, MEDEP and the Energy Efficiency Agency, and has a strong and efficient cooperation with industry and with SEPA, that is responsible for data collection, preparation and maintaining of the GHG Inventory according to the Law on Air Quality.

Serbia's EU Approximation Strategy for the Air Quality and Climate Change Sector assumes that for Serbia the most likely date of entry to the EU emissions trading system is 2016. It underlines that MEDEP should prepare legislation to transpose Directive (2009/29/EC), together with the associated EU legislation on monitoring, reporting and verification of GHG emissions and should start preparing Serbian industry to join the EU ETS. The highest priorities in the air quality and climate change field for transposition of the Emissions Trading Directive (2009/29/EC) are knowledge and capacity building at the national level.

Preparation of the required legislation and appropriate institutional support as a basis for efficient implementation of the Directive is planned through this measure, based on a gap analysis of legislation and national documents. A large number of stakeholders will be included in the process of developing legal acts, which will strictly define the type and quality of data and reporting guidelines required for evaluation of enforcement of the Directive. Following the requirements of the Directive improvement of mitigation actions should be proposed.

To achieve sustainability of the project results and implement the Directive, institutional responsibilities should be clearly defined and accepted by the identified institutions. In this way the system for implementation of the Directive, including data collection and reporting will have a stable basis to be measured reported upon and verified.

The various involved stakeholders (ministries responsible for energy, economy, finance, as well as representatives of industry, associations of industries, NGOs etc.) will increase their level of knowledge. The MEDEP and the Ministry in charge of regional development will be included in cooperation on legislation and system implementation concerning the energy and industry sector, respectively from the beginning of project implementation, through participation in the project implementation working group.

This measure will be implemented through a twinning contract, which will help to develop the legal and institutional framework; develop an action plan with a financing model for the implementation of the expected legislation; prepare the National GHG Inventory Report in line with the EU and UNFCCC requirements; define the required institutional arrangements, positions and procedures; prepare draft laws, by-laws and national documents, guidelines and methodologies and build staff competences.

Measure 1.3: Establishment of an integrated environmental monitoring system for air and water quality

The national network of stations for **water monitoring** includes 134 points along river courses and canals, 33 springs, 4 lakes, 25 reservoirs and 68 piezometers. Water quality is permanently monitored by the network of surface-water stations that includes 133 measuring profiles, using manual sampling and therefore precluding the possibility of real-time data or an early warning system, especially on transboundary rivers.

One automatic station in Beli Brod is currently operating on the Kolubara river (a tributary of the river Sava), for monitoring surface water quality. This station was put into operation in July 2008 as

a result of cooperation between Serbia and Germany in the Twinning Project "Strengthening the Capacities of the Water Directorate" and measures only the basic parameters of water quality. Also, as part of the Neighbourhood Programme Serbia-Hungary, two automatic stations in the form of water quality probes (automatic samplers) were installed on the Tisa River at Novi Knezevac and Novi Becej. These stations operate on the principle of a multi-parameter probe directly immersed in river water.

A project for an early warning system of surface water pollution initiated in 2007 by the Ministry of Science and Environmental Protection under the NIP recommended four automatic stations (three at the national inlets: on the Sava at Jamena, on the Danube at Bezdan, and the Tisa at Novi Knezevac; and at the outlet from Serbia at Radujevac on the Danube). Procurement of these automatic stations is planned within this project.

Locations for automatic water quality stations have already been selected as a result of the project finished in 2007 (Design of an early warning system). The analysis of the locations, including the information on the availability of electric power, water supply and other factors are available and will be used for further preparations. Within the next few months SEPA will conduct an analysis of land ownership and start the procedure for obtaining the necessary permits for construction and other works. SEPA will allocate funds for preparing the locations (construction, electrical and water works).

According to the redesigned draft Program of monitoring surface and ground water for 2012 (to be adopted by the end of 2011), the intention is to monitor numerous parameters - from basic (temperature, turbidity, pH, etc.) to sophisticated (*Daphnia toximeter*, SAC 254, the measurement of radioactivity, etc.) in order to determine the ecological status of the water bodies surveyed and providing a first general step towards full implementation of the Water Framework Directive (2000/60/EC).

Considering that biological research takes a very important place in the determination of the ecological status of water bodies, it is also necessary to envisage modernization of the equipment in the National laboratory that is a part of SEPA. Specific laboratory equipment such as a research microscope with light and dark field and high level magnification lens and a gas chromatograph with triple-quadrupole mass detector should raise the technical capacity of the National laboratory to perform very specific biological and chemical analysis. Modernization of laboratory equipment and establishing automatic monitoring (to replace manual sampling) will strengthen the monitoring and reporting of water quality.

The state network established by SEPA has 40 automatic **air quality monitoring** stations. The Autonomous Province of Vojvodina also has a network of automatic monitoring stations, and there are local networks for automatic monitoring in Pancevo and Bor (local self-government) and in Belgrade (City Institute for Public Health). Existing equipment types are produced by a variety of manufacturers and use different solutions to collect and update data. There is therefore a need to purchase additional software for processing air quality data and additional IT equipment in order to integrate state, provincial and local networks in a unified air quality monitoring system, establishing a common methodology, data collection, processing, analysis, verification and presentation of these data at the national level.

In this area significant progress has recently been made. Two successfully completed projects (CARDS automatic monitoring, computers and the Twinning Project SR 07 IB EN 01 Strengthening Administrative Capacities for Implementation of Air Quality Management System) laid the basis for establishing an air quality monitoring system by enabling the establishment of a network station for air quality, and laboratories for the calibration of automatic devices for air quality.

They developed an operational manual for monitoring, and introduced methods for reporting the results of national air quality assessments in zones and agglomerations in the form of the questionnaire as specified by decision 2004/461/EC ("questionnaire").

Within this measure, modernisation and integration of automatic systems will provide real-time concentration values and enable timely reaction to change and exceeded-limit values, improving the monitoring programme for ambient air and air quality assessment.

SEPA's competence in managing the National Information System for environmental protection, as the central point for data access and dissemination, including reporting to the European Environmental Protection Agency will be enhanced.

The measure will be implemented through one service contract and one supply contract. The service contract will analyse the recommendations of several past projects and the design of the system prepared by SEPA staff. Taking in account the newly adopted surface and groundwater monitoring programme for 2012, it will recommend improvements, review specified components of the integrated information system (software) and draw up the tender document for the supply contract. The supply contract will procure and commission automatic water quality stations; equipment for real-time water quality data collection including a data transmission system; software for air quality data collection, analysis, verification and reporting; hardware and telecommunication equipment for data collection from regional and local automatic air quality networks; and laboratory equipment.

Measure 2.1 Development of waste management infrastructure

The overall aim of this measure will be development of regional waste management centres along with the facilities for separation and sorting, recycling and biological treatment of waste; thus improving access to, and delivery of environmental services and facilities in waste management.

The main focus of this measure will be the construction of regional waste management centres Kalenic and Subotica that meet EU Landfill Directive 1999/31/EC. This will improve the waste management system and ultimately result in a cleaner and safer environment. The Kalenic waste management centre covers the Kolubara region with approximately 440,000 inhabitants generating 330 tonnes of waste per day (estimated in 2005 by the Regional Waste Management Plan) and expected to increase to about 550 tonnes per day in 2012. The lack of a sanitary landfill in this region has had a negative influence on the environment and general public health. In particular, Kalenic regional waste management centre will contribute to improving environmental conditions in the municipalities Valjevo, Obrenovac, Lazarevac, Ub, Barajevo, Vladimirci, Lajkovac, Mionica, Koceljeva, Osecina and Ljig. The state of the environment and waste management in the region was analysed in a feasibility study prepared through the IPA 2007 "Project Preparation Facility"- PPF2. According to available data, the waste service and collection from urban areas is well organised. There are 11 PUCs, one in each municipality. Collection from suburban areas is organised from time to time, but rural areas are not covered at all. Challenges in collection and transport include: containers for waste collection that mostly do not fulfil the needs and an obsolete vehicle fleet of 15 years average age. Municipal waste from the 11 municipalities has been disposed of in 11 registered dumpsites and on wild dumps. All the dumpsites need to be rehabilitated and closed when the regional landfill is constructed and operational. The technical and planning documentation prepared for the construction of the regional waste management centre is listed in a major project template enclosed in Annex to the SF. Preliminary Design is being prepared by PPF2 (RWMC working zone and pilot transfer station) with inputs from IAUS (the landfill body). A location permit could be issued on the basis of the preliminary design. A regional Public Utility Company has been established. For transfer stations and permits will be issued by the municipalities. Tender documentation has been prepared by the PPF2 project. The landfill will be tendered and built according to FIDIC Yellow Book. Final design will be prepared by the contractor.

Subotica regional waste management centre will cover a region with a population of 280,025, composed of 7 municipalities: Subotica, Backa Topola, Mali Idjos, Kanjiza, Senta, Novi Knezevac

and Coka. The land where the regional waste management centre should be constructed (46 ha) is owned by Subotica municipality and located between the settlements Bikovo, Orom and Cantavir, 19.7 km from the city of Subotica. A limited-liability waste management company ("Regionalna deponija" d.o.o) was established in 2007. The capacity of the RWMC Subotica is estimated at 1,718 million tonnes, sufficient until the year 2030. A location permit was issued in September 2011. A feasibility Study and preliminary design are developed in line with Serbian legislation and being revised and extended in line with DG Regio requirements by the EU-funded PPF3 project. An environmental impact assessment (EIA) will be prepared through the IPA 2008 "Project Preparation Facility" by May 2012, with Tender documents according to the FIDIC Yellow book.

This measure will be implemented through several contracts.

A works contract for RWMC Kalenic will cover the construction of the Regional Waste Management Centre, and supply of mobile equipment for RWMC including activities related to training for operations and maintenance of the facilities. Transport equipment will be purchased through a supply contract. Another group of activities include those required for the functioning of the RWMC, and consultancy services to be provided for the supervision of the works and supply of the equipment, and Financial and Operational Performance Improvement Programme (FOPIP) services. The national contribution will be provided as described in the annex, i.e. local co-financing will include the following: one Works contract for 2 transfer stations and 1 transfer point and mobile equipment for TS (forklifts and mini loader Bob Cats); one Works contract for construction of 5 recycling yards (local co-financing); and one supply contract for the replacement of collection equipment.

Construction of the RWMC Subotica will be implemented through a works contract for the construction of the landfill body, waste separation plant, composting plant, roads, plateau and surface water collection, wastewater treatment, and purchasing of necessary mobile equipment for the efficient performance of the RWMC. Another Works contract will cover construction of 4 transfer stations (Subotica, Senta, Kanjiza and Backa Topola). Transport of waste from the TS to the RWMC will be ensured through purchasing of a transport fleet (supply contract). Construction and equipping of recycling yards (Mali Idjos, Coka and Novi Knezevac) will be covered by a local co-financing contribution (works contract - local co-financing), as well as purchasing equipment for waste collection – trucks and containers (supply contract - local co-financing).

Measure 2.2: Improvement of air quality through reduction of dust emissions from thermal power plants (TPPs)

The aim of this measure is rehabilitation and reconstruction of facilities at Thermal Power Plants (TPPs) in order to reduce harmful emissions of particulates, thus helping to improve air quality and to achieve the key requirements of the EU Large Combustion Plants Directive.

Reconstruction of electrostatic precipitators (ESP) of TPP Nikola Tesla A3 and Morava represents a continuation of the upgraded works started on these facilities, aimed at meeting both Serbian and European regulations pertaining to environmental protection and improvement of air quality. The TPPs have been in operation for more than forty years and their electrostatic precipitators are designed with fly ash removal efficiency which is outdated and cannot meet current regulatory rules. Considering the time frame for implementation of EU rules (namely the Directive for Large Combustion Plants 2001/80/EC, which according to Annex 2 of the Energy Community Treaty will need to be implemented by Serbia by 31 December 2017), the basic purpose of ESP reconstruction is to meet the rigorous standard for the reduction of ESP outlet emission levels to 30mg/Nm^3 and 50mg/Nm^3 in Nikola Tesla and Morava TTPs respectively.

Existing ESPs release considerable amounts of particulate matter, resulting in frequent and excessive pollution of the surrounding air and soil. This adversely affects the health of the population living near the TPPs and also the quality of crops grown in their surroundings.

These problems will be eliminated by upgrading the existing ESPs which will considerably improve the quality of air and environment in general. A major share in the investment structure is occupied by the equipment, which makes up about 70% of total investments. Civil works amount to around 11%, while pre-production expenditures make up approximately 10% and include project management and commission costs, etc.

The measure will be implemented through one works contract with two lots, and one service contract, as well as one works contract financed by PE EPS. The works contract financed by IPA will include dismantling of old electrostatic precipitators and completion, installation and testing of new equipment, while the service contract will cover supervision of the works. The works contract financed by PE EPS will include the following: at the Nikola Tesla A unit A3 TPP - preliminary works (adaptation of the ash handling system to the new ESP requirements; control room air conditioning reconstruction); civil works on the existing support structure reinforcement; and at the Morava TPP - preliminary works (dismantling, procurement and erection of insulation with scaffolding erection; adaptation of the ash handling system to the new ESP requirements; control room air conditioning reconstruction); civil works on the existing support structure reinforcement. More detailed information per EU-funded operation and EPS financing is provided in Annex 4.

3.5 OVERVIEW OF PAST OR ONGOING ASSISTANCE, LESSONS LEARNED, MECHANISMS FOR DONOR COORDINATION/SECTOR WORKING GROUP AND/OR POLICY DIALOGUE

According to the ISDACON database, in the period 2007-2009, it is estimated that a total amount of € 67.33 million was actually disbursed in assistance from the international donor community in the environment sector in Serbia.

In the four annual programmes 2007-2010, **IPA component I** is financing projects in the environment sector worth around €17 million, mainly focused on approximation with environmental *acquis* and preparations for hazardous waste management. IPA is currently supporting the development of a strategy and action plan for the approximation of Serbian legislation with the EU environmental *acquis,* and increasing the capacity of the Serbian Environmental Protection Agency (SEPA) as a national focal point for cooperation with European Environment Agency in the realisation of Serbia's international environmental protection commitments. On capacity-building, IPA assistance is strengthening the institutional framework for environmental inspection at national, provincial and local levels to enforce regulations, including administrative capacities related to protected areas, according to NATURA 2000, supporting the development of the Water Management Information System through a twinning project, and improving chemicals management, preparation and implementation of regulations in the field of control and prevention of industrial pollution, Eco-Management and Audit Scheme (EMAS), and management of chemical accident risks. In the area of hazardous waste, IPA has contributed to the harmonisation of EU legislation and institutional strengthening. In the field of air quality, IPA is helping to strengthen administrative capacities to upgrade the air quality management system in line with EU standards, and reduce emissions from thermal power plants in Serbia in line with EU directives. The following projects in the Energy sector were financed by the EU in the recent period:

- Capital overhauls of units A3 TPP Nikola Tesla A, reconstruction of ESP (Budget: EUR 64.5m from CARDS 2002)
- Study of pollution from thermal power plants in Serbia and on pollution mitigation measures and their costs (EUR 0.75m from CARDS 2003);
- Reconstruction of Unit A1, A2, A4 and A5 of Electrostatic precipitators at TPP Nikola Tesla A (Budget: EUR 58m from CARDS 2004-2006);

- Reconstruction of Unit A2 of Electrostatic precipitators, TPP Kostolac A (Budget: EUR 5m from CARDS 2006);
- Emission reduction from TPP Nikola Tesla, Unit A6 and Unit B2 (Budget: EUR 12m from IPA 2007 for works and supervision of the works). Project is ongoing.
- Environmental Protection at Electric Power of Serbia (EPS)**.** Electrostatic precipitators installed at TPP Nikola Tesla B Unit B1, Equipment for continuous air emission measurement of harmful and hazardous substances Procured and installed at TPP Nikola Tesla A and B, TPP Kolubara A and TPP Morava; contamination sources (facilities and devices filled or contaminated with PCB oils) eliminated and replaced with corresponding facilities and devices that satisfy EU standards (Budget; EUR 11m from IPA 2008 and EUR 6m co-financed by EPS). Project is ongoing.
- Construction of Waste Water Treatment Facility at TPP Nikola Tesla B – (Budget: EUR 15m from IPA 2011 and EUR 5m co-financing by EPS).

The **bilateral donor** community has been prominent in funding projects in the environmental and climate sectors including Germany, Spain and Sweden. Sweden has aided Chemicals risk management, Implementation of the National Sustainable Development Strategy, SEPA capacities and environmental infrastructure support (EISP project financed by Swedish International Development Cooperation Agency - SIDA), while Spain funded preparation of the Feasibility study for the construction of the Kolubara District Regional Landfill and Feasibility study for GHG emission reduction. UNDP has been active in strategies and studies for biodiversity, strengthening capacities of protected area managers, and assisted with the remediation and strengthening of capacities in Bor, and with the recovery of Grand Backa Canal project, by finalising communal and industrial wastewater collection for the municipalities of Vrbas and Kula. Soft loans have been provided by EBRD, German Government (KfW) and the World Bank. EBRD (€24.3 million loan) and the World Bank ($6.6 million loan) have supported regional development in Bor district, including an environmental clean-up. The German Government has been most active in the water sector, with €92 million of subsidised loan and grant finance (actual and committed) for water supply projects in 17 municipalities to date. In the energy subsector, Germany has supported the rehabilitation and modernisation of the district heating system for Nis, Kragujevac, Kraljevo, Sombor, Zrenjanin and Pirot, and capacity-building for monitoring and evaluation of energy efficiency policy. Switzerland has co-financed the modernisation of the monitoring and control system in a thermal power plant Nikola Tesla. Norway provided assistance with strategic energy planning. Germany financed drafting of the foundations of a new law on rational use of energy and improving municipal planning in energy efficiency. The World Bank financed a $49 million loan accompanied by $6 million from Serbia for energy efficiency in heat production and public buildings. Norway assisted in the introduction of a new energy efficiency policy and establishment of energy planning on a local level. Japan financed a study of energy management. Serbia also participates in cross-border cooperation, where environment and climate problems are among the top priorities.

Lessons learned under implementation of EU funded regional solid waste management schemes point out that the existing regulatory framework or lack of adequate enforcement measures does not provide sufficient assurance regarding sustainability of the respective investments. Namely, inter-municipal institutional framework for operations and maintenance of the regional landfills, even in already fully operational regional public utility companies, as is the case in Duboko – Uzice regional solid waste management utility, proves to continuously be subject of discretionary decisions of each of participating municipality whether they will honour or not their commitments in terms of funding capital, delivery of minimum quantities of waste, payment of tipping fees, building the transfer stations etc.

3.6 SUSTAINABILITY

The results described will contribute to fulfilling EU environment and climate requirements in Serbia, which will result in a better quality of life for citizens as well as benefits from a more low-carbon development of the Serbian economy. Sustainability will be ensured through further harmonisation of the legal framework and establishment of the institutional mechanisms for the implementation and full enforcement of the transposed legislation. The successful implementation will not be limited only to specific results, but will also multiply its effect by strengthening administrative capacity for implementing similar activities. Sustainability related to the NATURA 2000 management plans will be ensured through the plans serving as pilot models for other sites of similar characteristics and secondly thorough the fact that trained staff for the preparation of the management/monitoring plans will deliver their expertise through "train the trainers". As regards the information system, establishment of a fully functional system will be ensured. Capacity building, i.e. training and mentoring, development of guidelines and manuals to ensure training of new recruits will continue into the future as personnel leave or retire. Investment in IT and monitoring equipment will strengthen and modernise monitoring systems having impact on the quality of the monitoring results and improving capacity to implement policy and enforce regulations in a more uniform manner across the country.

Sustainability of the investment is guaranteed by technical and financial capacity of the beneficiary responsible for its operation and maintenance. PE EPS will continue monitoring and maintenance of the operation of the electrostatic precipitators. The Government Memorandum on the budget for 2010 with projections for 2011 shows that the Government commits itself to undertaking gradual annual tariff adjustments in order to reach cost-recovering tariffs for electricity, thus allowing PE EPS to raise finance for investment in environmental projects. The current investment through donor financing should therefore represent a one-off improvement to bring the Serbian power generating capacity to a point where sustainable development is possible without subsidy or further donor intervention.

3.7 ASSUMPTIONS AND PRECONDITIONS[6]

3.7.1 Assumptions

The proposed objectives, results and operations are based on the following assumptions:

- Government's continuous commitment to reform environmental sector according to EU integration priorities and improve environmental management and the monitoring system in Serbia;
- Both national and local authorities remain committed to the fulfilment of EU environmental standards and implement the environmental *acquis*;
- Sufficient technical and professional capacity available to carry out the operations;
- Timely implementation of the operations.

Risks identified in relation to IPA sector support are the following:

[6] Assumptions are external factors that have the potential to influence (or even determine) the success of a project but lie outside the control of the implementation managers. Such factors are sometimes referred to as risks or assumptions but the Commission requires that all risks shall be expressed as assumptions. Pre-conditions are requirements that must be met before the sector support can start.

Absorption capacities for available EU funds - In order to mitigate this risk and enable a smooth and efficient dispersal of funds under environmental protection programmes, the Managing Authority needs to carefully prepare for implementation of individual measures. Prior to the implementation of a project, the availability of sufficient government employees to be included in activities should be assured. Also, both good cooperation between administrative officials and experts and good inter-sector communication are needed.

Ability to enforce and implement legislation – through IPA support, significant time and effort will be invested in building capacities to implement and enforce transposed legislation. In parallel, a wider group of stakeholders will be included in the educational and training programmes**.**

Timely implementation of operations - in order to ensure adequate and timely sequencing of the contracts, especially in relation to those measures where the delivery of outputs of one contract are a milestone and condition for another contract to start. It will be a condition that the technical specifications for electrostatic precipitators should be prepared in time by the beneficiary and all the data and information should be available. The installed equipment, after finishing the works, should be taken over by the beneficiary and its operation and maintenance should be secured. 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 which represent a potential risk for implementation of the project on time. The beneficiary is responsible to assure all necessary permits to start reconstruction. Implementation of works must be overseen by a qualified supervising engineer. There is a definite sequencing of events / activities associated with this project, which are the following:

- Tender documentation including Technical specification provided through a FWC on time;
- Design prepared by the contractor approved;
- Construction and associated permits provided by the beneficiary on time; this includes the Environmental Impact Assessment for the RWMC Kalenic whose timing of finalization could not be precisely determined at the time of programming. The preparation and approval of the EIA is a responsibility of the Serbian authorities. Moreover, the site location for the RWMC Kalenic currently owned by the PU EPS will have to be transferred, prior to the construction, to the new owner in accordance with Serbian legislation;
- Electrostatic precipitators completed and delivered to schedule;
- Installation of new equipment started according to schedule;
- This would be followed by the dismantling and removal of existing equipment.

3.7.2 Preconditions

The Regional Public Utility Company for the management of the Regional Landfill in Pirot financed under previous EU programmes becomes fully operational and proper maintenance of the site is ensured before funds under measure 2.1 can be contracted.

4 IMPLEMENTATION ISSUES

Implementation will be carried out under Centralised Management mode.

Partners in the implementation of all the envisaged measures/operations will be the MEDEP , the Environmental Protection Agency, the Institute for Nature Conservation, , the ministry in charge of economy, regional development, Chamber of Commerce, Associations of the industries, Associations of local communities, and PE EPS.

4.1 INDICATIVE BUDGET

Indicative budget (amounts in EUR) *(for centralised management)*

SECTOR TITLE				SOURCES OF FUNDING								
			TOTAL EXPENDITURE	IPA CONTRIBUTION		NATIONAL CONTRIBUTION					PRIVATE CONTRIBUTION	
	IB (1)	INV (1)	EUR (a)=(b)+(c)+(d)	EUR (b)	%(2)	Total EUR (c)=(x)+(y)+(z)	% (2)	Central EUR (x)	Regional/Local EUR (y)	IFIs EUR (z)	EUR (d)	% (2)
Measure 1.1			**2,000,000**	**2,000,000**	***100***							
Operation 1.1.1 (Service or Twinning)	X		1,500,000	1,500,000	*100*							
Operation 1.1.2 (Supply)		X	500,000	500,000	*100*							
Measure 1.2			**1,000,000**	**1,000,000**	***100***							
Operation 1.2.1 (Twinning)	X		1,000,000	1,000,000	*100*							
Measure 1.3			**1,950,000**	**1,950,000**	***100***							
Operation 1.3.1 (Service)	X		200,000	200,000	*100*							
Operation 1.3.2 (Supply)		X	1,750,000	1,750,000	*100*							
Measure 2.1			**44,150,000**	**33,850,000**	***76.8***	**10,300,000**	***23.2***					
Operation 2.1.1 (Works)		X	14,800,000	14,800,000	*100*							
Operation 2.1.2 (Supply)		X	1,000,000	1,000,000	*100*							
Operation 2.1.3 (Service)	X		1,200,000	1,200,000	*100*							
Operation 2.1.4 (Works) (local co-financing)		X	1,500,000			1,500,000	*100*	200,000	1,300,000			
Operation 2.1.5 (Works) (local co-financing)		X	700,000			700,000	*100*	700,000				
Operation 2.1.6 (Supply) (local co-financing)		X	4,200,000			4,200,000	*100*	4,200,000				
Operation 2.1.7 (Works)		X	12,000,000	12,000,000	*100*							
Operation 2.1.8. (Works)		X	2,300,000	2,300,000	*100*							
Operation 2.1.9 (Supply)		X	1,250,000	1,250,000	*100*							
Operation 2.1.10 (Service)	X		1,300,000	1,300,000	*100*							

Operation 2.1.11 (Works) (local co-financing)		X	700,000			700,000	*100*		700,000			
Operation 2.1.12 (Supply) (local co-financing)		X	3,200,000			3,200,000	*100*		3,200,000			
Measure 2.2			**20,150,000**	**16,350,000**	***81.1***	**3,800,000**	***18.9***					
Operation 2.2.1 Works (Lot 1)		X	10,000,000	10,000,000	*100*							
Operation 2.2.1 Works (Lot 2)		X	5,500,000	5,500,000	*100*							
Operation 2.2.2 Service	X		850,000	850,000	*100*							
Contract 2.2.3 Works (EPS co-financing)		X	3,800,000			3,800,000	*100*					
TOTAL IB			6,100,000	6,100,000	*100*							
TOTAL INV			63,400,000	49,300,000	*77.8*	14,100,000	*22.2*					
TOTAL SECTOR SUPPORT			**69,250,000**	**55,150,000**	***79.7***	**14,100,000**	***20.3***					

4.2 INDICATIVE IMPLEMENTATION SCHEDULE (PERIODS BROKEN DOWN PER QUARTER)

Operations	Start of Tendering/ Call(s) for proposals	Signature of contract(s)	Activity Completion
Operation 1.1.1 (Service or Twinning)	T+1Q	T+4Q	T+12Q
Operation 1.1.2 (Supply)	T+2Q	T+4Q	T+8Q
Operation 1.2.1 (Twinning)	T+1Q	T+4Q	T+12Q
Operation 1.3.1 (Service)	T+1Q	T+4Q	T+12Q
Operation 1.3.2 (Supply)	T+6Q	T+8Q	T+12Q
Operation 2.1.1 (Works) RWMC Kalenic	T+3Q	T+5Q	T+13Q
Operation 2.1.2 (Supply) RWMC Kalenic	T+5Q	T+7Q	T+13Q
Operation 2.1.3 (Service) RWMC Kalenic	T+1Q	T+3Q	T+13Q
Operation 2.1.4 (Works) (local co-financing) RWMC Kalenic	T+3Q	T+5Q	T+13Q
Operation 2.1.5 (Works) (local co-financing) RWMC Kalenic	T+3Q	T+5Q	T+13Q
Operation 2.1.6 (Supply) (local co-financing) RWMC Kalenic	T+5Q	T+8Q	T+16Q
Operation 2.1.7 (Works) RWMC Subotica	T+3Q	T+5Q	T+13Q
Operation 2.1.8. (Works) Transfer stations RWMC Subotica	T+5Q	T+7Q	T+13Q
Operation 2.1.9 (Supply) RWMC Subotica	T+5Q	T+7Q	T+13Q
Operation 2.1.10 (Service) RWMC Subotica	T+1Q	T+3Q	T+13Q
Operation 2.1.11 (Works) (local co-financing) RWMC Subotica	T+3Q	T+3Q	T+13Q
Operation 2.1.12 (Supply) (local co-financing) RWMC Subotica	T+5Q	T+8Q	T+16Q
Operation 2.2.1 Works (Lot 1)	T+1Q	T+3Q	T+13Q
Operation 2.2.1 Works (Lot 2)	T+1Q	T+3Q	T+13Q
Operation 2.2.2 (Service)	T+2Q	T+3Q	T+14Q
Operation 2.2.3 Works (co-financing PE EPS)	T+1Q	T+3Q	T+13Q

Measure 1.1 Capacity-building to implement *acquis* standards and conventions in nature protection - will be implemented through one service or twinning contract (Operation 1.1.1) and one supply contract (Operation 1.1.2). The service contract will start operation at the same time as the supply contract. Provision of training in the use of software and/or hardware and equipment will take place after the system has been installed through a supply contract.

The tender dossier for equipment (including technical specifications) and ToR for the service contract to support NATURA 2000 network and implementation of CITES convention and software for processing NATURA 2000 data will be prepared by the beneficiary with assistance from experts to be recruited under existing IPA allocations.

Measure 1.2 Creation of the monitoring, reporting and verifying system for the successful implementation of the EU Emission Trading Scheme - will be implemented through one twinning contract (Operation 1.2.1)

Measure 1.3 Establishment of an integrated environmental monitoring system for air and water quality - will be delivered through one service (Operation 1.3.1) and one supply contract with several lots (Operation 1.3.2). The service contract will start before the supply contract. The tender for the supply contract (including technical specifications) will be prepared through this TA contract which will also assist with supervision of implementation and provisional acceptance verification. In addition, part of the needs for supplies prepared through the Twinning Project - SR 07 IB EN 01, Strengthening Administrative Capacities for Implementation of Air Quality Management System, will be reviewed in order to take into consideration changes in the meantime. Provision of training in the use of software and/or hardware and equipment will take place after the system has been installed through a supply contract. The EU-funded component of the supply contract includes assistance with developing the concept, specifications and accompanying procurement process as well as the supply of containerised automatic water quality monitoring stations (WQMS) with ancillary equipment and supporting laboratory supplies as well as IT equipment and software for air quality data treatment (see NA for measure 1.3. in the Annex). The beneficiary co-financing will cover acquisition of land, permits and all receiving and connecting infrastructure required to render the AQMS operational. Besides land, this will include the foundations on which the WQMS will rest, security fencing and connection to power supplies and telephone communication lines, etc. The planning of this and the securing of the beneficiary budget is reflected in the contracting schedule of the EU-funded part of this measure. The receiving laboratory infrastructure, as far as adjustments are required to receive and effectively operate the desired equipment, is equally covered by beneficiary co-financing.

Measure 2.1 will be implemented through two types of Operations, one related to construction of the Regional Waste Management Centre Kalenic and other related to construction of Regional Waste Management Centre Subotica.

Construction of RWMC Kalenic includes Operations 2.1.1; 2.1.2; 2.1.3; 2.1.4; 2.1.5; 2.1.6. It will be delivered through one works (Operation 2.1.1) contract, one supply (Operation 2.1.2) contract and one service (Operation 2.1.3) contract. The works contract will follow the FIDIC Yellow book. The service contract will cover supervision of works ensuring that the specified standards are implemented. Contract 2.1.3 supervision should be contracted before contract 2.1.1 works and 2.1.2 supply and should last as long as both of these contracts. Operations 2.1.4, 2.1.5 and 2.1.6, should be implemented in parallel with national and local procedures and funding. The feasibility study including CBA and tender documentation for Kalenic regional waste management centre has been prepared through IPA 2007 “Project Preparation Facility”.

Construction of RWMC Subotica includes Operations 2.1.7; 2.1.8.; 2.1.9; 2.1.10; 2.1.11 and 2.1.12. It will be delivered through two works (Operation 2.1.7 and 2.1.8) contracts. Operation 2.1.7 will be based on the FIDIC Yellow book principle, while Operation 2.1.8 will be based on the FIDIC Red Book. There will be a service (Operation 2.1.10) contract for supervision of construction works in accordance with professional engineering practice and one supply contract (Operation 2.1.9). Contract 2.1.10 should be contracted before contract 2.1.7, and should last as long as the works and supply contracts. Operations 2.1.11 and 2.1.12 should be implemented in parallel with national and local procedures and funding.

Operation 2.1.11 will be implemented through a works contract related to construction and equipping of recycling yards, while Operation 2.1.12 will be implemented through a supply contract concerning procurement of collection trucks and containers. Tender documentation for Subotica regional waste management centre, Environmental Impact assessment (EIA) and the feasibility Study including CBA will be prepared through IPA 2008 "Project Preparation Facility" by May 2012.

Measure 2.2 - will be delivered through one works (Operation 2.2.1) contract with two lots and one service contract (Operation 2.2.2) that will run in parallel. The works contract will follow FIDIC Yellow book. The service contract will cover supervision of works ensuring the specified standards are implemented. The service contract will be finished 1 quarter after the works contract. At the same time the works contract (Operation 2.2.3) financed by the PE EPS will run. Sequencing and conditionality is described in chapter 3.7. Tender documentation for Reconstruction of Electrostatic precipitators at TPP Nikola Tesla A3 and TPP Morava will be prepared with the assistance of IPA 2008 "Project preparation Facility" by the end of May 2012.

4.3 CROSS CUTTING ISSUES

4.3.1 Equal Opportunities and non discrimination

Based on the fundamental principles of promoting equality and combating discrimination, participation in the project will be guaranteed on the basis of equal access regardless of sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation. All contractors shall be requested to provide monitoring data recording the participation of men and women in terms of expert inputs (in days), as a proof of equal participation of men and women during the implementation phase**.**

4.3.2 Environment and climate change

The SF directly relates to environment and climate issues at the national and local levels. It will improve the quality of information available to monitor progress in the implementation of EU legislation and thus directly contribute to improved environmental protection and climate action. Moreover the implementation of the SF will have a considerable impact on the environment: directly because of the reduction of dust emissions, aiming to improve air quality and human health in the wider area. The SF will implement part of the European environmental policy, such as in the field of nature protection.

4.3.3 Minorities and vulnerable groups

Considering the fact that this SF is for Environment and Climate Change and will deal with environmental issues targeting a general improvement of air quality, its outcomes will be beneficial to all citizens' especially national minority and underprivileged social groups, having in mind that these groups often live in areas where solving environmental problems is one of the top priorities. Further improvements in environmental protection (air, water, waste, soil) and management will assist in poverty reduction, and increase the potential for economic activity**.**

4.3.4 Civil Society/Stakeholders involvement

Although the project preparation team could not find the opportunity to work on the project fiche together with the representatives of the civil society, environmental protection is a subject where support and assistance of stakeholders and civil society could be of great help, in the organisation of campaigns, actions on the collection as well as dissemination of information and implementation of the environmental objectives.

Representatives of non-governmental organizations and civil society will be consulted and involved in the project activities. It is worth mentioning that their support and assistance will contribute to the project especially in the implementation phase.

ANNEX 1: Logical framework matrix for sector support in standard format

LOG FRAME PLANNING MATRIX FOR Sector Fiche		Sector support name and number		
		Contracting period expires 3 years after the signing of the Financing Agreement		Execution period expires 5 years after the signing of the Financing Agreement
		Total budget	EUR 69.25m	
		IPA budget:	EUR 55.15m	
National sector or sub sector objective	**Objectively verifiable indicators (OVI)**	**Sources of verification**		
The overall objective of IPA sector support in 2012 is to improve environment protection and climate action through strengthening the administrative capacity and resource base to implement EU policies and legislation pertaining to nature protection, environmental monitoring and climate change, and investments in environmental infrastructure.	• pSCI and SPAs agreed by end 2014 • Illegal trade in wildlife reduced 50% by end 2014 • State of environment is improved • GHG emissions reduced • Level of Priority Data Flow Reporting towards EEA increased • Reduced level of dust emission in ambient air in the area surrounding the TPP's • Waste management in Kolubara region improved	• EU progress report • EEA reports • SEPA reports • CITES report • National Plan for the Adoption of relevant Acquis • GHG Inventory		• Serbia's EU integration orientation • Environmental sector reform continuation; • Continued political support to environmental protection; • Serbian Government oriented towards improving environmental management and monitoring system of Serbia; • National authorities remain committed to the fulfilment of EU environmental standards
Sector support objective within the MIPD sector	**Objectively verifiable indicators (OVI)**	**Sources of Verification**		**Assumptions**
To help Serbia align with the EU environmental and climate *acquis,* to contribute to Europe 2020 targets in energy and climate change and to promote adaptation to climate change To improve environmental standards in waste and air management and to improve environmental infrastructure	• Adoption and implementation of relevant legislation; • Strengthened capacity of the environment protection administration; • Progress in implementing the national climate policy; • Improved air and water quality monitoring; • Completed works on Regional Waste Management Centre; • Completed works and operating reconstructed electrostatic precipitators.	• EU progress report • EEA reports • SEPA reports • CITES report • Guarantee testing reports • Continuous dust emission measurement in flue gases reports		• Government's continuous commitment to reform environmental sector according to EU integration priorities and improve environmental management and the monitoring system in Serbia; • Both national and local authorities remain committed to the fulfilment of EU environmental standards and implement the environmental *acquis*
Results of the sector support	**Objectively verifiable indicators (OVI)**	**Sources of Verification**		**Assumptions**
Result 1: Improved management and monitoring system for effectively implementing and enforcing transposed environmental and climate change *acquis* and related international commitments.	• List of potential NATURA 2000 sites that is harmonised with relevant database from EMERALD network established; • Information system for NATURA 2000 operational • Management plans prepared for selected NATURA 2000 areas; • Illegal wildlife trade significantly reduced; • Draft legislation and work plan for efficient EU ETS implementation developed and ready for adoption; • Improved national monitoring, reporting and verification capacities, including with respect to the	• Ministry Reports • SEPA reports • CITES reports • Enforcement authority reports • Project reports • Webpage, guidelines		• Sufficient technical and professional capacity available in order to carry out the operations • Timely implementation of the operations

	national GHG Inventory report prepared in line with EU requirements; • Collection of data for air quality and water standardised; • Integrated Information Systems (software) for specific component (air and water) installed and operational users and operators trained; • Automatic water quality monitoring station operational.		
Result 2: Upgraded environmental infrastructure through investments in waste management, and improvement in air quality	• Regional waste management centre for Kolubara district – "Kalenic" (covering 11 municipalities Valjevo, Lajkovac, Ub, Osecina, Ljig, Mionica, Koceljeva, Vladimirci, Lazarevac, Obrenovac and Barajevo) constructed; • Regional waste management centre for Subotica district (covering 7 municipalities Subotica, Backa Topola, Mali Idjos, Kanjiza, Senta, Novi Knezevac and Coka) constructed; • Reconstructed electrostatic precipitators at TPP Nikola Tesla A unit A3 and at TPP Morava and reduced dust emissions to 30 mg/Nm3 and 50 mg/Nm3 respectively.	• Monitoring/ measurements taken by the beneficiary and the Engineer • Measurements performed by PE EPS, by the accredited laboratory • Final technical acceptance certification • Quality certificates for installed equipment	
Measures to achieve results	**Means / operations**	**Costs**	**Assumptions**
	This SF will be implemented through works, service and twinning contracts, as well as through supply contracts.	**Indicative total cost** (VAT excluded): EUR 69.25m **Indicative EU contribution:** EUR 55.15m	• Sufficient technical and professional capacity available to carry out the operations; • Timely implementation of the operations.
Measure 1.1: Capacity-building to implement *acquis* standards and conventions in nature protection	Indicative EU contribution: Service (TA) or Twinning contract: Supply contract:	EUR 2.0 m EUR 1.5 m EUR 0.5 m	
Measure 1.2: Creation of the monitoring, reporting and verifying system for the successful implementation of the EU Emission Trading Scheme	Indicative EU contribution: Twinning contract:	EUR 1.0 m EUR 1.0 m	
Measure 1.3: Establishment of an integrated environmental monitoring system for air and water quality	Indicative EU contribution: Service contract: Supply contract:	EUR 1.95 m EUR 0.20 m EUR 1.75 m	
Measure 2.1: Development of waste management infrastructure	Indicative EU contribution: Works contract RWMC Kalenic: Supply contract RWMC Kalenic: Service contract RWMC Kalenic: Works contract RWMC Subotica: Works contract RWMC Subotica: Supply contact RWMC Subotica: Service contract RWMC Subotica:	EUR 33.85 m EUR 14.8 m EUR 1.0 m EUR 1.2 m EUR 12.0 m EUR 2.3 EUR 1.25 m EUR 1.3 m	

Measure 2.2: Improvement of air quality through reduction of dust emissions from thermal power plants (TPPs)	Indicative EU contribution: Works contract Lot 1: Works contract Lot 2: TA contract:	EUR 16.35 m EUR 10 m EUR 5.5 m EUR 0.85 m	

Precondition: The Regional Public Utility Company for the management of the Regional Landfill in Pirot financed under previous EU programmes becomes fully operational and proper maintenance of the site is ensured before funds under measure 2.1 can be contracted.

ANNEX 2: Description of Institutional Framework

The Ministry of Energy, Development and Environmental Protection , has a wide scope of competences defined by the **Law on Ministries** (Official Gazette of RS, no. 72/2012) as follows:

- Environmental protection and system of protection and promotion of environment (nature protection; air protection; ozone protection; climate change; cross-border pollution of air and water; water protection from pollution for the purpose of preventing aggravation of surface and underground waters quality, protection from chemical accident, protection from noise and vibrations; ionizing and non-ionizing radiation);
- Inspection in the domain of environmental protection;
- Application of the results of scientific and technological researches and development researches in the domain of energy and environment;
- Protection of flora and fauna;
- Climate change;
- Management of waste.

The Ministry is responsible for setting the energy policy objectives and methods of implementation, to create the framework for increased energy efficiency in all energy consumption sectors, to monitor and stimulate activities of SEEA, the legal framework, the energy balance of the Republic of Serbia, approving tariff systems, issuing energy permits, assuring security of delivery of energy and energy sources.

The Public Enterprise"Electric Power Industry of Serbia" (PE EPS) was established by Decision of the Government of Serbia which entered into force on 1 July 2005. The basic task of PE EPS represents meeting all the electric power requirements of the economy and inhabitants of the Republic of Serbia including the following activities: 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. PE EPS is 100% owned by the Republic of Serbia. The subsidiaries of Economic Association "Thermal Power Plant Nikola Tesla" plc (public limited company) are:

- TPP "Nikola Tesla A" – with 6 Units – total available capacity of 1,502 MW and electric power generation of 7,194 GWh;
- TPP "Nikola Tesla B" – with 2 Units – total available capacity of 1,160 MW and electric power generation of 7,728 GWh;
- TPP "Kolubara" – with 5 Units – total available capacity of 245 MW and electric power generation of 1,149 GWh;
- TPP "Morava" – with 1 Unit – total available capacity 108 MW and electric power generation of 341 GWh.

The Institute for Nature Conservation of Serbia is a professional institution responsible for the protection and enhancement of the natural heritage of Serbia through numerous activities, out of which we can mention the following: development of studies on protection which serve to determine values of those areas proposed for protection status and management which should be applied in those areas, research activities and studies of biodiversity and geodiversity, professional supervision in protected areas and draft measures, development of databases related to the status of nature ecosystems and resources in Serbia and maintenance of the register of endangered species; participation in the development of spatial plans, provision of conditions for spatial-planning

documents and giving opinions on the environmental impact of urban development plans, on forest, water management and fishery bases and other investment-technical documentation etc

The Management Authority for CITES (MEDEP)): Responsible for coordinating the implementation of the CITES Convention and wildlife trade regulations through development of relevant legislation, permit issuing, record keeping and all other tasks that a management authority for CITES is required to carry out. There are 3 fully employed staff and 1 part time staff member within the Sector for protection of natural resources**.**

The management authority staff requires additional specialization regarding certain aspects of wildlife trade control (permit control and processing, legislation development, monitoring and reporting). An important new issue that needs to be addressed is national trade and possession of protected species (application processing, control, record keeping, monitoring and reporting).

Scientific Authorities for CITES (*Majority of tasks are completed by the Institute for Nature Protection of Serbia and the Institute for Nature Conservation of Vojvodina Province*): Responsible for giving expert opinions (making non-detrimental findings) regarding permit applications, assisting the enforcement officers in the identification of specimens and other expert tasks.

The scientific authority staff requires further specialization with regard to non-detrimental findings and some aspects of species identification (live specimens as well as parts and derivatives thereof).

Other Scientific Authorities that carry out the abovementioned tasks of scientific authorities are the Faculty of Biology – University of Belgrade, the Natural History Museum and the institute for biological research "Sinisa Stankovic".

Main Enforcement Authority for CITES *(*MEDEP*)):* Responsible for control of the implementation of CITES and national wildlife trade legislation provisions in the field (Jurisdiction for control on the border crossings was given to other enforcement authorities – border veterinary and phytosanitary inspection, customs and border police). There are 14 environmental inspectors (Republic jurisdiction) and 4 environmental inspectors (Provincial jurisdiction) within the Sector for control and monitoring.

The environmental inspectors require specialised training regarding the prevention of illegal wildlife trade, species identification, tools used by wildlife enforcement officers, evidence gathering and case preparation, wild animal handling and other tasks that are required for combating the illegal wildlife trade. Other Enforcement Authorities for CITES are in the Ministry of Agriculture, Forestry and Water Management. Border veterinary inspectors and phytosanitary inspectors are responsible for controlling the shipments of wildlife, control of CITES documentation and visual inspection of contents (jurisdiction transferred from environmental inspection through the Integrated Border Management agreement). There are 32 border veterinary inspectors and 33 border phytosanitary inspectors. The border veterinary and phytosanitary inspectors require specialised training for wildlife trade control because they have been assigned to carry out the tasks previously conducted by environmental inspectors (CITES species controls), but the transfer of responsibility was done without any specialised training for border veterinary and phytosanitary inspectors in this field.

Other stakeholders on the CITES component of the project are:

- **Ministry of Finance and Economy (**Customs administration) - Customs officers (~1,950 customs officers) are responsible for controlling the transboundary movement of goods, including the control of CITES specimens and the relevant documentation. The customs officers require basic training in controlling legal and detecting illegal wildlife trade. Familiarization with the trends in illegal wildlife trade and rules of procedure in wildlife trade enforcement is required.

- **Ministry of the Interior:** The border police officers (~4,000 border police officers) are responsible for controlling the state borders with regard to human and other forms of transboundary movement and traffic. The crime prevention police investigators have the responsibility of investigating cases related to environmental crime. There are 400 crime prevention police inspectors, of which a limited number of staff is responsible for environmental crime prevention. Border police officers and crime prevention police inspectors require training in combating illegal wildlife trade. Familiarization with the trends in illegal wildlife trade and rules of procedure in wildlife trade enforcement is required.
- **Judicial bodies**: A number of prosecutors are involved in the process of prosecuting wildlife trade cases, depending on the circumstances. Prosecutors and judges in Serbia are not familiar with the illegal wildlife trade, therefore they are not capable of adequately sanctioning perpetrators. Familiarization with the trends in illegal wildlife trade and rules of procedure in wildlife trade enforcement is required. Judicial bodies (34 prosecutors – basic public prosecutor's office, 26 prosecutors – higher public prosecutor's office, 4 prosecutors – appellate public prosecutor's office, 1 state public prosecutor and 1 prosecutor for organised crime, all of the abovementioned prosecutors have a certain number of assisting prosecutors).
- **Zoological parks and rescue centres**: Out of 3 zoological parks in Serbia, only one zoo ("Zoo vrt Palic") has so far conducted specialised tasks of housing and care for confiscated specimens (however, there is a potential to use the other two and to establish new rescue centres for confiscated wildlife).

As far as administrative capacity is concerned, theMEDEP bears main responsibility for formulating and implementing climate change policy. **Climate Change Division (CCD) within the MEDEP** has the responsibility for initiation and coordination of climate change-related activities, and supervises implementation of those activities. CCD was responsible for development of: National CDM strategy for waste, agriculture and forestry, developed in effective cooperation with the ministry responsible for agriculture and forestry; Initial National Communication developed in close cooperation with the ministry responsible for energy but also for the economy, transportation, agriculture, health, etc. The document was accepted through the inter-ministerial opinion process by 14 ministries before governmental approval; currently the CCD leads the NAMAs development project in the energy efficiency field, for which their partner is the Energy efficiency agency. CCD has a strong and efficient cooperation with industry that was, besides the ministry responsible for energy, directly involved in development of the EAS (climate change-related part) as well as the Approximation Strategy for the Air Quality and Climate Change Sector. MEDEP cooperates with a number of other ministries and authorities with climate responsibilities. Other stakeholders on the climate change component of the project are:

- Ministries in charge of of economy and regional development
- Chamber of commerce
- Associations of industries
- NGOs.

The Law on Ministries defines the **Serbian Environmental Protection Agency** as part of the Ministry of Energy, Development and Environmental Protection of the Republic of Serbia. It has the following responsibilities and competences:

- Development, harmonization and management of the national environmental information system (monitoring of conditions of environmental media, development of the cadastre of polluters, etc.);

- Implementation of national monitoring of air and water quality, including the implementation of programs for air quality control, surface water and groundwater, aquifer and precipitation; Management of the National Laboratory;
- Collection, processing and unification of environmental data, reporting on environmental conditions and environmental policy implementation;
- Development of procedures for processing and assessment of environmental data;
- Updating data on the Best Available Technologies and practices and their introduction into the area of environmental protection;
- Cooperation with the European Environmental Agency and the EIONET;

The Environment Protection Fund was established on the basis of Article 90 of the Law on Environmental Protection. The aim of the Fund's establishment is to provide financial means for environmental incentives and enhancement in the Republic of Serbia. The Fund performs activities related to project management and financial mediation in the area of conservation, sustainable use, protection and enhancement of the environment and use of renewable energy sources in compliance with the National Environmental Protection Programme and other strategic plans and programmes, as well as concluded international agreements. The Law on the Environment Protection Fund (Official Gazette of RS, no. 72/09) regulates the position, activities, organization, revenues, purpose and manner of the utilization of funds, as well as all other issues important for the Fund's operation.

Regional waste management company in the Kolubara region ("EKO Tamnava" Ltd. Ub), established in December 2011, will be responsible for operation of the landfill. **Regional waste management company Ltd. Subotica** ("Regionalna deponija" d.o.o) will be responsible for operation of RWMC Subotica.

Steering Committee

A Steering Committee will be set up to oversee the implementation of the projects. It will consist of approximately 6 members including representatives of theMEDEP , ministry in charge for natural resources, mining and spatial planning, , ministries in charge of economy and regional development, Chamber of commerce, PE Electric Power Industry of Serbia, the Serbian Environmental Protection Agency, the Institute for Nature Conservation of the Republic of Serbia and the Provincial Institute for Nature Conservation, the Serbian Environmental Protection Fund, the EU Delegation and other stakeholders. The function of this Committee will be to monitor progress of the project tasks, to mobilise whenever needed the inputs and contributions of government departments, and to ensure timely achievement of results as planned. The Steering Committee will also be at disposal during the implementation to remove potential obstacles and will convene on a quarterly basis or when requested by the chairman, to review project progress and reports from the Contractor and Consultants. The MEDEP s responsible for providing the secretariat function for this Steering Committee (organising meetings, taking and preparing minutes).

ANNEX 3: Political, legal and institutional framework:

Reference list of relevant laws and regulations

- **Law on Nature Protection** (Official Gazette of the Republic of Serbia, No. 36/09 and 88/10 and 91/10 corr.) defines in **Article 38** *"Institute in cooperation with other professional and scientific institutions prepares documentation for the establishment of ecological networks"*; **Article 39** *"Monitoring of environmentally important areas, ecological corridors and entire ecological network, is performed by the Institute and / or other professional and scientific institutions under the authority of the Ministry "*, **Article 50** *"The central registry of natural resources leads the Institute for Nature Protection of Serbia "*

- **Regulation on Ecological Network** (Official Gazette of the Republic of Serbia, No. 102/10) includes spaces on which the following areas and facilities are located:

  1) Certain protected areas proclaimed pursuant to laws governing the protection of nature with the priority objective to conserve biodiversity including the areas under the proclamation of protection and the areas planned to be protected based on the respective strategy documents planning for protection;

  2) Important conversation areas, i.e. Emerald network, identified on the basis of the Convention on the conservation of European Wildlife and Natural Habitats (Bern Convention)

  3) Certain areas specified pursuant to the international programmes for the identification of Important Bird Area (IBA), Important Plant Area (IPA) and Prime Butterfly Area (PBA);

  4) The areas on the list of the Convention on internationally important wetland habitats (Ramsar areas) or are planned for entering the list;

  5) Certain speleological facilities;

  6) Cross-border ecologically important areas that enable the connection with the ecological networks of neighbouring countries in conformity with international regulations;

  7) Certain areas of habitat types of special conservation interest identified in conformity with the Rulebook on the criteria for the definition of habitats, habitat types, sensitive, endangered, rare and priority habitat types for protection as well as of protection measures for their conservation (Official Gazette of the Republic of Serbia, No. 35/10);

  8) Certain wild species habitats set forth in conformity with the Rulebook on proclamation and protection of strictly protected and protected species of wild flora, fauna and fungi (Official Gazette of the Republic of Serbia, No. 5/10);

  9) Other ecologically important areas not embraced in those areas specified as important in accordance with spatial plans.

- **The Law on Environmental Protection** (Official Gazette of the Republic of Serbia, No. 135/04, 36/09) defines in Article 69 (**Provision of Monitoring):** "The Republic of Serbia, autonomous province, and local self-government units, within their competencies prescribed by law, shall provide for continual control and monitoring of the state of the environment (hereinafter referred to as: the monitoring), in accordance with this and special laws. Monitoring shall be an integral part of the uniform information system of the environment. The Government shall adopt the programs of monitoring based on special laws. The Autonomous Province or local self-government unit shall adopt a program of monitoring on its territory that must be in accordance with the program referred to in paragraph 3 of this Article. The Republic of Serbia, Autonomous Province and local self-government unit shall provide financial resources for performing monitoring"; *Article 73*: "State authorities, organizations, authorities of the

Autonomous Province and local self-governance units, authorised organizations and polluters are obliged to submit the data on monitoring from Articles 70 and 72 of this Law to the Environmental Protection Agency in a manner prescribed by regulations."; *Article 74*: "The information system shall be run by the Environmental Protection Agency"; *Article 75*: "The integrated polluter cadastre shall be maintained by the Environmental Protection Agency"; *Article 78* (**Access to Information):** "State authorities, authorities of the Autonomous Province, authorities of local self-government units and authorised and other organizations shall be obliged to regularly, timely, fully and objectively inform the public on the state of the environment, and occurrences that are observed in monitoring the pollutant levels and emissions, as well as warning measures or development of a pollution which may pose a threat to human life and health, in accordance with this Law and other regulations. The public shall be entitled to access to the prescribed registers or records containing information and data in accordance with this Law. "

- **The Law on Air Protection** (Official Gazette of the Republic of Serbia, No. 36/09);
- **The Law on Water** (Official Gazette of the Republic of Serbia, No. 30/10);
- **The Law on Waste Management** (Official Gazette of the Republic of Serbia, No. 36/09, 88/10);
- **The Law on the Environmental fund** (Official Gazette of the Republic of Serbia, No. 72/09);
- **The Law on planning and construction** (Official Gazette of the Republic of Serbia, No. 72/09, 81/09, 64/10, 24/11);
- **The Law on SEA** (Official Gazette of the Republic of Serbia, No. 135/04, 88/10);
- **The Law on EIA** (Official Gazette of the Republic of Serbia, No. 135/04, 36/09).

Relevant EU Directives:

- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitat Directive);
- Council Directive 2009/147/EC on the conservation of wild birds (Birds Directive);
- Council Directive 2009/29/EC amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community;
- Council Regulation (EC) No. 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein;
- Commission Regulation (EC) No. 865/2006 laying down detailed rules for the implementation of Council Regulation (EC) No. 338/97);
- Commission Regulation (EC) No. 359/2009 of 30 April 2009 suspending the introduction into the Community of specimens of certain species of wild fauna and flora;
- Directive 2000/60/EC- WFD;
- Directive 1999/31/EC- Landfill Directive;
- Large Combustion Plants Directive (LCP) - Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants;
- Air Quality Framework Directive - Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management (OJ L 296, 21.11.1996, p. 55-63);

- Limit Values for SO_2, NO_x, NO_2, Particulate Matter and Lead Directive - Council Directive 1999/30/EC of 22 April 1999 relating to limit values for Sulphur Dioxide, Nitrogen Dioxide and oxides of Nitrogen, Particulate Matter and Lead in ambient air (OJ L163, 29.06.1999, pp.41-60).

Reference to MIPD 2011-2013

"To help Serbia align with the EU environmental and climate *acquis…"*

"To improve environmental standards in air, water and waste management; "

"To contribute to Europe 2020 targets in energy and climate change";

"To promote adaptation to climate change"

"To improve environmental infrastructure"

"To prepare viable projects for investment and attract FDI".

References to National strategies

NAD 2011-2013

Priority 1: Create and strengthen policy, regulatory, financing and monitoring mechanisms for ensuring sustainable development

Measure 1.1 – Strengthen strategic planning and implementation through legal reforms and institution building in the sector – enable further transposition of EU legislation into the national legal system in the field of nature protection,

Measure 1.2 – Developing integrated monitoring and information systems

Priority 3: Enable sound management of natural resources and reduction of pollution

Measure 3.1 Ensuring conservation, sustainable use, improvement and management of natural resources

Measure 3.2 *Developing* and improving the waste management system

Measure 3.4 Improving air quality through the reduction of harmful emissions.

The NPI (National programme for integration with the European Union) defines, among other things, the following priorities:

1. Strengthening the administrative capacity for the implementation of the UNFCCC and the Kyoto protocol;

2. Begin strengthening the administrative capacity for the transposition and implementation of the EU Climate and Energy Package, especially focusing on the Emission Trading Directive.

In Chapter 3.27.3, on Air quality and climate change, it is planned to transpose the Commission Decision (2007/589/EC) establishing guidelines for the monitoring and reporting of greenhouse gases pursuant Directive 2003/87/EC. Adoption of all directives and regulations included in EU Energy and Climate Package is also envisaged.

The National Strategy for the Accession of Serbia to the EU defines that it is necessary to establish a system of nature conservation and biodiversity in accordance with the criteria for accession.

The National Sustainable Development Strategy (NSDS) defines strategic objectives to adapt to and mitigate climate change; these include the preparation of relevant institutions for the implementation of EU climate change policy and for fulfilment of Serbia's international

commitments (the UNFCCC and the Kyoto Protocol etc Action Plan for the Implementation of the Strategy has listed infrastructure projects in the area of environmental protection in the Energy Sector, that need to be realised to assure sustainable development in the Republic of Serbia.

Relevant objectives under **NPEP (2010-2019)** are:

- To establish management system for ecological networks (Emerald network, NATURA 2000, corridors, transboundary areas within the EU Green Belt in Serbia, transboundary Biosphere Reserves, etc.)
- To establish NATURA 2000 areas based on present habitat types and species, in compliance with the Directive 92/43/EEC on protection of natural habitats of wild flora and fauna
- Upgrading environmental monitoring and enforcement system through establishing accredited laboratories, enforcement of norms and standards and mandatory quality control of analyses and emission monitoring, self-monitoring of polluters, the establishment of inventory of polluters and an inventory of greenhouse gas emissions, establishing a unified information system.
- To transpose into national legislation and to prepare for the implementation of the Emission Trading Directive, and the EU Energy and Climate Package
- To develop professional and administrative capacities, including in industry and relevant subjects, for efficient implementation of national policy to combat climate change and to fulfil, international commitments.

The Serbian Energy Sector Development Strategy until 2015 represents the following in the Objectives, Priority programs and appropriate Measures and Instruments for the realization of priority programs and realization of the following objectives of the Serbian new Energy Policy/Strategy:

- Specific-technological and environmental objectives which, given the inherited situation in energy facilities/systems and technologies with reduced operating performances and harmful environmental effect, increase the operational safety of the facility and functional reliability of the equipment and vital systems of energy installations. Within this target-oriented priority of technological modernization of energy facilities and installations, *including the installation of equipment for reduction of the emission of harmful effluents from energy sources*, not only a significant increase in the operational availability and production capacity of a large part of the existing energy sources will be possible, but also a lower threat to the environment *(page 17).*

Relevant objectives in the **National Biodiversity Strategy and Action Plan (2010)** are:

- Capacity building for biodiversity conservation within the public and private sectors in the Republic of Serbia, as well as awareness raising on the importance of its role in sustainable development, is of crucial importance.
- Goal 7.1 Development and strengthening capacities within designated public and private institutions for biodiversity conservation and sustainable use.

  Activities: 1) Development of a national program and centre for education of the public and private sector for monitoring biodiversity, assessment, management and conservation, with special emphasis on: implementation of the CITES convention (with focus on the judicial system and customs)

The **Progress Report (2010)** states: “it still lacks the capacity to ensure proper implementation of the integrated monitoring strategy.”

According to the **EC Analytical Report for 2011**, "Environmental monitoring is ensured by the central government, Autonomous Province and municipal authorities, with overlaps and gaps. Efforts to streamline this system have just started, with the progressive transfer of environmental monitoring tasks to the SEPA, thus significantly increasing its capacity in terms of staff from 29 to 88 employees and monitoring functions of both air and water quality, but the fragmentation of responsibility for implementation of the EU's environmental acquis remains a challenge."

ANNEX 4: Details per EU funded operation (*) where applicable:

Measure 1.1: Capacity-building to implement *acquis* standards and conventions in nature protection

Operation 1.1.1 - Service (TA) or Twinning contract

Main components and activities are:

Component 1:

- Setting up a list of potential NATURA 2000 sites that is harmonised with relevant database of EMERALD network;
- Mapping of habitat types according to the EU Habitat Directive;
- Strengthening of stakeholder capacity to prepare management plans and inter-sector cooperation and stakeholder participation;
- Development of management plans for NATURA 2000 selected sites;
- Upgrade of website for NATURA 2000, if necessary;
- Preparation of guidelines for appropriate assessment and training of stakeholders.

Component 2:

- Strengthening of stakeholder capacity (enforcement authorities, management and scientific authority, judges and prosecutors, rescue centres and zoo etc.) to implement CITES;
- Increasing of public awareness of wildlife trade-related issues (legal and illegal trade, sanctions and effects on global biodiversity).

Indicative budget: EUR 1.5 m

Operation 1.1.2 – Supply contract

- Procurement of equipment to support functionality of NATURA2000 information system including software for processing of NATURA 2000 data and the equipment to support implementation of CITES convention
- Provision of training in the use of software and/or hardware and equipment for monitoring.

Indicative budget: EUR 0.5 m

BUDGET JUSTIFICATION TABLE*				
Sector Fiche for Environment	***Strengthening system of Environment Protection and Climate Change***			
Measure 1.1:	***Capacity-building to implement acquis standards and conventions in nature protection***			
Operation 1.1.2	*1 Supply Contract*			
Estimated Duration:	12 months			
2. Supply Contract (Operation 1.1.2)				
Basic Technical Specification	**Number of units**	**Cost per unit**	**Total Cost**	**Comments**
NATURA/CITES related equipment	1	500,000.00 €	500,000.00 €	
TOTAL EXPENDITURE			**500,000.00 €**	
		TOTAL BUDGET	***500,000.00 €***	

Measure 1.2: Creation of a monitoring, reporting and verifying system for the successful implementation of the EU Emissions Trading Scheme

Operation 1.2.1 - Twining contract

Main components and activities are:

- Necessary legal framework and relevant documents for efficient EU ETS implementation in MRV manner developed;
- Institutional set-up for implementation of EU ETS in MRV manner established;
- Capacity of stakeholders strengthened.

Indicative budget: EUR 1.0 m

Measure 1.3: Establishment of an integrated environmental monitoring system for air and water quality

Operation 1.3.1 - Service (TA) contract

Main expected outputs are:

- Completion of analysis and recommendation for improvement of current situation of existing systems for **air quality** data collection and integration, focusing on data validation and reporting procedures and integration of existing automatic air quality networks as well as on analysis of compliance of the existing **water quality** monitoring system with WFD with recommendations for improvement;
- Completion of tender documentation of equipment for automatic monitoring of water quality and review of needs assessment including technical specifications for specific technical and IT equipment for data collection and exchange.
- Assistance with implementation supervision of supplies and provisional acceptance verification.

Indicative budget: EUR 0.20 m

Operation 1.3.2 – Supply contract

- Procurement of equipment (IT equipment, equipment for automatic monitoring and calibration) and software for the information system on water and air quality and
- Provision of training in the use of software and/or hardware and equipment for monitoring.

Indicative budget: EUR 1.75 m

BUDGET JUSTIFICATION TABLE*	
Sector Fiche for Environment	***Strengthening system of Environment Protection and Climate Change***
Measure 1.3:	***Establishment of an integrated environmental monitoring system for air and water quality***
Operation 1.3.2	*1 Supply Contract*
Estimated Duration:	12 months

1. Supply Contract (Operation 1.3.2)				
Basic Technical Specification	**Number of units**	**Cost per unit**	**Total Cost**	**Comments**
Automatic water quality station	4	185,000.00 €	740,000.00 €	
Communication center for real-time water quality data collection	1	100,000.00 €	100,000.00 €	
Laboratory equipment: Gas Chromatograph TOF Mass Spectrometer	1	360,000.00 €	360,000.00 €	
High resolution Light microscope	1	100,000.00 €	100,000.00 €	
Software for air quality data collection, analysis, verification and reporting	1	450,000.00 €	450,000.00 €	
TOTAL EXPENDITURE			**1,750,000.00 €**	
		TOTAL BUDGET	***1,750,000.00 €***	

Measure 2.1 Development of waste management infrastructure

Operation 2.1.1 - Works contract (Yellow FIDIC) (EUR 14.8 m), the following items will be constructed and designed:

- Preparatory works such as access road, potable water supply, power supply and transformer stations;
- Landfill body (Non-hazardous waste landfill);
- Entry/exit area with double weighbridge, meter house, reception and wheel wash area;
- Administrative building and parking lot;
- Recycling yard with staff premises and canopy shed;
- Transport area with parking, workshops and staff premises;
- Materials Separation and Recovery Facility (MRF);
- Organic matter composting and curing facilities;
- Landfill gas flare;
- Wastewater treatment;
- Green belt, infrastructure and site roads within the RWMC.

Landfill equipment:

- Compactor: landfill compactor is needed for compacting waste layers to the appropriate compaction
- Wheeled Loader: is needed for loading soil and gravel materials, waste etc
- Bulldozer: is necessary for spreading of waste and application of daily cover layers on top of the compacted waste

- Roll-arm tipper for baled and bulky waste is needed for residual-waste transport from Materials Separation and Recovery Facility (MRF) to the landfill cell
- Truck lifter for transport of dispersed waste and soil
- Forklift: is required for internal transportation of materials inside RWMC
- Mini loader "Bob Cat": is needed maintenance work at the RWMC and for loading miscellaneous material;
- Stationary press.

Indicative budget: EUR 14.8 m

Operation 2.1.2 - Supply contract, (EUR 1.0 m) the following equipment will be purchased:

- 6 trucks 24 tonnes capacity, hook lifting mechanism, with sufficient operating and axle weight conforming to Serbian legislation;
- 8 closed 32m^3 hook-lift roll Containers;
- 5 open top 32m^3 hook-lift roll Containers.

Indicative budget for transport fleet: EUR 1.0 m

Operation 2.1.3 - Service contract - TA for supervision will be provided.

Technical Assistance should help implement the project by putting in place a reliable waste management system and effectively improving it. The Technical Assistance shall focus on 3 main stages during the priority phase:

- Financial and operational performance improvement programme (FOPIP);
- Project Management Support and Public Relations Activities;
- Construction Works and Equipment Supplies Supervision.

Indicative budget: EUR 1.2 m

Operation 2.1.4 - Works contract for 2 Transfer Stations and 1 Transfer point, mobile equipment (forklifts and mini loader Bob - Cats) will be provided (local co-financing)

Indicative budget: EUR 1.5 m

Operation 2.1.5 - Works contract for 5 recycling yards construction (local co-financing)

Indicative budget: EUR 0.7 m

Operation 2.1.6 - Supply contract for replacement of collection equipment (local co-financing)

Indicative budget: EUR 4.2 m

Budget per contract is done in accordance with FS prepared by PPF2.

BUDGET JUSTIFICATION TABLE*					
Project Fiche Title:	*Construction of the Kolubara District Regional Landfill – "Kalenić"*				
Implementation Modes (types of contract):	*Works contract (mixed) and Service contract*				
Justification for the selection of implementation modes:	*One works (mixed) contract – works contract including components of supply of equipment and TA for maintenance and operation of the RWMC*				
Estimated Duration:	2.5 yrs				
1.Supply Contracts					
Basic Technical Specification	**Number of units**	**Cost per unit**	**Total Cost**	**Comments**	
Supply contract for transport of waste from TS to RWMC	1	1,000,000.00 €	1,000,000.00 €		
TOTAL EXPENDITURE			**1,000,000.00 €**		
2. Works Contract (mixed)					
Basic Specification	**Number of units**	**Cost per unit****	**Total Cost**	**Comments**	
Construction of phase I RWMC complex	1	13,500,000.00 €	13,500,000.00 €		
Supply component: Supply of mobile equipment for RWMC	1	1,300,000.00 €	1,300,000.00 €		
TOTAL EXPENDITURE			**14,800,000.00 €**		
		TOTAL PROJECT FICHE BUDGET	***15,800,000.00 €***		

Operation 2.1.7 - Works contract (Yellow FIDIC) (EUR 12.00 m), the following items will be constructed and designed:

- Preparatory works;
- Landfill body (Non-hazardous waste landfill);
- Entry/exit area with double weighbridge, meter house, reception and wheel wash area;
- Administrative building and parking lot;
- Recycling yard with staff premises and canopy shed;
- Transport area with parking, workshops and staff premises;
- Materials Separation and Recovery Facility (MRF);
- Organic matter composting and curing facilities;
- Landfill gas flare;
- Wastewater treatment;
- Green belt, infrastructure and site roads within the RWMC.
- Landfill equipment
    - Compactor: landfill compactor is needed for compacting waste layers to the appropriate compaction
    - Wheeled Loader: is needed for loading soil and gravel materials, waste etc
    - Bulldozer: is necessary for spreading of waste and application of daily cover layers on top of the compacted waste

- ADT (Articulated Dump Truck) is needed for residual-waste transport from Materials Separation and Recovery Facility (MRF) to the landfill cell
- Forklift: is required for internal transportation of materials inside RWMC
- Mini loader "Bob Cat": is needed maintenance work at the RWMC and for loading miscellaneous material;
- Stationary press.

Indicative budget: EUR 12.00 m

Operation 2.1.8 - Works contract (Red FIDIC) (EUR 2.30 m)

The following construction works are included:

- Earthworks including excavation and backfilling;
- Connection to public utilities (electricity, water, communication);
- Concrete works including reinforcement, framework for in-situ casting;
- Buildings;
- Recycling area;
- 1 Weighbridge with complete, automatic monitoring system and online connection to RLF;
- Boilers, heating, air-conditioning, etc.
- Paved areas and internal road, including curbs and surface drain;
- Sewage and water;
- Fence and gates around the site;
- Landscape and Gardening. Non-paved area will be planted with grass and bushes.

An alternative to the connection to water and sewerage may be to provide water supply via a water tank and disposal of sewage via a septic tank. Access road to the sites is not included in the estimate.

Transfer station mobile equipment (bobcat, fork lift and mobile presses) will be included in the TS equipment list.

Four transfer stations were initially proposed, at Subotica, Backa Topola, Senta and Kanjiza. The Subotica station is of the large type, whereas the other three are of medium size. The selection was justified by the options analysis.

Indicative budget: EUR 2.30m

Operation 2.1.9 - Supply contract, (EUR 1.25m) the Transport fleet will be purchased.

Transport Fleet - 1,250,000 €

- 6 trucks 24 tonnes capacity, hook lifting mechanism, with sufficient operating and axle weight conforming to Serbian legislation;
- 8 closed 32m^3 hook-lift roll Containers;
- 5 open top 32m^3 hook-lift roll Containers.

Indicative budget: EUR 1.25m

Operation 2.1.10 - Service contract - TA for supervision (1.3m) will be provided.

Technical Assistance should help implement the project by putting in place a reliable waste management system and effectively improving it. The Technical Assistance shall focus on 3 main stages during the priority phase:

- Financial and operational performance improvement programme (FOPIP);
- Project Management Support and Public Relation Activities;
- Construction Works and Equipment Supplies Supervision.

Indicative budget: EUR 1.3m

Operation 2.1.11 - Works contract (0.7m) for construction and equipping of recycling yards (national co-financing)

Indicative budget: EUR 0.7m

Operation 2.1.12 - Supply contract (3.2m) for purchasing of collection trucks and containers for Subotica, Backa Topola, Senta, Coka, Novi Knezevac and Mali Idjos. (national co-financing)

Indicative budget: EUR 3.2m

BUDGET JUSTIFICATION TABLE*

Project Fiche Title:	*Strengthening system of Environment Protection and Climate Change*
Measure 2.1.	*Development of waste management infrastructure*
Justification for the selection of implementation modes:	*2 Works contracts, 1 Supply contract*
Estimated Duration:	30 months

1. Supply Contract (Operation 2.1.9)				
Basic Technical Specification	**Number of units**	**Cost per unit**	**Total Cost**	**Comments**
Supply component: Transport fleet	1	1,250,000.00 €	1,250,000.00 €	
TOTAL EXPENDITURE			**1,250,000.00 €**	

2. Works Contract (Operation 2.1.7)				
Basic Specification	**Number of units**	**Cost per unit****	**Total Cost**	**Comments**
Construction of phase I RWMC complex, Supply of mobile equipment for RWMC	1	12,200,000.00 €	12,200,000.00 €	
TOTAL EXPENDITURE			**12,200,000.00 €**	

3. Works Contract (Operation 2.1.8)				
Basic Specification	**Number of units**	**Cost per unit****	**Total Cost**	**Comments**
Construction of transfer stations	1	2,300,000.00 €	2,300,000.00 €	
TOTAL EXPENDITURE			**2,300,000.00 €**	

			TOTAL PROJECT FICHE BUDGET	***17,050,000.00 €***

Measure 2.2: Improvement of air quality through reduction in dust emissions from thermal power plants (TPPs)

Operation 2.2.1 – Design & Works ontract (FIDIC Yellow Book Plant and Design-Build) with 2 Lots (Lot 1 for TTP Nikola Tesla A Unit A3 and Lot 2 for TTP Morava under Result 1) (EUR 15.50 m) will include the following activities:

- Preparation of Project Final Design;
- Dismantling and removal of the existing equipment;
- Installation of completed and delivered new equipment;
- Trial operation (operation optimization including training as well as facility and documents take over);
- Performance tests - guarantee tests.

For the purpose of implementation of this project the following design-technical documents are available:

- Pre-feasibility Study for Emission Control in Coal-Fired Power Plants, financed by EAR during 2003, developed by RWE Innogy, establishing the priority facilities in EPS TPPs for harmful substances emission alignment.
- Feasibility study with Conceptual Design for the reconstruction of electrostatic precipitators at TPP Nikola Tesla A unit A3 and Feasibility study with Conceptual Design for the reconstruction of electrostatic precipitators at TPP Morava, financed by PE EPS and completed in 2011.
- Mid-Term Environmental Development Plan, representing an integral part of the Mid-Term Business Plan until 2015, financed by PE EPS and completed in 2009.

Indicative budget: EUR 15.50m

Operation 2.2.2 - Service contract (EUR 0.85m) will include the following activities:

- Supervision of works on the reconstruction of the electrostatic precipitators at TPP Nikola Tesla A unit A3 and TPP Morava pursuant to the conditions of the contract and national legislation;
- Monitoring the progress of the works by conducting on-site inspection as considered necessary to check the performance and execution of the project in accordance with the contract;
- Technical assistance in all matters related to the contract.

Indicative budget: EUR 0.85m

Operation 2.2.3 -Works contract (financed by PE EPS) (EUR 3.8 m) will include the following activities:

No	**Reconstruction of electrostatic precipitators at Nikola Tesla A unit A3 TPP**	**Cost (EUR)**
1.	Preliminary works (Adaptation of the ash handling system to the new ESP requirements; Control room air conditioning reconstruction)	760,000
2.	Civil works on the existing support structure reinforcement	1,462,000
No	**Reconstruction of electrostatic precipitators at Morava TPP**	
1.	Preliminary works (Dismantling, procurement and erection of insulation with scaffolding erection; Adaptation of the ash handling system to the new ESP requirements; Control room air conditioning reconstruction)	760,000

2.	Civil works on the existing support structure reinforcement	810,000
	Reconstruction of electrostatic precipitators at Nikola Tesla A unit A3 TPP and Morava TPP **Total (EUR)**	**3,800,000**

Indicative budget: EUR 3.8m

BUDGET JUSTIFICATION TABLE*

Sector fiche for Environment	***Strengthening system of Environment Protection and Climate Change***
Measure 2.2:	***Improvement of air quality through reduction in dust emissions from thermal power plants (TPPs)***
Operation 2.2.1	*1 Works contract*
Estimated Duration:	30 months

1. Works Contract (Operation 2.2.1)

Basic Specification	Number of units	Cost per unit**	Total Cost	Comments
LOT 1 (TTP Nikola Tesla)				
Project Final Design	1	500,000.00 €	500,000.00 €	
Equipment (mechanical & electrical)	1	6,500,000.00 €	6,500,000.00 €	
Dismantling and removal of the existing equipment	1	1,000,000.00 €	1,000,000.00 €	
Installation of new equipment	1	1,500,000.00 €	1,500,000.00 €	
Trial operation (including training)	1	500,000.00 €	500,000.00 €	
LOT 2 (TTP Morava)				
Project Final Design	1	200,000.00 €	200,000.00 €	
Equipment (mechanical & electrical)	1	3,500,000.00 €	3,500,000.00 €	
Dismantling and removal of the existing equipment	1	600,000.00 €	600,000.00 €	
Installation of new equipment	1	900,000.00 €	900,000.00 €	
Trial operation (including training)	1	300,000.00 €	300,000.00 €	
TOTAL EXPENDITURE			**15,500,000.00 €**	
		TOTAL BUDGET	***15,500,000.00 €***	

ANNEX 5: Possible visibility activities

The project visibility activities will be organised to promote exchanges of experience, constraints and best practices achieved on the project.

The main aims of the publicity / visibility requirements are to increase the public awareness and transparency over the project activities and to inform potential beneficiaries about the project results. Publicity must be ensured in accordance with the applicable rules on the visibility of external action laid down and published in the "EU guidelines on visibility" available on: http://ec.europa.eu/europeaid/work/visibility/index_en.htm.

The standard formats will be used in briefings, newsletters, press conferences, presentations, invitations, signs, to highlight EU participation. The key tools of information and communication are:

- Media – press releases, press events, interviews, background papers, project visits;
- Events – forums, information days, workshops, professional debates, seminars, conferences, project presentations, other regional events.

Publications – news letters, brochures, leaflets, project information sheets, reports, studies, programme presentation summaries

- Publications, Internet pages;
- Others: billboards, plaques, stickers, flags, maps, posters and tableaux.

ANNEX 6: Project readiness assessment for environmental infrastructure projects

Measure 1.1: Capacity-building to implement *acquis* standards and conventions in nature protection

NEEDS ASSESSMENT FOR SUPPLY CONTRACT

1. Background

The supply contract is part of the implementation of Measure 1.1 of the Sector Fiche – Strengthening the System of Environmental Protection and Climate Change. This measure will be implemented through one service contract and one supply contract. The service contract will support the development of NATURA 2000 site management plans, and assessment guidelines, design information systems and develop a website for NATURA 2000, raise public awareness on CITES, and provide extensive stakeholder training related to both NATURA and CITES.

The supply contract will enable the procurement and commissioning of IT equipment, in line with commercial software, for the NATURA 2000 information system (database of NATURA 2000 sites).

1.1. Context and rationale

NATURA 2000

The basis for protection and improvement of the nature protection system at national and international level is the development of NATURA 2000 which is an EU-driven ecological network that includes areas important for conservation of species and habitat types. The network should cover sites of international and national importance (international conventions, relevant EU directives, list of endangered species and habitats). Protection mechanisms for NATURA 2000 sites include preparation of management plans. Favourable conservation status must be preserved and species and habitat status in NATURA 2000 areas monitored.

Establishment of the ecological network in Serbia is prescribed by the Law on Nature Protection (Official Gazette of RS 36/09, 88/10 and 91/10 corr.). In accordance with Article 38 of this Law, the Institute for Nature Conservation in cooperation with other experts and scientific institutions prepares documentation for the establishment of ecological networks and maintains a database for the ecological network. The Decree on Ecological Networks defines NATURA 2000 as a part of the national ecological network. The MEDEP is responsible for proposing the list of Natura 2000 sites in Serbia to the Government and further to the EC.

The EU Nature Directives require that site selection for NATURA 2000 is based on scientifically sound data. NATURA 2000 sites must be designated by delivering quantitative and qualitative data on habitat types and species at these sites via so called Standard Data Forms. Important issues to be clarified inter alia are data flows, data structures, data storage, access to data, quality assessment of data, data management.

The assessment of the current state of the IT system for nature conservation in Serbia which was made within the IPA 2007 Twinning project started in January 2010, in partnership with Austria and Greece, revealed that there is no common database that administers data of all plant species nor all animal species in Serbia. For different groups of species there are several independent databases – institutional or private ones. Most of the existing data have been recorded in different projects or in private initiatives. Species inventories can only be compiled by merging such data. Data are not available for the whole of Serbia in a similar data quality. In some nature conservation institutions there are ongoing or planned activities for development of IT systems with the intention of mutual compatibility. In order to facilitate the exchange of data and to produce comprehensive maps identifying potential NATURA 2000 sites it is necessary to gather all available data in one database, in the requested format. This database should be connected with GIS technology.

The proposed database will be situated at the Institute for Nature Conservation in Belgrade with the Institute of Nature Conservation in Novi Sad to serve as backup/restore point with all the administrative privileges of the central database in Belgrade. Based on the mentioned division of competencies, the indicative list in chapter 4 represents the IT equipment needs doubled for two equal databases (central and backup/restore point) as well as GIS Server Software, but the GIS software has to be compatible with Database server.

CITES

The Federal Republic of Yugoslavia ratified the CITES Convention in 2001, and since the dissolution of the Union of Serbia and Montenegro in 2006, the Republic of Serbia has continued its implementation as the successor state of FR Yugoslavia. Serbia has one designated Management Authority for CITES, the MEDEP is responsible for coordinating the implementation of the CITES Convention and wildlife trade regulations through provisions of the Law on Nature Protection and the Regulation on Transboundary Movement and Trade in Protected Species as well as other national laws and bye-laws as well as issuing permits, keeping records and all other tasks that a management authority for CITES is required to carry out.

Serbia, on its way to EU accession must take appropriate measures to enforce the provisions of the EU Wildlife Trade Regulations. The main enforcement authority for CITES, the MEDEP is responsible for control of the implementation of CITES and national wildlife trade legislation provisions. Customs officers and border veterinary inspectors and phytosanitary inspectors are responsible for controlling the shipments at the border, which includes the control of CITES documents and the visual inspection of shipment contents. Jurisdiction at the border has been transferred to them from environmental inspection through the integrated border management agreement. All the CITES enforcement authorities require specialised training in order to work with protected species, and this includes species identification, evidence gathering and case preparation, wild animal handling evidence gathering and preparation of cases for the court, etc. Beside developing the capacities of enforcement authorities through training, specialised workshops and study visits, there is a need to acquire the necessary equipment for conducting effective controls in all aspects of wildlife trade and to work on capacity building of zoos and rescue centres, which will enable proper care and placement of the confiscated live specimens of wild animals.

Legal context (including requirements from EU acquis and new legislation)

- Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitat Directive);
- Council Directive 2009/147/EC on the conservation of wild birds (Birds Directive);
- Council Regulation (EC) No. 338/97 on the protection of species of wild fauna and flora;
- Commission Regulation (EC) No. 865/2006 laying down detailed rules for the implementation of Council Regulation (EC) No. 338/97;
- Commission Regulation (EC) No. 828/2011 suspending the introduction into the Community of specimens of certain species of wild fauna and flora;
- Law on Nature Protection (Official Gazette of the Republic of Serbia, No. 36/09 and 88/10 and 91/10 corr.);
- Regulation on Transboundary Movement and Trade in Protected Species (Official Gazette of the Republic of Serbia, No. 99/09).

The Law on Nature Protection has been almost entirely harmonised with the requirements of Birds Directive and Habitat Directive. According to Article 50 of the Law on Nature Protection: "the central registry of natural resources is run by the Institute for Nature Conservation of Serbia". This will be achieved by purchasing the equipment and software for NATURA 2000 database.

Implementation of CITES will be supported by procuring the necessary equipment. With appropriate equipment the enforcement authority officers will be able carry out more efficient controls on the border and in the internal market. In cases of illegal trade it will enable them to detect and identify the species, and with the appropriate equipment the enforcement officers will be able to seize and transport the specimens with greater ease when controlling the shipments at the border or in the internal market. This will allow greater efficiency in determining if the trade or possession of such specimens is legal or illegal. The above mentioned equipment includes various electronic devices (the digital pinhole cameras, microchip transponder readers, UV lamps, and digital microscopes, etc.). In cases where illegal trade or possession is detected during control activities, the specimen animals are to be seized and transported to a rescue centre, zoological park or another specialised adequate housing facility. The animal handling, immobilisation and transport equipment will be required (transport cages, nets, immobilization darts and blowguns, snake hooks and other similar tools). It is crucial for carrying out these activities by the enforcement authority officers. Sometimes the animals concerned are dangerous and will require special equipment for immobilization and handling. In the case of seizure of viable reptile or bird eggs, in order to ensure their survival, incubators must be available. Often in cases of illegal trade, a number of specimens die due to inadequate conditions and stress in transport, therefore the bodies of dead animals must be stored in a secure place and used as physical evidence against the offenders in a court.

1.2. Institutional context

In accordance with Article 38, the Institute for Nature Conservation in cooperation with other experts and scientific institutions prepare documentation for the establishment of ecological networks and maintains a database for the ecological network. The NATURA 2000 database and additional equipment will therefore be placed in the Institute for Nature Conservation and a provincial institute.

The equipment for CITES implementation will be the property of MEDEP as the CITES Management Authority of the Republic of Serbia, and will be used by the relevant enforcement authorities (environmental inspectorate, customs, etc). The competencies of the enforcement authorities are established in the provisions of the CITES Convention (Article VIII and Resolution Conf 11.3) and The Law on Nature Protection (Articles 95, 118, 119, 120, 121, 122, 123). The CITES Management Authority of the Republic of Serbia is responsible for coordinating the activities of the enforcement authorities in implementing the CITES Convention and relevant national legislation on wildlife trade.

2. Gap assessment

There is no common database that administers data of all plant species nor all animal species in Serbia. For different groups of species there are several independent databases – institutional or private ones. Most of the existing data have been recorded in different projects or in private initiatives. Species inventories only can be compiled by merging such data. Data for the whole of Serbia are not available in a similar data quality. In some nature conservation institutions there are ongoing or planned activities for development of IT systems with the intention of mutual compatibility. In order to facilitate the exchange of data and to produce comprehensive maps identifying potential NATURA 2000 sites it is necessary to gather all available data in one database, in the requested format. This database should be connected with GIS technology.

There is one strictly specified database which has to be filled: the Standard Data Form Natura 2000 (N2000 database). Part of the N2000 database regarding ecological information (part 3 of the

database) was presented with the aim of showing all participants the minimum necessary data and their quality attributes for proposing a sufficient Natura 2000 network in Serbia. It is recommended to have a common methodology for data gathering in the field with the purpose of enabling wide interpretation of data in different tasks. It is therefore recommended to have a common structure of attributes for each group of data reciprocally comparable. The information system (IS) should be flexible to follow this need.

The IS should distinguish between three different types of data (mutually linked): species, habitats and sites. In addition, clear classification must be set up to link with international commitments (N2000 database) and secure national needs also.

It is recommended to be in accordance with EUNIS classification with an additional list of species and habitats which have not yet been included in the EUNIS. This will allow the use of data for both international and national needs. It is also recommended to use not only the classification of species and habitats but incorporate existing national classes for geological monuments, types of landscape (based on covering biotopes and possibly the altitude) to enable specification of conservation objectives for the sites in a wide scope.

Equipment that is to be purchased for CITES implementation will enable the enforcement authorities to conduct their tasks and duties with greater capacity, as they currently lack the necessary tools to fully and effectively control the possession and trade in species protected by CITES, EU and national legislation. For instance, the control of live specimens marked with a microchip transponder can only be conducted with the adequate microchip transponder reader, while the control of shipments at ports of entry or exit is conducted with much more ease through the use of the digital pinhole camera. For detailed control required for species identification, as is the case with timber or animal or plant parts and derivatives, a digital microscope is necessary. In case of confiscation of live animals, it is only feasible if adequate equipment for immobilisation and transport of the specimens is available.

3. Financial sustainability

The NATURA database will be in the ownership of the Institute for Nature Conservation and a provincial institute, who will provide maintenance after completion of the supply contract. Testing of equipment and training for database usage should be provided by the contractor. The total cost of the investment in equipment needed for NATURA 2000 is 300,000 EUR.

The equipment for CITES will be the property of the CITES Management Authority of the Republic of Serbia and will exclusively be used for the purpose of wildlife trade control. It will be managed and maintained after completion of the supply contract. Testing of the equipment and training for its use should be provided by the contractor. The total cost of the investment in equipment needed for CITES is 200,000 EUR. The financing of the follow-up activities for operating and maintenance costs will be covered by the Management Authority for CITES and the enforcement authorities using the equipment.

Expected life of the equipment is 5 to 20 years.

4. **Indicative list of equipment (incl. estimated prices based on market analysis and locations)**

No	Item / NATURA	A. # of Items	B. Item rate (in EUR)	C. Expected costs (in EUR) C=A x B
1.1.	INTEGRATED FIREWALL APPLIANCE WITH MINIMAL 40 user FIREWALL LICENSE	2	700	1,400
1.2	Server RACK 42U	2	1,500	3,000
1.3	Server: Rack, 2xXeon, RAM64GB, RAID5, 4xSAS300GB, NIC10GB, Remote Access Card, Windows 2008 R2 Enterprise	4	10,000	40,000
	UPS, Rack, 3750W	2	2,200	4,400
1.4.	Switch Gigabit Ethernet 24-port Layer3	2	1,300	2,600
1.5.	Storage 2xNIC10GB, 2 x Controller, 10x500GB,	2	12,000	24,000
1.6.	Database Server Software	4	13,000	52,000
1.7.	GIS Server Software compatible with Database server	2	22,500	45,000
1.8.	Software compatible with GIS software package which includes capabilities for data manipulation, editing, and analysis	2	20,000	40000
1.9.	Software compatible with GIS software package which allows viewing of spatial data, creation of layered maps, and performing basic spatial analysis (6 concurrent licenses)	2	27,000	54,000
1.10.	Additional equipment will be defined in the next step			33,600
Total costs for all items				**300,000 €**

No	Item / CITES	D. # of Items	E. Item rate (in EUR)	F. Expected costs (in EUR) C=A x B
1.1.	Vehicle for use in controls of internal trade and transport of seized live animals	4	20,000	80,000
1.2.	Vehicle for transport of large live specimens of seized animals	2	35,000	70,000
1.3	Laptop computer for facilitating controls in the field	8	500	4,000
1.4	Projector (to be used in enforcement workshops and trainings)	1	800	800
1.5	Microchip reader (capable of reading from a distance for use with dangerous animals)	16	600	9,600
1.6.	Digital pinhole camera for shipment inspection and surveillance	6	300	1,800
1.7.	Protective equipment for handling dangerous and poisonous animals	8 kits	1,000	8,000
1.8.	Transport containers for large animals	10 units	1,000	10,000
1.9.	Transport containers for medium sized and small animals	40 units	200	8,000
1.10.	Equipment for containment and restraint of live animals	16 units	500	8,000
Total costs for all items				**200,000 €**

The prices for the items listed above are best estimates based on market price analysis done over the internet, in consultation with colleagues from CITES Enforcement Authorities in EU countries, and according to some price information from official retailers and official distributors of the equipment in Serbia and the EU.

5. Indicative Timetable/scheduling/sequencing

Measure 1.1 Capacity-building to implement *acquis* standards and conventions in protecting habitats and species - will be implemented through one service contract (Operation 1.1.1) and one supply contract (Operation 1.1.2). Tendering dossier for the supply contract will be prepared in close cooperation with SEIO and EUD through a FWC. Tendering for the supply contract will start 1 quarter later than tendering for the service contract but the operation will start at the same time. Other elements of the service contract, such as training of system users, will take place after the system has been designed and installed. This means that the supply contract shall end four quarters before completion of the service contract to ensure the time for training to be conducted.

Operations	Start of Tendering/ Call(s) for proposals	Signature of contract(s)	Activity Completion
Operation 1.1.1 (Service)	T+1Q	T+4Q	T+12Q
Operation 1.1.2 (Supply)	T+2Q	T+4Q	T+8Q

Year	Year 1												Year 2												Year 3											
Quarter	Q1			Q2			Q3			Q4			Q5			Q6			Q7			Q8			Q9			Q10			Q11			Q12		
Month	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
1.1.1. Service contract			MS									MS												MS												MS
1.1.2. Supply contract						MS						MS												MS												

Measure 1.3: Establishment of an integrated environmental monitoring system for air and water quality

NEEDS ASSESSMENT FOR THE SUPPLY CONTRACT

1. Background

The supply contract is part of the implementation of Measure 1.3, Establishment of an integrated environmental monitoring system for air and water quality, of the Sector Fiche – Strengthening the System of Environmental Protection and Climate Change. The measure will be implemented through one service contract and one supply contract. The service contract will analyse the existing monitoring system, recommend improvements, design/ upgrading of software for an information system on water and air quality; and train system users and operators.

The supply contract will procure and commission equipment (IT equipment, equipment for automatic monitoring and calibration).

1.1. Context and rationale

The Serbian Environmental Protection Agency (SEPA) is an authority within the MEDEP and was established in November 2004 to gather environmental data and develop the National Information System for environmental protection. Its main mission is to ensure the availability of reliable and timely data and information on the state of the environment. SEPA integrates the work of all the scientific, professional and educational institutions and cooperates with international bodies, providing a central point for data, and access to and dissemination of information. However, one of the general causes of environmental problems in the Republic of Serbia is an ineffective system of monitoring, particularly the lack of an adequate monitoring programme and financial resources for suitable equipment. Not all priority areas are covered by the monitoring system (it is not integrated). Integrated reporting on the state of the environment in the Republic of Serbia is inadequate. Self-monitoring by polluters is quite limited, primarily due to non-harmonised legislation.

SEPA is obligated to perform environmental monitoring at the national level of two media - water and air.

Based on the Law on Air Protection (Official Gazette No. 36/09, 88/10), automatic monitoring of air quality is defined as the recommended method. This ensures the harmonization of national and EU legislation. Therefore, monitoring of air pollutant levels is one of the issues intended to be solved by this project and purchasing of the necessary equipment. A few networks of automatic air quality monitoring systems (AMSQA) currently operate in the Republic of Serbia. It is necessary to modernise this network, particularly in the sense of data collection and exchange, in order to obtain real time concentration values, which would enable a timely reaction to change and exceeded limit values, and to improve the monitoring programme for ambient air and air quality assessment. Existing equipment is made by a variety of manufacturers and there are different solutions to collecting and updating data. There is therefore a need to purchase additional IT equipment in order to integrate the system, establishing a common methodology, processing, analysis, verifying and presentation of these data at the national level. There is also a lack of equipment for automatic monitoring and calibration at additional locations. To obtain the optimal benefit from a large automated system, the control centre should deal with the following activities. Automatic functions: timing of the network, control of the network, data transmission and processing, continuous information on actual air quality in the different regions of the network etc. Considering the competence of SEPA, in that way all available information of air quality monitoring in real time will be provided. Staff will be trained to use and maintain the equipment for monitoring data processing and verifying.

Water quality monitoring in the Republic of Serbia was in the competence of the Republic Hydro-Meteorological Institute, but since March 2011 was moved to SEPA. The existing monitoring network is not in line with the Water Framework Directive, which is partially transposed into Serbian legislation in the new Law on Water (Official Gazette No. 30/10). Moreover, existing water quality monitoring is performed using manual sampling only, meaning that the data obtained cannot be used as real-time data or as a basis for an early warning system, especially on transboundary rivers. Taking over the responsibilities of the Supervision Department for environmental quality of the Republic Hydro-meteorological Institute, SEPA has created the conditions to fully establish a monitoring system, to analyse the state of the environment, to establish an information system and report on water quality in the Republic of Serbia.

The present situation in Serbia, in terms of network automation stations for monitoring surface water quality is such that there is currently only one automatic station in operation on the Kolubara river (tributary of river Sava), located in Beli Brod. This station was put into operation in July 2008 as a result of cooperation between Serbia and Germany in the Twinning Project "Strengthening the capacities of the Water Directorate" and it measures only the basic parameters of water quality. Also, as part of Neighbourhood Programme Serbia-Hungary, two automatic stations were installed on the river Tisa at Novi Knezevac and Novi Becej. These stations operate on the principle of multi-parameter probes directly immersed in river water, and measure a number of parameters. They were also put into operation in 2008 and store data in a database. However, the measured parameter values are not realistic, suggesting a lack of calibration of sensors in multi-parameter probes, so that the results of continuous monitoring have not been publicly available. There is therefore a need for establishing automatic stations at transboundary locations for continuous monitoring of certain water quality parameters, as well as IT equipment for processing data. Establishing automatic monitoring of surface water at transboundary locations will ensure the provision of online information of the status of water quality and information on long-term trends, and will serve as a basis for an early-warning system on water quality.

Bearing in mind the first step towards implementation of the Water Framework Directive (2000/60 EC) in the new surface and groundwater monitoring programme in 2012, it is also necessary to envisage modernization of the equipment in the National laboratory, especially since biological research takes an important place in the determination of the ecological status of water bodies. Until now the biological research was on a qualitative level, but the quantitative level is also necessary, e.g. number of recorded species. Nevertheless, at this moment there is no way to confirm the existence of certain organic pollutants in streams – in water and sediment samples (herbicides, tensides, PAHs, PCBs, PBDEs, organochlorine and organophosphorous compounds, etc.). This means that there is no way to control industrial wastewater and improve its quality in relation to the above pollutants.

Specific laboratory equipment, like a research microscope with light and dark field, and high level magnification lens as well as a Gas chromatograph with triple-quadrupole mass detector should raise the technical capacity of the National laboratory to perform specific biological and chemical analyses, as specified above.

As a country that cooperates with European Environmental Agency, Serbia will send monitoring data directly to the central system for data collection to be established in SEPA thus enabling real-time data transfer into the Water Information System in Europe (WISE) on the core components of the newly established Shared Environmental Information System (SEIS).

By purchasing the necessary equipment the conditions for full integration of water and air quality monitoring into one system will be created.

1.2. Legal context (including requirements from EU acquis and new legislation)

- Directive 2008/50/EC of the European Parliament and of the Council on the ambient air quality and cleaner air for Europe;
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy;
- Directive 2006/118/EC of the European Parliament and of the Council on the protection of groundwater against pollution and deterioration;
- Directive 2008/105/EC of the European Parliament and of the Council on environmental quality standards in the field of water policy, amending and subsequently repealing Council directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC;
- The Convention on Co-operation for the Protection and Sustainable Use of the River Danube.

Supply of equipment/material/software will contribute towards achievement of the EU *acquis* and EU standards/requirements by providing conditions to improve the current monitoring network and reporting system at the international level. For Danube river monitoring an international programme for routine transboundary monitoring with regular reporting to the coordinating body is in place (Trans National Monitoring Network). The objectives of the TNMN are to support reliable and consistent trend analysis of concentration loads for priority pollutants, support the assessment of water quality and use, and assist in the identification of major pollution sources. It is administered by the International Commission for the Protection of the Danube River (ICPDR).

- Law on Environmental Protection (Official Gazette of the RS, No. 135/04, 36/09);

Monitoring obligation is prescribed in the Law.

- Law on Air Protection (Official Gazette of the RS, No. 36/09, 88/10);

Automatic monitoring of air quality is defined as a recommended method. Therefore, monitoring of air pollutants is one of the issues intended to be solved by this project and by purchasing the necessary equipment.

- The Law on Water (Official Gazette of the RS, No. 30/10);

Existing water quality monitoring is performed only using manual sampling, meaning that the data obtained cannot be used as real-time data or as a basis for an early warning system especially on transboundary rivers.

1.3. Institutional context

The Serbian Environmental Protection Agency (SEPA) as an authority within the MEDEP is responsible for the monitoring of air and water quality. According to the Law on Ministries, SEPA has the following responsibilities and competences:

- Development, harmonization and management of the national environmental information system (monitoring of conditions of environmental media, the development of the cadastre of polluters, etc.);
- Implementation of national monitoring of air and water quality, including the implementation of programs for air quality control, surface water and groundwater, aquifer and precipitation; Management of National Laboratory;
- Collection, processing and unification of environmental data, reporting on environmental conditions and environmental policy implementation;

- Development of procedures for processing and assessment of environmental data;
- Updating data on the Best Available Technologies and practices and their introduction into the area of environmental protection;
- Cooperation with the European Environmental Agency and the EIONET.

According to the Law on Environmental Protection (Official Gazette of the RS, No. 135/04, 36/09), Article 69 (**Provision of Monitoring)** prescribes: "The Republic of Serbia, the Autonomous Province, and local self-government units, within their competencies prescribed by law, shall provide for continuous control and monitoring of the state of the environment (hereinafter referred to as: the monitoring), in accordance with this and special laws.

Monitoring shall be an integral part of the uniform information system of the environment.

The Government shall adopt the programs of monitoring based on special laws.

The Autonomous Province, or local self-government unit shall adopt the program of monitoring on its territory that must be in accordance with the program referred to in paragraph 3 of this Article.

The Republic of Serbia, Autonomous Province and local self-government units shall provide financial resources for performing monitoring."

Article 73: "State authorities, organizations, authorities of the Autonomous Province and local self-governance units, authorised organizations and polluters, are obliged to submit the data on monitoring from Articles 70 and 72 of this Law to the Environmental Protection Agency in a way prescribed by regulations."

Article 74: "The information system shall be run by the Environmental Protection Agency."

Article 75: "The integrated polluter cadastre shall be maintained by the Environmental Protection Agency."

Article 78 (**Access to Information):** "State authorities, authorities of the Autonomous Province, authorities of local self-government units and authorised and other organizations shall regularly, timely, fully and objectively inform the public on the state of the environmental, and occurrences observed in monitoring pollutant levels and emissions, as well as warning measures or development of the pollution which may pose a threat to human life and health, in accordance with this Law and other regulations.

The public shall be entitled to access to the prescribed registers or records containing information and data in accordance with this Law."

2. Gap assessment

The existing network is not modernised to obtain real-time concentration values, which would enable timely reaction to changes and exceeded limit values and improve the monitoring programme for ambient air and air quality assessment.

Existing equipment is not sufficient to merge data, establish a common methodology, process, analyze or present these data at the national level. There is also a lack of equipment for automatic monitoring and calibration at additional locations.

Existing water quality monitoring is performed using manual sampling only, meaning that the data obtained cannot be used as real-time data or as a basis for an early warning system, especially on transboundary rivers, and the existing monitoring network is not in line with the Water Framework Directive. There is a need to establish automatic stations at transboundary locations for continued monitoring of certain water quality parameters as well as IT equipment for processing the data.

3. Financial sustainability

The total cost of investment is EUR 1.75m. After purchasing the equipment and training staff, SEPA will take over the ownership and responsibility for maintenance of the equipment. A source for operational and maintenance costs will be ensured from the Republic budget transferred to SEPA, according to the Law on Environmental Protection: "The Republic of Serbia, Autonomous Province and local self-government units shall provide financial resources for performing monitoring."

Expected life of the equipment is 15 years.

4. Indicative list of equipment (incl. estimated prices based on market analysis and locations)

No	Item	A. of Items	B. Item rate (in EUR)	C. Expected costs (in EUR) C=A x B
1.1.	Automatic water quality station (spare parts, container, basic set of analyzers: temperature, conductivity, pH, oxygen, turbidity, chlorophyl, UV index, automatic sampler. etc.)	4	185,000	740,000
1.2.	Communication centre for real-time water quality data collection including data transmission system (hardware, software and telecommunication equipment)	1	100,000	100,000
1.3.	Laboratory equipment: Gas Chromatograph TOF Mass Spectrometer or Gas Chromatograph with triple quadrupole mass detector	1	360,000	360,000
1.4.	High resolution Light microscope	1	100,000	100,000
1.5.	Software for air quality data collection, analysis, verification and reporting including hardware and telecommunication equipment for data collection from regional and local automatic air quality networks	1	450,000	450 000
Total costs for all items				**1,750,000**

The prices presented above were calculated according to market price analysis and recommendations from earlier studies, projects and strategic documents.

The tender dossier for the Supply contract for IT, software and laboratory equipment as well as for automatic water quality stations will be prepared by the TA. Automatic water quality stations (Item 1.1) will be installed at the following transboundary locations: Danube – Bezdan; Sava – Jamena; Tisa – Novi Knezevac; and outlet profile Danube – Radujevac). The communication centre (Item 1.2) will be installed at the premises of the Serbian Environmental Protection Agency. Laboratory equipment (Items 1.3 and 1.4) will be installed at the National Laboratory of Serbian Environmental Protection Agency. Most of the equipment and software (Item 1.5) for the air quality data collection

system will be installed in SEPA, while part of the equipment and software will be installed in regional and local air quality monitoring network centres (Novi Sad, Belgrade, Pancevo, etc.).

5. Indicative Timetable/scheduling/sequencing

Measure 1.3 Establishment of an integrated environmental monitoring system for air and water quality - will be delivered through one service contract (Operation 1.3.1) and one supply contract (Operation 1.3.2). The tender dossier for the supply contract will be prepared by the TA. The service contract will start operation before the supply contract. Other elements of the service contract, such as training of system users, will take place in parallel with system installation. This means that the supply contract shall end at the same time as completion of the service contract.

Operations	Start of Tendering/ Call(s) for proposals	Signature of contract(s)	Activity Completion
Operation 1.3.1 (Service)	T+1Q	T+4Q	T+12Q
Operation 1.3.2 (Supply)	T+6Q	T+8Q	T+12Q

Year	Year 1												Year 2												Year 3											
Quarter	**Q1**			**Q2**			**Q3**			**Q4**			**Q5**			**Q6**			**Q7**			**Q8**			**Q9**			**Q10**			**Q11**			**Q12**		
Month	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
1.3.1. Service contract			MS									MS																								MS
1.3.2. Supply contract																		MS						MS												MS

Measure 2.1 Development of waste management infrastructure – RWMC "Kalenic"

NEEDS ASSESSMENT FOR THE WORKS/SUPPLY CONTRACTS

1. Background

1.1. Context and rationale

Serbia's population of around 7.3 million generates 2.4 million tonnes of municipal waste per year, but lacks environmental infrastructure for waste management. Landfilling is the only waste disposal method. Only 60% of municipal solid waste is collected in an organised way and disposed at 164 officially registered municipal landfills. Much of the municipal waste goes instead to more than 4,000 unofficial dumpsites, presenting a potential risk for underground and surface water and soil, due to the high concentration of organic matter and heavy metals.

Less than 15% of waste is buried in landfills that comply with EU standards. The existing disposal sites do not generally meet the technical requirements of sanitary landfills and their capacity in most municipalities is already exhausted. Most landfills operate without valid permits, and are not equipped with leachate collection systems, bottom lining and landfill gas collection systems. Air pollution is caused by uncontrolled burning of waste dumps and containers and by emissions of methane from landfills, while landscape degradation occurs as a result of improper disposal of waste. Only 4% of municipal solid waste is recycled in Serbia, compared with over 40% in the EU.

The Government adopted the new National Waste Management Strategy in April 2010, which envisages the creation of 26 waste management regions, leading to the adoption of regional waste management plans and centres. It sets a target date of 2020 for the provision of municipal solid waste collection services and fully compliant landfills for more than 90% of the Serbian population. The National Environmental Approximation Strategy (NEAS) was adopted in October 2011, and estimates the capital investment of meeting the environmental acquis requirements for municipal solid waste systems at €601 million (2010 prices).

The proposed project would enable the construction and equipping of the Kalenic regional waste management centre (RWMC) based on a landfill and supporting infrastructure for the Kolubara region, serving 11 municipalities with a population of approximately 370,000: Valjevo, Ub, Lajkovac, Ljig, Mionica, Osecina, Vladimirci, Koceljeva, Barajevo, Lazarevac and Obrenovac. The regional landfill will receive waste directly, and from three Transfer Stations (TS) in Valjevo, Lazarevac and Koceljeva, and one Transfer Point (TP) with a separation facility and composting plant (in Obrenovac).

A full set of documentation for the project, including tender documentation, is currently being finalised by the IPA 2007 project "Project Preparation Facility" (PPF2), following earlier work funded by Spanish bilateral assistance (July-December 2010). This documentation will be completed by the end of March 2012. Complementary infrastructure for the collection and transfer of solid waste at the level of individual municipalities has been financed through bilateral donor assistance and municipal funds (further details are provided in section 1.4).

1.2. Legal context (including requirements from EU *acquis* and new legislation)

When constructed, the proposed regional waste management centre will fully comply with the following EU legislation and standards:

- The Waste Framework Directive (2008/98/EC);
- The Landfill Directive (1999/31/EC);
- The Packaging and Packaging Waste Directive (1994/62/EC);
- The Batteries Directive (2006/66/EC);

- The Waste Electronic and Electrical Equipment Directive (2002/96/EC);
- Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC (2003/33/EC).

These directives and decision have been largely[7] transposed into Serbian legislation through the following acts, to which the Kalenic RWMC will also fully conform:

- Law on Environmental Protection (OG RS, No. 135/04, 36/09);
- Law on Waste Management (OG RS, No. 36/09, 88/10);
- Law on Packaging and Packaging Waste (OG RS, No. 36/09);
- Decree on disposal of waste in landfills (OG RS, No 92/10);
- Decree on products which become special waste streams after use (OG RS, No. 54/10);
- Decree on criteria for calculating fees for packaging or packaged products and exemption from these fees (OG RS, No. 08/10);
- Law on Mining and Geological Research (OG RS, No. 88/11).

The preparation of project documentation and performance of the works contract will also be fully compatible with the Republic of Serbia's Law on Planning and Construction.

1.3. Institutional context

The Ministry of Energy, Development and Environmental Protection (MEDEP) is the key institution in the waste sector, having responsibilities for policy, legislation and control (permitting), assisted by the Serbian Environmental Protection Agency, which is responsible for data collection/reporting. Practical implementation of waste collection and management is vested in local self-government units. Most municipalities establish Public Utility Companies (PUCs) to provide waste management services; however, most of these are too small to achieve the technical or cost efficiencies required of a modern waste management operation.

Regarding the Kolubara region, waste management is currently handled by 11 separate PUCs, which are each responsible for collection, transport and disposal, and directly and indirectly charge the population for these services. In order to establish a regional system, an inter-municipal agreement on waste management was signed in April 2005 between the 11 municipalities. Until recently, the Directorate for Development of the Kolubara District has been managing the process of project preparation on their behalf, in accordance with a Memorandum of Understanding signed with the MEDEP the European Integration Office (SEIO) and the 11 municipalities.

On March 2012, an inter-municipal PUC for solid waste management in the Kolubara region was established as investor and operating company, named "EKO Tamnava" Ltd Ub. During the project's operational phase, the general function of "EKO Tamnava" Ltd Ub will be to organise and coordinate the delivery of regionalised waste management services, on behalf of its members and other municipalities within the region, on a commercial basis. "EKO Tamnava" Ltd Ub contains the following bodies: the General Assembly, the Supervisory Board and the Management Board. All 11 municipalities have committed themselves through the inter-municipal agreement to dispose their waste at the proposed RWMC, once it is functioning. Collection of waste at the local level will remain the responsibility of individual municipalities and their PUCs, and will not become part of

[7] For example, according to the NEAS, adopted in October 2011, the planning provisions of the Law on Waste Management do not adequately address the obligation contained in the Waste Framework Directive to draw up Waste Management Plans. Amendment of the Law on Waste Management will be required to complete transposition.

the functions of "EKO Tamnava" Ltd Ub. In accordance with national policy, the existing waste disposal sites will be progressively closed and will be replaced with regional treatment and disposal facilities. The coordination of the effective and efficient operation of these facilities and associated transfer infrastructure will be a core function of "EKO Tamnava" Ltd Ub.

1.4. Gap assessment

The Kolubara region currently lacks a proper sanitary landfill, to the detriment of the environment and public health. Municipal waste is currently disposed of in 11 registered dumpsites and on wild dumps. While waste service and collection from urban areas is well organised, collection from suburban areas is organised from time to time, and rural areas are not covered at all. According to analysis in the draft feasibility study, containers for waste collection do not fulfil needs in most cases, and the vehicle fleet is very old, 15 years on average. While the Regional Waste Management Plan estimated that 330 tonnes per day were being generated in 2005, this is expected to have increased to about 550 tonnes per day by 2012. All the dumpsites need to be rehabilitated and closed when the regional landfill is constructed and operational.

The proposed project will construct and equip a regional landfill, in accordance with EU Waste Framework Directive 1999/31/EC and the Serbian Law on Waste Management. It will include facilities for separation and sorting, recycling and biological treatment of municipal solid waste.

IPA funding is sought to implement the following three contracts:

- **Works contract** under Yellow FIDIC for construction of the Regional Waste Management Centre, including preparatory works, landfill body, entry/exit area, administrative building and parking lot, recycling yard, transport area, Materials Separation and Recovery Facility (MRF), organic matter composting and curing facilities, landfill gas flare, wastewater treatment; green belt, infrastructure and site roads within the RWMC, as well as for landfill equipment (compactor, wheeled loader, bulldozer, ADT, forklift, mini loader and stationary press);
- **Supply contract** for transport fleet (trucks and roll containers) for the RWMC; and
- **Service contract** for technical assistance for the supervision of works and supply of equipment, project management support and public relations activities, and Financial and Operational Performance Improvement Programme (FOPIP) services to train operating staff and other stakeholders and thereby ensure the effective functioning of the RWMC.

Under the parallel co-financing principle, national and local sources will fund the works and supplies contracts for the TS/TP, recycling yards and local collection equipment, to complete the first phase of the integrated regional waste management system.

The proposed project is fully in line with the Needs of the Republic of Serbia for International Assistance in the period 2011-2013, the National Sustainable Development Strategy, the National Programme for Environmental Protection 2010-2019, the National Waste Management Strategy 2010-2019, and the National Environmental Approximation Strategy. It is also in line with the Regional Waste Management Plan for Kolubara, revised in accordance with new Law on Waste Management and adopted by MEDEP in 2010, and the General Regulation Plan for area of TE "Kolubara B", adopted by the municipality of Ub (Official Gazette of Ub, no. 1/07). It will enable compliance with the Landfill Directive and associated EU and Serbian legislation, and establish an integrated waste management system, with pre-treatment of waste before final disposal or landfill, and an increase in recovery and recycling, and will thus ultimately result in a cleaner and safer environment in the Kolubara region. The draft feasibility study, currently being finalised, shows a positive economic rate of return, indicating that the project is desirable from a socio-economic perspective.

2. Financial sustainability

The sustainability of the Kalenic RWMC has been considered within the feasibility study (FS) being finalised by the IPA 2007 technical assistance project 'PPF2'.

The total cost of the investment proposed under IPA 2012 is **€23,400,000**, of which **€17,000,000** is sought as the IPA contribution (72.6%). The scope of the project is in line with the description in section 1.4 (constructing and equipping the RWMC, TS/TP and recycling yards, and all associated stationary and mobile equipment, including replacement of outmoded collection vehicles), with the aim of ensuring a fully functioning centralised waste management system to serve the whole of Kolubara region, when the works contract has been executed. The phase 1 investment excludes, however, construction work on TS which pre-dates the IPA 2012 Financing Agreement (such as the construction of the Obrenovac Transfer Point and Valjevo Transfer Station). It also excludes the closure of the old dumpsites (over €5 million), which will be a necessary and consequent associated cost, but considered outside the scope of this IPA project. The time horizon for the investment is 30 years, in keeping with the EU Guide to Cost-Benefit Analysis (July 2008) for waste sector projects. Subsequent follow-up phases during the reference period will include new landfill cells, replacement of RWMC, TS and recycling yard equipment and transport vehicles, closure of used-up landfill cells, and ultimately the monitoring, closure and after-care of the RWMC itself.

Within the situation and demand analysis, the FS has projected population, per capita waste generation rates and composition to produce waste quantities by material type, primary recycling rates, and recovered material prices. The municipal PUCs currently charge collecting fees in the region amounting to about €10 per household per year, which is below the break-even point when all the hidden costs faced by the PUCs are taken into account, such as depreciation and replacement costs, non-core business income, indirect subsidies, etc. The minimum additional cost to finance the regional waste management system will be in the region of €20 per tonne, on top of the existing collection cost. (By way of comparison, the typical costs in Austria and Germany are around €130-150 per tonne, while in Croatia the level is around €50-70 per tonne for collection, part-recycling and sanitary land-filling only, which will increase to around €100-120 per tonne when their RWMCs become operable). This level is considered affordable, based on average household income in the Kolubara region of €405 per month (2010 data), and an affordable waste tariff of €6.08 per household per month, which represents 1.5% of household income, well within the 4% that is deemed to be the ceiling on affordability for utility costs. The FS also shows positive net cash flow for the RWMC. The consultancy services under the IPA project, specifically the FOPIP support, will also enhance the sustainability of the PUC itself.

In addition to the Feasibility Study and the planning documents (Urban Design Detailed Regulation Plan), the Kalenic RWMC will have a full set of documentation, prior to signing of the Financing Agreement. The study on the selection of a micro location for the regional landfill and the recycling centre was issued in November 2005; the location permit can be issued based on this document, and hence there is no need to produce a pre-feasibility study and general project design. The preliminary project design is being prepared by PPF2 (RWMC working zone and landfill body and pilot transfer station). The decision on the scope and content of the EIA was issued by MEDEP; the EIA is being prepared by IAUS, funded by the Serbian Environmental Protection Fund. Tender documents will be prepared by PPF2 by end of February 2012. The construction permit will be issued by MEDEP, according to Article 133 of the Law on Planning and Construction.

The proposed location for the regional landfill is in the middle of Thermo Power Plant "Kolubara B" area, between the opencast mine "Tamnava – West field" and the opencast mine "Tamnava – East field".

The size of the landfill area, including transport corridor and protective zone is 75.45 hectares on two municipalities: Ub (Kalenic) and Lajkovac (Mali Borak). Total capacity will be 1,718 million tonnes to the year 2041. The site is currently owned by the state enterprise Electric Power of Serbia (EPS), but will be transferred to the inter-municipal PUC "EKO Tamnava", in accordance with the agreement between EPS and the Directorate for Development of Kolubara District, which was acting as investor prior to the PUC's establishment in March 2012 . The project scope and costs are based on the prior reclamation and rehabilitation of the site by EPS, in accordance with Articles 129 and 130 of the Law on Mining and Geological Research.

3. Indicative list of contracts (incl. estimated prices based on market analysis and locations)

No	Item	A. Unit rate per works item	B No. of works items	C Expected costs (in EUR) C = A x B
Operation 2.1.1: Works contract for RWMC				
1.1	General earthworks, roads and plateaus	3,259,580	1	3,259,580
1.2	Entrance area	216,200	1	216,200
1.3	Administrative and personnel area	568,000	1	568,000
1.4	Transport centre area	255,200	1	255,200
1.5	Waste separation area	3,320,000	1	3,320,000
1.6	Composting area	1,879,000	1	1,879,500
1.7	RWMC infrastructure	806,200	1	806,200
1.8	Landfill body, Phase 1	2,635,840	1	2,635,840
1.9	Landfill degassing, Phase 1	171,400	1	171,400
1.10	Surface water collection	10,960	1	10,960
1.11	Green belt and landfill planting, Phase 1	87,150	1	87,150
1.12	Electrical installations, telecommunications, automation and security	292,000	1	292,000
	a) Sub-total			***13,502,030***
1.13	Landfill equipment			
	Compactor	350,000	1	350,000
	Wheel loader	150,000	2	300,000
	Bulldozer	250,000	1	250,000
	Roll-arm tipper for baled and bulky waste	70,000	1	70,000
	Tipper truck	45,000	1	45,000
	Truck lifter for transport of dispersed waste and soil	50,000	1	50,000
	Forklift	50,000	2	100,000
	Mini loader Bob-Cat	35,000	1	35,000
	Metal containers 5 m3	500	10	5,000
	Special containers	30,000	1 lot	30,000
	Car, caravan type	11,000	3	33,000
	Balance, 1,000 kg, scale 0.5 kg	2,000	1	2,000
	b) Sub-total			***1,270,000***
	Sub-total (a+b)			***14,772,030***
Operation 2.1.2 Supply contract for RWMC (TSs to RWMC)				
1.14	Transport fleet	1,005,000	1	1,005,000
	Truck 24 t capacity	150,000	6	***900,000***
	Closed 32 m3 containers	10,000	8	***80,000***

	Open 32 m3 containers	5,000	5	***25,000***
	Sub-total			***1,005,000***
Operation 2.1.3: Service contract for supervision & FOPIP				
1.15	Technical assistance	1,200,000	1	1,200,000
	Sub-total			***1,200,000***
Operation 2.1.4: Works and supply contracts for Transfer Stations and Transfer Point (local co-financing)				
1.16	Construction of TS Lazarevac & Koceljeva, installations & equipment	1,200,000	1	1,200,000
1.17	Installations & equipment for TP Obrenovac	118,000	1	118,000
1.18	Mobile equipment for TS Lazarevac, Valjevo and Koceljeva	240,000	1	240,000
	Sub-total			***1,558,000***
Operation 2.1.5: Works and supply contract for construction of recycling yards (local co-financing)				
1.19	Construction and equipping of recycling yards	730,000	1	730,000
	Sub-total			***730,000***
Operation 2.1.6: Supply contract for replacement of collection equipment (local co-financing)				
1.20	Collection vehicles	2,305,000	1	2,305,000
1.21	Containers	1,875,000	1	1,875,000
	Sub-total			***4,180,000***
TOTAL				**23,445,030**

All prices are market prices and based on calculations from the feasibility study.

4. Timetable/scheduling/sequencing

Please see spreadsheet for the timing of works, supplies and service contracts.

Year	2012 (Year 1)												2013 (Year 2)												2014 (Year 3)												2015 (Year 4)											
Quarter	Q1			Q2			Q3			Q4			Q5			Q6			Q7			Q8			Q9			Q10			Q11			Q12			Q13			Q14			Q15			Q16		
Month	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Operations 2.1.1: Works contract for RWMC									MS						MS																								MS										
Operation 2.1.2: Supply contract for RWMC															MS						MS																		MS										
Operation 2.1.3: Service contract for supervision and FOPIP			MS						MS																														MS										

Measure 2.1 Development of waste management infrastructure – RWMC Subotica

NEEDS ASSESSMENT FOR THE WORKS/SUPPLY CONTRACTS

1. Background

1.1. Context and rationale

The region, which is composed of one City (Subotica) and 6 municipalities (Backa Topola, Kanjiza, Senta, Novi Knezevac, Mali Idjos and Coka), does not have a proper sanitary landfill. The existing landfills in each municipality result in a negative impact on the environment and also on the general public health. Waste management in the municipalities of the Subotica region is handled by the PUCs. These companies are responsible for collection, transport and disposal and they directly and indirectly charge the population for these services. The economy of the whole region is dominated by the City of Subotica.

1.2. Legal context (including requirements from EU *acquis* and new legislation)

When constructed, the proposed Regional Waste Management Centre will fully comply with the following EU legislation and standards:

- The Waste Framework Directive (2008/98/EC);
- The Landfill Directive (99/31/EC);
- The Packaging and Packaging Waste Directive (94/62/EC);
- Directives for Specific Waste Streams,
- Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 99/31/EC (2003/33/EC).

These directives and decision have been largely transposed into Serbian legislation through the following acts, with which RWMC Subotica will also be fully compliant:

- Law on Environmental Protection (Official Gazette RS, No. 135/04, 36/09);
- Law on Waste Management (Official Gazette RS, No. 36/09, 88/10);
- Law on Packaging and Packaging Waste (Official Gazette RS, No. 36/09);
- Decree on disposal of waste on landfills (Official Gazette RS, No. 92/10);
- Decree on products which become special waste streams after use (Official Gazette RS, No. 54/10);
- Decree on criteria for calculating fees for packaging or packaged products and exemption from these fees (Official Gazette RS, No. 08/10);
- Law on Mining and Geological Research (Official Gazette RS, No. 88/11).

The preparation of project documentation and performance of the works contract will also be fully compatible with the Law on Planning and Construction (Official Gazette RS, No. 72/09, 81/09, 24/11).

The proposed project is fully in line with the Needs of the Republic of Serbia for International Assistance in the period 2011-2013, the National Waste Management Strategy 2010-2019, the National Sustainable Development Strategy, the National Programme for Environmental Protection 2010-2019, and the National Environmental Approximation Strategy. It is also in line with the Regional Waste Management Plan for Subotica region. It will enable compliance with the Landfill

Directive and associated EU and Serbian legislation. The project is of a preventive nature regarding pollution from present and future development and of a curative nature, due to the fact that it makes possible the closure and rehabilitation of existing landfills and dumpsites.

1.3. Institutional context

The MEDEP is the competent authority for waste management. The Ministry holds the general responsibility for the state administration in the areas of environment, spatial and urban planning including waste management. Construction permits for regional landfills, are issued by the MEDEP (or Vojvodina Province, as in the case of Subotica Region) according to Article 133 of the Law on planning and construction.

The Secretariat for Environmental Protection and Sustainable Development of the Autonomous Province of Vojvodina has responsibilities for environmental protection and the waste sector. Responsibilities in construction and operation permits issuing belong to the Secretariat for Architecture, Urban Planning and Construction of the Autonomous Province of Vojvodina. The Secretariat for Environmental Protection and Sustainable Development was established in 2002 (Article 2 of the expired Law on the establishment of certain powers of the Autonomous Province of Vojvodina, Official Gazette RS, No. 21/02), and is responsible for the supervision of the application of environmental legislation at Provincial level, excluding supervision of hazardous waste. With regard to the Subotica regional landfill, the Secretariat will be responsible for giving consent to the construction permit by issuing an EIA permit, as well as the inspection of the existing dumpsites' closure and of the regional landfill complex operation. Construction permits for regional landfills are issued by the Provincial Secretariat for Architecture, Urban Planning and Construction.

Municipal waste management is vested in local self-government units. Most municipalities establish PUCs to provide waste management services; however, most of these are too small to achieve the technical or cost efficiencies required of a modern waste management operation.

There are 7 PUCs, one in each municipality in the Subotica region. In 2006, based on the guidelines given in the National Waste Management Strategy and the Study on spatial distribution of regional landfills and transfer stations in the area of AP Vojvodina, the municipalities that constitute the region, Subotica, Senta, Coka, Backa Topola, Mali Idjos and Kanjiza (without the municipality of Novi Knezevac which joined the Region in 2011) signed the "Agreement on cooperation in the formation of region for municipal waste management and establishment of the mutual company on the territory of Subotica". Pursuant to Article 3 of the Agreement, the objective of the Agreement is proper management of municipal waste with the aim of protection of public health, environment, waters, soil and air. In order to achieve the set objectives, the municipalities started with the establishment of a mutual company.

On November 5, 2007 all the municipalities signed and verified the Contract on the establishment of the Limited Liability Company "Regionalna deponija" Ltd., Subotica, for municipal waste management on the territories of the municipalities of Backa Topola, Coka, Kanjiza, Mali Idjos, Senta and Subotica. The Company has been registered at the Business Registers Agency, based on the decision No. BD 146624/2007, since December 3, 2007. The founders are six municipalities of the region. On February 18, 2008, the Company was registered as a taxpayer in the Tax Administration, when it started with the activities for which it was registered. The establishment of the Company was done in accordance with the Law on Companies (Official Gazette RS, No. 125/04).

1.4. Gap assessment

The region lacks a proper sanitary landfill. The existing landfills in each municipality can have a negative impact on the environment and also on the general public health. Waste management in the 7 municipalities of Subotica region is handled by the 7 PUCs. While waste service and

collection from urban areas is well organised, collection from suburban areas is organised from time to time, rural areas are not covered at all. According to analysis in the feasibility study, containers for waste collection do not fulfil the needs in most cases, and the vehicle fleet is very old, 15 years on average. Waste has been disposed at the landfills without being treated. Primary selection and recycling are still at an early stage, although the PUC Subotica has established a process that shows initial positive results in collecting plastic and paper. Aside from the PUC Subotica, the other official landfills in the region are not equipped with weighbridges. The large number of illegal dump sites makes the determination of waste quantity more difficult. Furthermore the whole Region is not covered with waste collection and transport services. The total quantity of generated waste by the population in the municipalities in the Region, in 2009, was 90,502 t.

The proposed project will construct and equip a RWMC, in accordance with EU Waste Framework Directive 99/31/EC and the Serbian Law on Waste Management. It will include a regional landfill and facilities for separation and sorting, recycling and biological treatment of municipal solid waste.

IPA funding is sought to implement the following three contracts:

- **Works contract** under Yellow FIDIC for construction of the Regional Waste Management Centre Subotica, including Preparatory works; Landfill body (Non-hazardous waste landfill); Entry/exit area with double weighbridge, meter house, reception and wheel wash area; Administrative building and parking lot; Recycling yard with staff premises and canopy shed; Transport area with parking, workshops and staff premises; Materials Separation and Recovery Facility (MRF); Organic matter composting and curing facilities; Landfill gas flare; Wastewater treatment; Green belt, infrastructure and site roads within the RWMC, landfill equipment including compactor, wheeled loader, bulldozer, bobcat, balance, vertical press etc, and
- **Works contract** under FIDIC Red Book for construction works and equipment for 4 Transfer Stations (Subotica, Backa Topola, Senta and Kanjiza);
- **Supply contract** for transport fleet from transfer stations to the landfill, which will include trucks 24 t capacity and roll containers of 32 m^3, will ensure efficient performing of RWMC and TS.
- **Service contract** for technical assistance which will focus on 3 main stages during the priority phase: Financial and operational performance improvement programme (FOPIP); Project Management Support and Public Relation Activities; and Construction Works and Equipment Supplies Supervision. Technical Assistance should help implement the project by putting in place a reliable waste management system and ensuring the effective functioning of the RWMC Subotica.

Under the parallel co-financing principle, local sources will fund the works for construction of recycling yards and supply of collection vehicles and containers.

- **Works contract** for construction and equipment of recycling yards (local co-financing), which will include recycling yards in Mali Idjos, Novi Knezevac and Coka.
- **Supply contract** for collection trucks and containers will represent local co-financing for Subotica, Backa Topola, Senta, Coka, Novi Knezevac and Mali Idjos.

2. Financial sustainability

The sustainability of the RWMC Subotica has been considered within the feasibility study (FS) being finalised by the IPA 2008 technical assistance project 'PPF3'.

The total cost of the investment proposed under IPA 2012 is **€20,750,000**, of which **€16,850,000** is sought as the IPA contribution (81.4%). The 1st Phase is defined in 2 parts, one for consideration

under the IPA 2012-2013 pipeline programming and will cover investment for the construction and equipping of the RLF, the Transfer Stations and all associated stationary and mobile equipment, as described above. During Phase 1 the whole of the Regional Waste Management Centre and Transfer stations infrastructure will be put in place, except certain future landfill cells. The other part of the 1st Phase covers investment that will not be included in the IPA finance, namely the new connection road, the closure of old landfills and wild dumpsites, the procurement of additional collection vehicles and the construction of separate recycling yards. The aim of the project is to ensure a fully functioning centralised waste management system to serve the whole of the Subotica region, when the works contract has been executed. The project generates positive annual and cumulative cash flow throughout the 30 year time horizon of the analysis. That is logical because the revenues have been estimated under the full cost recovery assumption.

The PUCs, at the moment, are collecting fees from domestic users in the region amounting to about 10 €/yr. per household but the charges remain below the break-even point, when all of the hidden costs such as depreciation and replacement costs, non-core business income, indirect subsidies, etc., are taken into account. In actual fact, according to the IFC study, the real cost of collection is much higher, but the difference is borne by businesses paying much higher tariffs. This has to change in order to be compatible with EU policies. In 2011, according to the waste calculations, each household produces on average about 1.0 ton/yr., so the real collection cost is about 30 €/ton. Another 25 €/ton is expected to be the cost of the new Regional Waste Management System, and another €12/ton the cost due to recovery of investment. Subotica region affordable waste tariff is 5 € per household per month in 2011 or 60 € per year, which represents 1.3% of household income. This cost should be offset for the collection PUCs, either by subsidies from the municipal budget or by profits from the sale of the recyclable materials recovered before transporting the waste to the landfill. The cost of possible loans has not been included. The consultancy services under the IPA project, specifically the FOPIP support, will also enhance the sustainability of the PUC itself.

In addition to the feasibility study and the planning documents (Urban Design Detailed Regulation Plan), the RWMC Subotica will have a full set of necessary documentation, prior to signing of the Financing Agreement. Feasibility study and preliminary design are developed in line with Serbian legislation, being revised and extended in line with DG Regio requirements, by the EU funded PPF3 project. The EIA is prepared and it is in procedure in line with the EIA Law. A location permit will be issued in September 2012. Tender documentation for Subotica regional waste management centre, environmental impact assessment (EIA) and feasibility study including CBA will be prepared through IPA 2008 “Project Preparation Facility” by May 2012.

The chosen location of the regional landfill is situated on the territory of the City of Subotica, 19.7 km south-east from Subotica, (i.e. east from the main highway E-75), and between the settlements of Bikovo, Orom and Novo Selo. It represents agricultural land of III class in its present state (i.e. grazing land or land well suited to pasture improvement). The preliminary design report (PDR) indicates that the regional landfill occupies an area of 46 ha, out of which 32.6 ha is planned for waste disposal. The land is owned by Bikovo Municipality.

3. Indicative list of contracts (incl. estimated prices based on market analysis and locations)

No	Item	A Unit rate per works item	B No. of works items	C Expected costs (in EUR) C = A x B
Operation 2.1.7: Works contract for RWMC - landfill				
1.1	Roads and plateaus	1,558,266	1	1,558,266
1.2	Entrance area	80,700	1	80,700

1.3	Administrative and personnel area	235,700	1	235,700
1.4	Service centre area	253,300	1	253,300
1.5	Waste separation area	2,529,555	1	2,529,555
1.6	Composting area	1,222,000	1	1,222,000
1.7	RWMC infrastructure	1,209,708	1	1,209,708
1.8	Landfill body, Phase 1 (hydro-insulation, leachate collection system, surrounding channel, landfill degassing, fire protection, monitoring systems, greenbelt and landfill planting)	2,642,326	1	2,642,326
1.9	Electrical installations, telecommunications, automation and security	393,000	1	393,000
1.10	Landfill equipment		*total*	*1,214,800*
	Compactor	350,000	1	350,000
	Wheeled loader	150,000	1	150,000
	Bulldozer	150,000	1	150,000
	Roll-arm tipper for baled and bulky waste	70,000	1	70,000
	Tipper truck	60,000	1	60,000
	Truck lifter for transport of dispersed waste and soil	50,000	1	50,000
	Forklift	50,000	2	100,000
	Mini loader Bob-Cat	38,000	1	38,000
	Metal containers 5 m^3	600	5	3,000
	Metal containers 1.1 m^3	230	10	2,300
	Car, caravan type	11,000	1	11,000
	Vertical press	10,000	1	10,000
	PET shredder	8,000	1	8,000
	Balance, 1,000 kg, scale 0.5 kg	2,000	1	2,000
	Wire containers	50	10	500
	Special containers	10,000	1	10,000
1.11	Contingencies			800,000
	Sub-total			***11,939,355***
Operation 2.1.8: Works contract for Transfer stations				
1.12	Transfer station Subotica	612,020	1	612,020
1.13	Transfer station Backa Topola	611,800	1	611,800
1.14	Transfer station Senta	493,800	1	493,800
1.15	Transfer station Kanjiza	619,800	1	619,800
	Sub-total			***2,337,420***
Operation 2.1.9: Supply contract for Transport Fleet (TSs to Landfill)				
1.16	Transport fleet			
	Truck 24 t capacity	150,000	7	1,050,000

	Closed 32 m^3 containers	10,000	14	140,000
	Open 32 m^3 containers	5,000	10	50,000
	Sub-total			***1,240,000***
Operation 2.1.10 Service contract for supervision & FOPIP				
1.17	Technical assistance	1,200,000	1	1,200,000
1.18	Contingencies			100,000
	Sub-total			***1,300,000***
Operation 2.1.11: Works contract for construction and equipment of recycling yards (local co-financing)				
1.19	Construction of recycling yards (Mali Idjos, Novi Knezevac, Coka)			
	Road and plateaux	31,620	3	94,860
	Buildings utilities and works	69,200	3	207,600
	Green belt	1,170	3	3,510
	Installation and equipment	24, 690	3	74,070
1.20	Mobile equipment for recycling yards			
	4x4 forklift telehandler	60,000	3	180,000
	Vertical press/baler machine	10,000	3	30,000
	Weigh balance	2,000	3	6,000
	Skid steer loader (bobcat)	38,000	3	114,000
	Containers	3,250	3	9,750
	Sub-total			***719,790***
Operation 2.1.12: Supply contract for collection trucks and containers (local co-financing)				
1.21	Subotica collection vehicles and containers	1,730,500	1	1,730,500
1.22	Backa Topola collection vehicles and containers	258,900	1	258,900
1.23	Senta collection vehicles and containers	269,500	1	269,500
1.24	Coka collection vehicles and containers	331,000	1	331,000
1.25	Novi Knezevac collection vehicles and containers	329,000	1	329,000
1.26	Mali Idjos collection vehicles and containers	270,000	1	270,000
	Sub-total			***3,188,900***
TOTAL				**20,725,465**

All prices are market prices and based on calculations from the feasibility study. Supervision is included in the above table (operation 2.1.9) and the indicative timetable is in the following section 4.

4. Timetable/scheduling/sequencing

Please see spreadsheet for the timing of works, supplies and service contracts.

Year	2012 (Year 1)												2013 (Year 2)												2014 (Year 3)												2015 (Year 4)											
Quarter	Q1			Q2			Q3			Q4			Q5			Q6			Q7			Q8			Q9			Q10			Q11			Q12			Q13			Q14			Q15			Q16		
Month	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Operations 2.1.7: Works contract for RWMC									MS						MS																								MS									
Operations 2.1.8: Works contract for TS															MS						MS																											
Operation 2.1.9: Supply contract for RWMC															MS						MS																		MS									
Operation 2.1.10: Service contract for supervision and FOPIP			MS						MS																													MS									

Measure 2.2: Improvement of air quality through reduction in dust emissions from thermal power plants (TPPs)

NEEDS ASSESSMENT FOR THE DESIGN & WORKS CONTRACT

1. Background

Measure 2.2 Improvement of air quality through reduction in dust emissions from thermal power plants (TPPs) of the Sector Fiche – Strengthening System of Environment Protection and Climate Change, will be implemented through one Works contract and one Service contract, both financed by EU IPA. The Works contract with two lots will include dismantling of old electrostatic precipitators and completion, installation and testing of new equipment for TPP Nikola Tesla A, Unit A3 and for TPP Morava, while the Service contract will cover supervision of works. In addition, there will be one Works contract financed by PE EPS, running in parallel.

1.1 Context and rationale

Energy infrastructure in Serbia is aged and cannot meet EU directives without significant investments. PE EPS has a huge impact on the environment due to its activities: coal production and electricity generation, distribution and trade.

The major part of air pollution results from the combustion of low-quality lignite and engine fuel. Lignite has a low calorific value and high moisture content, and its combustion produces high quantities of fly ash, sulphur and nitrogen oxides. Pollution from lignite-fired power stations has been and still is a serious problem in Serbia. One of the priority environmental objectives within the energy sector is reducing dust emission from large combustion plants.

Air pollution emission from TPP contributes to the emergence of respiratory illnesses, especially among children, as well as to acid rain. This pollution has a harmful impact on crops, agricultural products and forests. The reduction of pollutants will improve air quality around the TPPs, the health of the working population and the youngest population will be improved, with all direct and indirect effects: reduction of health costs, both curative and preventive for all population levels and age groups; increased efficiency of the working population and reduced pollution of agricultural areas and cross-border pollution.

By implementation of this project, dust emission will be reduced from 183 mg/Nm^3 in TPP Nikola Tesla A Unit A3 to ≤ 30mg/Nm^3 and from 484 mg/Nm^3 in TPP Morava to ≤ 50mg/Nm^3.

Justification for this project stems from Serbia's commitments under the Energy Community Treaty, which introduces the legal requirement for Serbia to implement the EU *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 Combustion Plant Directive). TPP Nikola Tesla A and TPP Morava are required to obtain an IPPC permit until 2015 in accordance with the Law on Integrated Pollution Prevention and Control (Official Gazette of the Republic of Serbia, No. 135/04) and also in accordance with the Decree on determination of IPPC permit application submission dynamics (Official Gazette of the Republic of Serbia, No. 108/08). One of the conditions for issuing the IPPC permit is operational harmonization with air emission limit values, including dust emission. The project must be implemented by 2015 to fulfil Serbian and EU legal requirements within the prescribed deadline, and to obtain the IPPC permit.

1.2 Legal context (including requirements from the EU acquis and new legislation)

List of relevant EU Directives:

- Large Combustion Plants Directive (LCP) - Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants;
- Air Quality Framework Directive - Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management (OJ L 296, 21.11.1996, p. 55-63);
- Ambient Air Quality and Cleaner Air for Europe Directive (CAFE) - Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe;
- Limit Values for SO_2, NO_x, NO_2, Particulate Matter and Lead Directive - Council Directive 1999/30/EC of 22 April 1999 relating to limit values for Sulphur Dioxide, Nitrogen Dioxide and oxides of Nitrogen, Particulate Matter and Lead in ambient air (OJ L163, 29.06.1999, pp.41-60);
- Integrated Pollution Prevention and Control Directive (IPPC) - on 24th November 2010, the European Parliament and the Council adopted a new Directive on industrial emissions (integrated pollution prevention and control) 2010/75/EU, which entered into force on 6th January 2011).

In 2006 the Republic of Serbia ratified the Treaty Establishing the Energy Community, which requires certain commitments of the signatories (for non EU member countries) in terms of harmonisation of national legislation with the EU *acquis*. The Energy Community Treaty introduces the legal requirement for Serbia to implement the EU environmental *acquis*. Annex II of the Treaty sets the deadline of 31 December 2017 for implementation of Directive 2001/80/EC (the Large Combustion Plant Directive), which is a relatively short period for such a major programme of works, and with a high cost.

Reconstruction and replacement of electrostatic precipitators at TPP Nikola Tesla A and TPP Morava will reduce air pollution. Reduction of emissions will improve the air quality around the TPPs, the health of the working and youngest population will be improved, with all direct and indirect effects: reduction of health costs, both curative and preventive for all population levels and age groups; increased efficiency of the working population and reduced pollution of agricultural areas and cross-border pollution.

Reference list of relevant laws and regulations:

- Law on Environment Protection (Official Gazette RS, No. 135/04, 36/09, 72/09);
- Law on Integrated Pollution Prevention and Control (Official Gazette RS, No. 135/04);
- Law on Air Protection (Official Gazette RS, No. 36/09).
- Energy Law (Official Gazette RS, No. 57/2011)

1.3 Institutional context

Public Enterprise "Electric power industry of Serbia" (hereinafter: PE EPS) was established by Decision of the Government of Serbia which entered into force on 1 July 2005. The basic task of PE EPS is to meet all the electric power requirements of the economy and inhabitants of the Republic of Serbia including the following activities: 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; and engineering. PE EPS is 100% owned by the Republic of Serbia. According to capital valuation and with a staff of 34,130 employees (including employees from Kosovo) as of 31 December 2010 PE EPS is the largest enterprise in the country. PE EPS supplies electric power to 3,499,358 million customers on the territory of Serbia (without Kosovo).

PE EPS is vertically integrated and consists of 11 corporate enterprises: facilities for electricity generation, facilities for coal production, processing and transport, and electricity distribution. The installed capacity of PE EPS power plants amounts to a total of 8,359 MW, as follows:

- in lignite-fired thermal power plants - 5,171 MW;
- in gas-fired and liquid fuel-fired combined heat and power plants - 353MW;
- in hydro power plants - 2,835 MW.

In addition, PE EPS operates 3 power plants of total capacity 461 MW which are not in its ownership.

Electric power generation in PE EPS is set up in 5 economic associations (PLC) as follows:

Thermal Power Plants (TPPs):

- TPPs "Nikola Tesla" plc with main office in Obrenovac;
- TPPs and Mines "Kostolac" plc with main office in Kostolac.

Hydro Power Plants (HPPs):

- HPPs "Djerdap" plc with main office in Kladovo;
- HPPs "Drinsko - Limske" plc with main office in Bajina Basta.

Combined Heat and Power Plants (CHPPs):

- CHPPs "Panonske" plc with main office in Novi Sad.

The subsidiaries of Economic Association TPPs “Nikola Tesla" plc (public limited company) are:

- TPP "Nikola Tesla A" – with 6 units – total available capacity of 1,502 MW and electric power generation of 7,194 GWh;
- TPP "Nikola Tesla B" – with 2 units – total available capacity of 1,160 MW and electric power generation of 7,728 GWh;
- TPP "Kolubara" – with 5 units – total available capacity of 245 MW and electric power generation of 1,149 GWh;
- TPP "Morava" – with 1 unit – total available capacity 108 MW and electric power generation of 341 GWh.

The thermal power blocks of the Economic Association "Thermal Power Plant Nikola Tesla" plc with a total of 3,015 MW make 36 % of the total capacity of the electric power system of Serbia. Production of the company's four thermal power plants amounting to 16,412 GWh makes around 47% of the total production of the Electric Power Industry of Serbia.

The Ministry of Energy, Development and Environmental Protection (hereinafter: MEDEP) is responsible for setting the energy policy objectives and methods of their implementation, to create framework for increased energy efficiency in all energy consumption sectors, to monitor and stimulate activities of SEEA, legal framework, energy balance of the Republic of Serbia; approving the tariff systems, issuing energy permits, seeing to the security of delivery of energy and energy

sources.

1.4 Gap assessment

Thermal power plants (TPP) are equipped only with electrostatic precipitators and do not have means installed for desulphurisation and de-nitrification, but these electrostatic precipitators were installed in TPP Nikola Tesla when the plants were constructed in the late 1970s and 1980s. After about 30 years of operation, their present separation rate is well below design values.

During the construction of existing TPPs, there were no regulations concerning emission limits at the level of Republic of Serbia. Electrostatic precipitators of these units have a design rate of 98-99.7%, but the design value of dust concentration in flue gases after the electrostatic precipitator is above the prescribed emission limit value, meaning that even if they operated within their design values they would not meet current legal regulations for dust concentration reduction in the ambient air, i.e. the prescribed emission limit value.

Since 2000, PE EPS has taken a series of actions aimed at improving the operation of thermal units, as well as the availability and reliability of units in operation. Until 2004 within the capital overhaul and regular overhauls, special attention was paid to electrostatic precipitators (ESP), with the purpose of bringing the existing ESP after ten-year operation to the maximum reliability level within the existing technologies. From 2004, alignment of PE EPS operation with legal regulations was started. Other projects were also launched:

- Capital overhauls of units A3 TPP Nikola Tesla A, reconstruction of ESP (EUR 64.5m from CARDS 2002), financed by EU;
- Reconstruction of Unit A1, A2, A4 and A5 of ESP, TPP Nikola Tesla A between 2004-2007 (EUR 58m);
- Reconstruction of Unit A2 of ESP, TPP Kostolac A, 2006 year, financed by EU (EUR 5m);
- Emission reduction from Nikola Tesla Thermal Power Plant Obrenovac, Unit A6 and Unit B2 (EUR 12m from IPA 2007 for works and supervision of the works), financed by the EU. Project is ongoing.
- **Environmental Protection at the Electric Power of Serbia (EPS),** ESPs installed at TPP Nikola Tesla B Unit B1; equipment for continuous air emission measurement of harmful and hazardous substances procured and installed at TPP Nikola Tesla A and B, TPP Kolubara A and TPP Morava; contamination sources (facilities and devices filled or contaminated with PCB oils) eliminated and replaced with corresponding facilities and devices that satisfy EU standards (EUR 11m from IPA 2008 financed by EU and 6 m by EPS). This project is ongoing.
- **Construction of Waste Water Treatment Facility at TPP Nikola Tesla B** –(15 m from IPA 2011and 5 m by EPS)

In 2006 the Republic of Serbia ratified the Treaty Establishing the Energy Community, which requires certain commitments of the signatories (for non EU member countries) in terms of harmonisation of national legislation with the EU *acquis*. The Energy Community Treaty introduces the legal requirement for Serbia to implement the EU environmental *acquis*. Annex II of the Treaty sets the deadline of 31 December 2017 for implementation of Directive 2001/80/EC (the Large Combustion Plant Directive), which is a relatively short period for such a major programme of works, and with a high cost.

TPP Nikola Tesla A and TPP Morava are required to obtain IPPC permits by the MEDEP until 2015 in accordance with the Law on Integrated Pollution Prevention and Control (Official Gazette

of the Republic of Serbia, No. 135/04) and also in accordance with the Decree on determination of IPPC permit application submission dynamics (Official Gazette of the Republic of Serbia, No. 108/08). One of the conditions for issuing an IPPC permit is operational harmonization with air emission limit values, including dust emission.

2. Financial sustainability

The total cost of the investment is EUR 19.30 m, while the EU IPA contribution is EUR 15.50 m plus EUR 0.85 m for supervision of works – total IPA contribution EUR 16.35 m.

Sustainability of the investment is guaranteed by the technical and financial capacity of the beneficiary responsible for its operation and maintenance. PE EPS will continue monitoring and maintenance of the operation of the electrostatic precipitators. The government budget memorandum for 2010 with projections for 2011 shows that the government commits itself to undertake gradual annual tariff adjustments in order to reach cost-recovering tariffs for electricity in compliance with European levels, thus allowing PE EPS to raise finance for investment in environmental projects. The current investment through donor financing should therefore represent a one-off improvement to bring the Serbian power generating capacity to a point where sustainable development is possible without subsidy or further donor intervention.

The expected life span of the investment is 15 years.

For the implementation of this project the following design-technical documents are available:

- Pre-feasibility study for emission control in coal-fired power plants, financed by EAR during 2003, developed by RWE Innogy, establishing the priority facilities in EPS TPPs for harmful substances emission alignment.
- Feasibility study with conceptual design for the reconstruction of electrostatic precipitators at TPP Nikola Tesla A unit A3 and feasibility study with conceptual design for the reconstruction of electrostatic precipitators at TPP Morava, prepared by Energoprojekt-Entel in September 2011. Both feasibility studies will be reviewed and upgraded by PPF3 to DG REGIO requirements.
- A location permit will also be obtained for the new reconstruction of ESP due AUG 2012, as PE EPS responsibility. The beneficiary is responsible to assure all necessary permits to start reconstruction.
- Environmental impact assessment (EIA) Study is not required according to a decision of the MEDEP as the competent authority (Conclusion 353-02-2506/2010-02 (15 DEC 2010) confirming EIA not required for the project at TPP Nikola Tesla A3; b) Conclusion 353-02-2505/2010-02 (15 DEC 2010) confirming EIA not required for the project at TPP Morava).
- Final project design - This will be carried out by the successful contractor as part of a FIDIC contract, Yellow Book - Plant and Design Build Contract.
- Tender documents (FIDIC) will be produced by PPF3. The documents will be based on EPS specifications in the preliminary design. There will be a single tender using FIDIC (likely to be Yellow Book Conditions of Contract) and PRAG procedures.
- Construction permit will be provided by TPP Nikola Tesla and TTP Morava and issued by MEMSP, based on winning contractor's design.

According to the Feasibility study with conceptual design on reconstruction of the electrostatic precipitator for TPP Nikola Tesla A, Unit A3, as well as the feasibility study with conceptual design on reconstruction of the electrostatic precipitator for TPP Morava, the full investment and operating costs are as follows.

No	Item	TTP Nikola Tesla A, unit A3 (in EUR)	TTP Morava (in EUR)
	EXPENSES		
1.	Total investments in the reconstruction	12,147,558.00	7,061,481.00
2.	Operating costs (15 years)	10,319,657.00	4,183,513.00

PE EPS will continue monitoring and maintenance of the operation of the electrostatic precipitators. Financing of the operating costs will be secured by PE EPS.

3. Indicative list of works (incl. estimated prices based on market analysis and locations)

The works contract (Operation 2.2.1) **with 2 Lots (Lot 1 for TTP Nikola Tesla A Unit A3 and Lot 2 for TTP Morava under Result 1)** (EUR 15.50 m) will include the following activities: preparation of project final design; dismantling and removal of the existing equipment; installation of completed and delivered new equipment; trial operation (operation optimization including training as well as facility and documents take over); and performance tests - guarantee tests. The implementation modality is a Works contract FIDIC Yellow book (2 Lots), International open tender procedure.

Supervision of works is foreseen to ensure that the specified standards are implemented. The implementation modality is a service contract, international restricted procedure. **The service contract** (EUR 0.85m, Operation 2.2.2) will include the following activities: supervision of works on the reconstruction of the electrostatic precipitators at TPP Nikola Tesla A unit A3 and TPP Morava pursuant to the conditions of contract and national legislation; monitoring the progress of the works by conducting on site inspection as required to check the performance and execution of the project in accordance with the contract; and technical assistance in all matters related to the contract.

No	Item	B. # of Items	C. Item rate (in EUR)	D. Expected costs (in EUR) C=A x B
1.	**LOT 1 (TTP Nikola Tesla A, unit A3)**			
1.1.	Project Final Design	1	500,000.00	500,000.00
1.2.	Equipment (mechanical & electrical)	1	6,500,000.00	6,500,000.00
1.3.	Dismantling and removal of the existing equipment	1	1,000,000.00	1,000,000.00
1.4.	Installation of new equipment	1	1,500,000.00	1,500,000.00
1.5.	Trial operation (including training)	1	500,000.00	500,000.00
2.	**LOT 2 (TTP Morava)**			
2.1.	Project Final Design	1	200,000.00	200,000.00
2.2.	Equipment (mechanical & electrical)	1	3,500,000.00	3,500,000.00
2.3.	Dismantling and removal of the existing	1	600,000.00	600,000.00

	equipment			
2.4.	Installation of new equipment	1	900,000.00	900,000.00
2.5.	Trial operation (including training)	1	300,000.00	300,000.00
	TOTAL			**15,500,000.00**

Works contract (financed by PE EPS) (EUR 3.8 m, Operation 2.2.3.) will include the following activities:

1.	**Reconstruction of electrostatic precipitators at TPP Nikola Tesla A, unit A3**	**Cost (EUR)**
1.1.	Preliminary works (Adaptation of the ash handling system to the new ESP requirements; Control room air conditioning reconstruction)	760,000.00
1.2.	Civil works on the existing support structure reinforcement	1,462,000.00
2.	**Reconstruction of electrostatic precipitators at TPP Morava**	
2.1.	Preliminary works (Dismantling, procurement and erection of insulation with scaffolding erection; Adaptation of the ash handling system to the new ESP requirements; Control room air conditioning reconstruction)	760,000.00
2.2.	Civil works on the existing support structure reinforcement	810,000.00
	Reconstruction of electrostatic precipitators at TPP Nikola Tesla A, unit A3 and TPP Morava **Total (EUR)**	**3,800,000.00**

The above prices were calculated according to market price analysis and recommendations from the feasibility study with conceptual design on reconstruction of electrostatic precipitator for TPP Nikola Tesla A, Unit A3, as well as the feasibility study with conceptual design on reconstruction of the electrostatic precipitator for TPP Morava, prepared by Energoprojekt Entel in September 2011.

4. Indicative Timetable/scheduling/sequencing

Measure 2.2 - Improvement of air quality through reduction in dust emissions from thermal power plants (TPPs) will be delivered through one works (Operation 2.2.1) contract with two lots and one service contract (Operation 2.2.2) that will run in parallel. The works contract will follow FIDIC Yellow book. The service contract will cover supervision of works ensuring the specified standards are implemented. The service contract will be finished 1 quarter after the works contract. At the same time the works contract (Operation 2.2.3) financed by the PE EPS will run in parallel. Sequencing and conditionality is described below. Tender documentation for reconstruction of electrostatic precipitators at TPP Nikola Tesla A3 and TPP Morava will be prepared with assistance of IPA 2008 "Project preparation Facility" by the end of May 2012. EU delegation will check and verify the Tender Dossier together with PE EPS. EU delegation will be in charge of managing this works and service contract. EU delegation will check and verify the Tender Dossier together with PE EPS.

Operations	**Start of Tendering/ Call(s) for proposals**	**Signature of contract(s)**	**Activity Completion**
Operation 2.2.1 Works (Lot 1)	T+1Q	T+3Q	T+13Q
Operation 2.2.1 Works (Lot 2)	T+1Q	T+3Q	T+13Q

Operation 2.2.2 (Service)	T+2Q	T+3Q	T+14Q
Operation 2.2.3 Works (co-financing PE EPS)	T+1Q	T+3Q	T+13Q

It will be a condition that the technical specifications for electrostatic precipitators should be prepared in time by the beneficiary and all the data and information should be available. PE EPS is committed to providing the co-financing and necessary human resources to successfully implement the project. The beneficiary should also provide an action plan for assuring the provision of adequate funding for operation and maintenance of the equipment. Activities planned by the beneficiary should be implemented in time. The installed equipment, after finishing the works, should be taken over by the beneficiary and their operation and maintenance should be secured.

Implementation of works must be overseen by a qualified 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 which represent a potential risk for implementation of the project on time.

Before launching the tender for works contracts, the beneficiary will provide the documentary proof on the date when the site is available and ready to be handed over to the contractor.

There is a definite sequencing of events / activities associated with this project, as follows:

- Technical specification provided by the beneficiary in time;
- Tender documentation prepared in time;
- Design prepared by the contractor approved;
- Construction and associated permits provided by the beneficiary in time;
- Electrostatic precipitators completed and delivered to schedule;
- Installation of new equipment started according to schedule;
- This would be followed by the dismantling and removal of existing equipment.

The beneficiary is responsible to assure all necessary permits to start reconstruction.

It is important for project success that all parties follow the approved schedule for project implementation. The beneficiary is under full responsibility to plan the activities in advance and to make the site available for works according to schedule.

Year	2012 (Year 1)												2013 (Year 2)												2014 (Year 3)												2015 (Year 4)											
Quarter	Q1			Q2			Q3			Q4			Q5			Q6			Q7			Q8			Q9			Q10			Q11			Q12			Q13			Q14			Q15			Q16		
Month	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Operations 2.2.1: Works contract LOT 1			MS						MS																														MS									
Operation 2.2.1: Works contract LOT 2			MS						MS																														MS									
Operation 2.2.2: Service contract for supervision						MS			MS																																MS								