

**2011 Annual Programme  
Support to Energy Sector : 07-2011/2**

**1. Basic information**

- 1.1 CRIS number:** 2011/022-939  
**1.2 Title:** Support to Energy Sector  
**1.3 ELARG statistical code:** 03.15  
**1.4 Location:** Kosovo\*

**Implementing arrangements**

- 1.5 Contracting authority:** European Commission Liaison Office to Kosovo  
**1.6 Implementing agency:** European Commission Liaison Office to Kosovo  
 Indirect centralised management with the Kreditanstalt für Wiederaufbau (KfW)  
**1.7 Beneficiary:**

<b>Project activity</b>	<b>Beneficiary</b>	<b>Contact point responsible for activity coordination</b>
Upgrade and development of the transmission capacities and interconnection infrastructure	Kosovo's independent transmission system and market operator, Kosovo's citizens and all transmission system operators of neighbouring countries.	Chief Executive Director, KOSTT.  Director of Department for Project Management & Engineering, KOSTT.

**Financing**

- 1.8 Overall cost (VAT excluded):** EUR 17.5 million  
**1.9 EU contribution:** EUR 4.0 million  
**1.10 Final date for contracting:** 3 years after signing the financing agreement  
**1.11 Final date for execution of contracts:** 2 years following the final date for contracting  
**1.12 Final date for disbursements:** After the signature of the contract for Delegation Agreement with KfW.

**2. Overall Objective and Project Purpose**

**2.1 Overall Objective:**

To foster economic development in Kosovo by integrating the Kosovo's transmission network in the regional energy market in compliance with the Energy Community Treaties for SEE.

**2.2 Project purpose:**

To upgrade, develop and improve the security of the transmission system and its interconnection infrastructure and improve the power exchange in the region.

\* Under UNSCR 1244/1999.

### **2.3 Link with: European Partnership (and its action plan); Sap/STM**

All key documents on the Enlargement Strategy and the European perspective of candidate and potential candidate countries underline the importance of infrastructures remediation and upgrading as critical factor for sustained socio-economic development in the region and for its progress towards the European Perspective. In this respect, the centrality of sound collaboration with IFIs engaged in promoting infrastructure investments is also emphasised.

The **Thessaloniki Declaration of June 2003** stresses the importance of developing modern networks and infrastructures in energy, transport and telecommunications in the region. The declaration encourage further mobilisation of international support in these areas, notably through the European Investment Bank and other International Financial Institutions, and private investment. The **Communication from the Commission of 27<sup>th</sup> January 2006 on the Western Balkans**<sup>1</sup> identified further progress in regional co-operation in the field of infrastructures as crucial for the regional progress towards sustained stability and prosperity.

The most recent **Communication "Enlargement Strategy and Main Challenges"** 2010 – 2011 of November 2010 and the **Communication on the Western Balkans** of March 2008, reiterate the importance of cooperation with IFIs in the Western Balkan region in the field of infrastructures. The Western Balkans Investment Framework (WBIF) was set up in December 2009 as a joint initiative of the Commission and partner IFIs. It is a key tool for channelling investments into infrastructure in the region. It leverages significant loans from the IFIs with IPA grants.

The EU, together with the IFIs, helped alleviate the impact of the crisis. IPA assistance was reprogrammed to support investment in infrastructure and competitiveness. The WBIF plays an important role in mobilising funds for large infrastructure projects.

The European Partnership Action Plan (EPAP) for 2010 requires for strengthening the regional cooperation, good neighbour relations and requires active participation in the regional initiatives as well as close regional cooperation in the field of Energy related to Energy Treaty.

The EPAP requires for enhancing energy policies in compliance with requirements of the SEE, upgrading the energy infrastructure according to European standards, development of a energy competitive market according to EU acquis and the Energy Community Treaty for SEE through which would be offered better energy services (with friendly environment technology and low costs) that presents the only way towards a sustainable development of Kosovo.

The EPAP priority for Energy sector policies is making progress on meeting commitments under the Energy Community Treaty related to upgrading the electricity transmission system and participation in the regional mechanism for energy market operation. The Treaty obliges the contracting parties including Kosovo to implement the Generally Applicable Standards<sup>2</sup> of the European Community including requirements of the ENTSO-E<sup>3</sup> (UCTE – Union for Coordination of the Transmission of the Electricity) related to the technical operation of the transmission network operators.

In October 2008 with the decision of the Prime Minister the Working Group for Infrastructure has been established with the purpose of coordinating and monitoring the implementation of EPAP actions for environment, energy and transport.

EC Progress Report for Kosovo 2010 highlights the need for reliable power supply and upgrading infrastructure impair the efficiency of market mechanisms conform the standards set under the Energy Community Treaty.

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<sup>1</sup> Communication from the Commission "The Western Balkans on the road to the EU: consolidating stability and raising prosperity" COM(2006) 27 final, 17 January 2006

<sup>2</sup>As a part of the Treaty establishing the Energy Community (Title II – The Extension of the *acquis communautaire*, Chapter VI – Compliance with generally applicable standards of the European Community), Articles 21-23

<sup>3</sup> ENTSO-E - European Network of Transmission System Operators for Electricity

## **2.4 Link with the Multi-Annual Indicative Planning Document (MIPD) 2011-2013**

In the MIPD 2011-2013, one of the three selected main sectors is Private Sector Development. The priorities set under Economic Criteria include also the support for infrastructure for future economic development, improvement of business environment and ensure that Kosovo's socio-economic development can continue..

Kosovo will need to implement sustainable macro-economic policies. Therefore the objective of EU support for next three years is also to help Kosovo related to supply-side constraints such as infrastructure weaknesses and energy shortages.

The selected project will fully comply with the principle of sustainable development and will enhance the quality of life of the targeted populations. Also by the implementation of this project, the coordination with other donors and stakeholders will be further improved.

Past IPA infrastructure projects in Kosovo have proven to be very effective and to have a strong impact on the quality of life, key issues to focus on when endeavouring to strengthen Kosovo's and donors' development and reform efforts.

## **2.5 Link with National Development Plans**

The project links to the priorities identified in the mid-term expenditure framework (MTEF 2011-2013).

The objective of MTEF 2011-2013 for energy sector is to support the implementation of Kosovo Energy Strategy by providing investments for upgrading the electricity network in compliance with the international technical standards, to ensure reliability and security of supply.

The project will support KOSTT on the implementation of Transmission Network Development Plan and on meeting requirements of the Law on Electricity (no 2004/8), the Law on Energy (no 2004/10) the requirements of the Transmission System Operator licence and meeting of requirements from Grid Code, N-1 criteria and Metering Code. The project will improve the reliability and the security of power supply to customers, will increase the reliability of the power exchange in the region, will increase the accuracy of the commercial metering, monitor and the control of the system (SCADA/EMS system which is under the implementation phase), will decrease the technical losses in the network, will improve the voltage profile and will support KOSTT to become a member of ENTSO-E.

## **2.6 Link with national/ sectoral investment plans**

The Energy Strategy 2009-2018 requires for implementing the commitments arising from the SEE Energy Community Treaty. A key strategic objective is upgrade of the electricity transmission network to improve the quality of supply and the security of the network as a prerequisite for integration in the regional energy market. Actions to include these objectives include reducing constraints and losses by adding additional transmission capacities.

# **3. Description of project**

## **3.1 Background and justification:**

The Kosovo power system is characterised with an annual electricity demand growth of about 8% and unreliable power supply due to insufficient generation capacity and insufficient capacity to transmit the electricity to the end users.

Inefficient and/or wasteful consumption of electricity is also a problem. Over 60% of electricity demand is for household consumption. Electricity is the main source for heating used by households as there are not many alternatives, there are only three district heating companies in three cities of Kosovo (Pristina, Gjakova and Mitrovica) that supply only about 5% of heating demand in the mentioned cities. The demand is expected to grow further with the privatisation of Socially Owned

Enterprises (SOE) and with private sector development. The privatised SOE “Ferronickel” consumes up to 100MW which is about 15% of total power generation in Kosovo.

As from 2008, there is some progress achieved on improving the level of payment for electricity bills however the system losses remain high. The lack of investment in the electricity network (in both transmission and distribution) affects the quality and security of power supply in many areas of Kosovo, which impacts negatively the revenue collection.

Since 2006 the transmission system operation (TSO) and market operation (MO) is performed by the independent operator KOSTT<sup>4</sup>. Based on the law on Electricity KOSTT has obtained two licenses issued by the Energy Regulatory Office (ERO) for transmission system operation and for market operation. KOSTT has developed the grid code and technical standards compliant to Generally Acceptable Standards (GAS) as required under the Energy Community Treaty.

The transmission network operation faces constraints due to lack of transmission capacity at voltage level 110 kV which impacts the supply of electricity within the Kosovo territory.

Investment programs for increase of the capacities, the security and the reliability of the Transmission System has characterised the first four years since establishment of KOSTT. These measures have been financed with the much appreciated support by the Kosovo Consolidated Budget (KCB) and donors, such as European Union through European Commission Liaison Office, the German Government through Kreditanstalt für Wiederaufbau (KfW), etc.

The actual EC progress report for Kosovo 2010 emphasises the problem of adequate infrastructure development, reliability of electricity supply and appropriate investments in the transmission network.

According to Generally Applicable Standards (GAS) of the European Community it is necessary to ensure investment in order to operate the network systems safely, reliably and efficiently, including transmission, cross-border connections, modulation and general technical system security standards issued where applicable via the European Committee for Standardisation (CEN).

The Transmission Network Development (TND) Plan 2010-2019 prepared by KOSTT, gives a high priority to the installation of the second power autotransformer 300 MVA at Peja 3 and Ferizaj 2 substations, to the installation of the Optical Ground Wire/OPGW and metering groups on interconnection lines.

According to above and taking into account the responsibility in fulfilment of the objectives in infrastructure development, KOSTT needs a financial support in this direction for below proposed projects (indicatively: three works and one service contract) appraised as a high priority:

1. Installation of a second power autotransformer 300 MVA at 400/110 kV Peja 3 and Ferizaj 2 substations.
2. Installation of the OPGW (Optical Ground Wire) on interconnection lines.
3. Installation of the metering groups for interconnection lines.
4. Tender dossier preparation and/or supervision of upgrade and development of the transmission capacities and interconnection infrastructure.

The recently finalised project for building of Peja 3 substation (co-funded KfW and Kosovo Consolidated Budget/KCB) and ongoing project for building a new Ferizaj 2 substation (co-funded under IPA 2008) identified in the IDP will significantly improve the security of supply in the western part and south-east part of Kosovo. The IPA 2011 project is a complementary action towards increasing the network stability and security and consequently improving the quality of power supply.

Currently the financial sustainability of KOSTT depends on the transmission tariff set by the Energy Regulator. KOSTT is member of SETSO (South East European Transmission System Operators), but is not yet participating in the inter-TSO compensating mechanism (ITC mechanism) and in the

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<sup>4</sup> KOSTT –Kosovo Transmission System and Market Operator

Congestion Management (CM) mechanism which would contribute to increased income from the electricity transit and the CM through the Kosovo network.

However the investment needed to upgrade the transmission network in terms of capacity and security are very costly and in mid term cannot be covered from KOSTT revenues. On the other hand the transmission network upgrade up to the level of European technical standards<sup>5</sup> is a requirement deriving from the Energy Community Treaty for integration in the regional energy market. In addition the KOSTT's technical codes and standards which are in compliance with European technical standards require for improving the standards of operation in the substations and in the network to ensure security and reliability of supply.

### **3.2 Assessment of project impact, catalytic effect, sustainability and cross border impact**

The project will have an impact on energy supply by improving the technical conditions of electricity transmission system. The project will increase the capacity of transmission network which will enable a more reliable electricity supply for consumers and will directly have an impact on real time data exchange for the market and the reliability of the transmission system with neighbouring county's transmission systems. In addition the project will enable KOSTT meeting obligations arising from Technical Codes and Market Rules, which derive from relevant EC Directives and standards.

### **3.3 Results and measurable indicators:**

This project will focus on the achievement of the following results:

#### **Result 1:**

Improved quality of power supply (voltage profile) in the 110 kV network and increased safety in operation and the reliability of power supply at 400/110 kV substations Peja 3 and Ferizaj 2.

#### **Indicator for Result 1:**

Number of power outages is minimised, the UCTE (N-1) security criteria is fulfilled at the mentioned substations.

#### **Result 2:**

Improved efficiency and safety of the real and market data exchange, voice communication operating network systems.

#### **Indicator for Result 2:**

Improved communication infrastructure, data transparency, reduced losses.

### **3.4 Activities:**

#### **Activities for achieving Result 1:**

A 1.1: Installation of a second power autotransformer 300MVA at Peja 3 and Ferizaj 2 substations including all necessary electrical equipment and devices.

#### **Activities for achieving Result 2:**

A 2.1: Replacement of the existing earth wire with Optical Ground Wire (OPGW) on interconnection points, installation of telecommunication equipment MUX.

A 2.2: Installation the new meters, current and voltage transformers on interconnection lines and fully integration to the existing Remote Metering and SCADA/EMS system.

This proposed infrastructure project will be performed through four complementary actions:

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<sup>5</sup> Technical standards have been defined under the frame of Energy Community Treaty therefore the compliance is mandatory for signatory parties

### **Action 1: Installation of a second power autotransformer 300 MVA at 400/110kV Peja 3 and Ferizaj 2 substations**

Based on the law on electricity, KOSTT has adopted the technical codes which provide the technical standards for maintenance and operation of the high voltage equipment. The technical codes including the grid code require for compliance with UCTE criteria for security (N-1 criteria).

The action addresses the problem of insufficient transformation capacity in transmission substations (400/110 kV) and supports KOSTT on moving forward with the implementation of UCTE requirements. The action includes supply, installation and commissioning of a second power autotransformer at each 400/110 kV Peja 3 and Ferizaj 2 substations.

The 400/110 kV Peja 3 substation, with the transforming capacity of 300 MVA is a new substation, recently constructed in November 2009. This project was co-financed by German Government through KfW and the Kosovo Consolidated Budget. As being the second biggest 400 kV substation it is a very important node in the Kosovo transmission network. It consists of a 400/110 kV substation looped into the 400 kV circuit to Montenegro, with (initially) one 300 MVA power autotransformer. On the 110 kV side through five 110 kV lines it supplies about a third of Kosovo's system power load.

The Ferizaj 2 substation 400/110 kV is the third biggest 400 kV substation in the existing Transmission System of Kosovo and also one of the most important nodes of the Kosovo's transmission network. It consists of a 400/110 kV substation looped into the 400 kV circuit to FYROM, with (initially) one 300 MVA, 400/110 kV power autotransformer. This project is under the implementation and it is co-financed by the European Union and the Kosovo Consolidated Budget. The expected date of completion is November 2011 (plus 1 year for Defect Liability Period). The 110 kV level supplies around 25 % of the consumers in the Southeast part of Kosovo's load system.

These substations with only one installed power autotransformer 300 MVA per each do not meet the Grid Code's N-1 security criteria which is one of the ENTSO-E (UCTE) requirements. As a consequence, the outage of these single power autotransformers would in many cases put the system at an unacceptable high risk of overload and the possibility of damaging the equipment and devices that would result with the forced power cuts in the region. Considering the importance of these substations and their strategic position in the grid, it is crucial to ensure a reliable and safe operation of the substations. This can be achieved only if substations fulfil the N-1 grid code required criteria.

The implementation of this action by installation of the second power autotransformer at each substation with the equal ratings will improve significantly the capacity, the reliability and the security of electricity supply. The N-1 criteria will be met and therefore the possibility for forced power cuts will be eliminated. In addition the maintenance will be improved and optimised consequently.

This action is based on Kosovo demand forecast, power flow analysis and Grid Code requirements. Therefore the installation of the second power transformer with all necessary associated equipment and facilities before the winter 2012 is needed.

Based on power system analysis and computer simulations done by KOSTT, the implementation of this action will contribute to reduction of energy losses by around 10,000 MWh per year. Based on calculated price of EUR 30 per MWh, the overall losses in terms of money are around EUR 300,000. In addition the total amount of undelivered energy to costumers because of bottle necks (in case of any unplanned outage of the existing power transformers at the mentioned substations and the related insufficient transformation capacity) is around 4,800 MWh per year with the trend of increase proportionally to the demand growth. Considering the actual market price of EUR 400 per MWh (the lowest price in the region), the total losses due to this undelivered energy in terms money are EUR 1.92 million.

To summarise, can be concluded that the annual financial losses for KOSTT caused due to insufficient transformation capacity of Peja 3 and Ferizaj 2 substations are over EUR 2.2 million.

## **Action 2: Installation of the OPGW (Optical Ground Wire) on interconnection lines**

Based on central geographic position of Kosovo, the transmission system that is operated by KOSTT, even relatively small, represents an important electrical node and hub which is shown through its powerful interconnections.

Through an ongoing project for SCADA/EMS & Telecommunications, KOSTT is developing and modernising the internal communication infrastructure. Even this actual project will not completely fulfil the requirements of European Network of Transmission System Operators for Electricity/ENTSO-E Operational Hand Book – Policy 6 related to Communication Infrastructure.

In addition, the Policy 3 of ENTSO-E Operational Hand Book requires that the Transmission System Operator (TSO) shall monitor at any time the N-1 criteria for his own system through an observation of the interconnected system/s and carry out security computations for risk analysis. This can be achieved through communications of KOSTT SCADA system with other communication systems of neighbouring countries via an established efficient telecommunication infrastructure. Therefore the proposed installation of Optical Ground Wires (OPGW) on the existing interconnection transmission lines will essentially improve this telecommunication infrastructure.

This action foresees the installation of the earth wire OPGW (till the border with neighbouring countries) and telecommunication equipment at the existing interconnection 400 kV overhead lines (OHL) as follows:

- OHL 437, SS Peja 3 – Border with Montenegro, with total length 69 km.
- OHL 407, SS Kosovo B – Border with Serbia, with total length 41 km.
- OHL 2303, SS Prizren – Border with Albania, with total length of 45 km.
- OHL 205/1, SS Podujevo – Border with Serbia, with total length of 14.5 km.

*Total length for installation of OPGW is 169.5 km.*

The project will directly have an impact on real time data exchange for the market and reliability of the transmission system with neighbouring county's transmission systems.

## **Action 3: Installation of Metering Group for interconnection lines**

In order to comply with the obligations as transmission network and market operator, KOSTT must ensure that an appropriate 15 minute data is available from all of its boundaries with other network operators.

Actually, none of the existing interconnection meters are fully in compliance with the Metering Code, approved by Energy Regulatory Office (ERO). Therefore an upgrade of the existing metering system is needed.

The implementation of this action will enable KOSTT to meet the obligations arising from Technical Codes and Market Rules, which derive from EC Directive 2003/54/EC and Regulation 1228/2003/EC. According to this EC Directive, KOSTT has an obligation to implement a new metering system including all necessary current and voltage transformers.

Implementation of this action and the related operational experience gained would support KOSTT in its future integration into the Regional and European mechanisms.

Three above mentioned actions require to be implemented through works contract/s.

## **Action 4: Tender dossier preparation and/or supervision of upgrade and development of the transmission capacities and interconnection infrastructure**

This action includes services for the tender dossier preparation and/or supervision of above mentioned actions implementation. The services include technical assistance on performing the following services (but not limited to):

- Preparation of the tender dossier including the technical specification and other necessary documents as part of the tender dossier,
- Assistance during tendering and evaluation period until conclusion of the works contract/s,
- Coordination and supervision prior to installation works: overseeing the overall performance program of the implementing parties (contractor/s) for actions included in above mentioned activities,
- Assisting during the design phase on assessing and/or approving the design submitted by the implementing party, identify project risks and critical path, checking of all Works Contractor/s preparatory activities and technology application, etc.
- Coordination and supervision of installation, commissioning services and testing activities at site: daily coordination of supply, installation and commissioning activities based on the project planning documents, check the quality of the equipment and systems supplied, installed and commissioned to ensure compliance with technical specification and relevant technical acceptable standards,
- Check and approve the testing procedures and witness the site acceptance tests as well as the commissioning of installations. Issuing of handing/taking over certificate/s,
- Monitor Works Contractor/s performance related to environmental issues,
- Review and mitigate the claims and variations submitted by the Works Contractor/s, if any, including the preparation of cost estimates and maintain appropriate records,
- Check the content and completeness of the final documentation,
- Certification of all invoices of the Works Contract/s,
- Coordination and Supervision during the Defect Liability Period (Warranty Period) of Works Contract/s: assisting on handling fault or defect claims in the supplies and systems during the defect liability period,
- At the end of Defect Liability Period (Warranty Period), if the Works Contractor/s has/have completed his/their contractual obligations, issuing of the Final Acceptance Certificate.

This action requires to be implemented through a service contract/s.

### **Contracting arrangements**

Project will be implemented through indirect centralised management with Kreditanstalt für Wiederaufbau (KfW) by means of a delegation agreement for co-financing of this infrastructure investments. Therefore there is a need for signature of this delegation agreement by both co-financing parties, which will cover all above mentioned activities necessary for the investments to be jointly implemented.

After the commitment of IPA 2011 funds and the signature of the delegation agreement, the funds will be transferred to the Kreditanstalt für Wiederaufbau (KfW) bank account.

### **Project management and administration**

After the transferring of IPA 2011 funds to the Kreditanstalt für Wiederaufbau (KfW) bank account, the project will be entirely managed by KfW (procurement, implementation, quality control, reporting and coordination with other donor/s if any, and of the financial and technical cooperation related to the actions described in this project fiche, taking remedial actions if and when needed).

### **3.5 Conditionality and sequencing:**

The implementation mechanisms sequencing of the above activities will be designed on the basis of a few key principles:



- a) Clear identification of the financing perspective for the proposed investment project to support the upgrade and development of the transmission capacities and interconnection infrastructure,
- b) Continue collaboration between the European Commission, KfW and other beneficiary/ies,
- c) Intergovernmental consultations (between Kosovo and Germany) and discussions related to commitments of the co-financing funds,
- d) Commitment of IPA 2011 and German Government funds,
- e) After the commitment of the funds, preparation of a project appraisal and its approval by German Government,
- f) Signature of delegation agreement between German and Kosovo's Governments,
- g) Continue with meetings with KfW and KOSTT to discuss and define the project implementation modalities,
- h) Providing input during preparation of delegation agreement between European Commission and KfW and its signature,
- i) Activities regarding the transfer of EC co-financing contribution to KfW bank account.

Has been proposed that German Government's contribution portion of EUR 13.5 million to be broken down into two components:

- a) EUR 5.0 million as IDA loan with total duration period of 40 years (including the grace period of 10 years) and an interest rate of 0.75 % per year, and
- b) EUR 8.5 million as KfW market funds borrowed from the market. Conditions and other details of these funds are not defined yet.

The IPA 2011 funds of EUR 4.0 Million can leverage KfW market funds of EUR 8.5 million.

### 3.6 Linked activities

EU funded linked activities:

Name of project (Amount EUR million)	Start End	Activities/Results
KOSTT (EUR 14 million under CARDS, EUR 2.1 million under IPA 2007, EUR 6.8 million under IPA 2008 and EUR 7.8 million under IPA 2009)	2002-2013	<ul style="list-style-type: none"> <li>• High voltage metering system (CARDS 2000)</li> <li>• Local Scada (System for Control and Data Acquisition) for Kosovo B substation (CARDS 2001)</li> <li>• Supply of power transformers for Kos A and Kos B substations (CARDS 2001)</li> <li>• Technical assistance for the establishment of the KOSTT (CARDS 2005)</li> <li>• Replacement of relay protection in Kos B and Pristina 4 substation and control system in Pristina 4 (CARDS 2006)</li> <li>• Assistance to KOSTT (IPA 2007)</li> <li>• Construction of Ferizaj 2 substation with the related technical assistance for supervision (IPA 2008)</li> <li>• Support on upgrading power transmission system to meet the EC technical standards with the related technical assistance for supervision (IPA 2009)</li> </ul>
Institutional Support to the Energy Regulatory Office	Feb2005-Sep 2007	Technical support provided to ERO to develop and implement energy regulatory frameworks, market rules, mechanisms and procedures for the establishment of a

(EUR 1.9 million under CARDS and EUR 1.0 million under IPA 2007)		competitive energy market in Kosovo.
Institutional Support to the Ministry of Energy and Mining (EUR 2.1 million under CARDS, EUR 1.0 million under IPA 2007, EUR 2.0 million under IPA 2008, EUR 17.5 million under IPA 2009 <sup>(*)</sup> )	Apr 2005-end 2015	<p>Institutional capacity Support to the MEM to: formulate an Energy Strategy; and to prepare secondary legislation; programme for energy efficiency and renewable; fulfilling Energy Community Treaty requirements.</p> <p>Support on the establishment of the body for certification of energy auditing, further build the energy auditing capacity and energy planning at the regional/local level and improving energy statistics.</p> <p>Promoting Energy Efficiency and Renewable Energy Resources (implementation of energy efficiency measures in public buildings, strengthening of legal and policy framework, support to meet the Directive 2006/32/EC &amp; implementation of NEEAP, public awareness camping, etc).</p>
KEK Incorporation (EUR 3 million, CARDS 2004)	2005	Incorporation of KEK and district heating companies, unbundling and full separation of transmission function
Feasibility studies and assessments (EUR 2 million, CARDS)	Jan 2007-Aug 2007	<ul style="list-style-type: none"> <li>• Feasibility study for building of lignite fired power plant in Kosovo and related transmission (in support of the LPTAP project funded by the World Bank);</li> <li>• Assessment Study on Renewable Energy Resources;</li> <li>• Options Analysis Study for investment in the new power plant and coal mine; and</li> <li>• Studies for pollution mitigation measures in the Kosovo B power plant.</li> </ul>

Other donors' projects supporting energy sector are:

- USAID provides support under the project 'Kosovo Economic Development Initiative' in the process of privatisation of public owned enterprises including KEK. This program includes support the Project Steering Committee for developing a new power plant Kosovo C project (the name of the project has recently changed to 'new Kosovo project'). USAID is also providing management advisors in the power company KEK aiming at improving the performance of networks and supply, and on improving billing and collection. A task of this project is the preparation of the strategy for privatising the distribution and supply divisions of KEK. In addition an institutional support to KEDS privatisation is provided.
- KfW is supporting KOSTT on improving the transmission infrastructure. In 2008 a grant agreement was signed for construction of a new transmission substation Peja 3 (400/110 kV) and for construction of a 400 kV transmission interconnection line to Albania. In addition KfW has financed the study for Transmission Network Expansion (2010 – 2025) that was finalised in 2010. The main objective of this study was to provide guidelines for modernisation and development of Kosovo's power transmission system including its optimisation. These projects will contribute to the security of supply in Kosovo, will support the coal production and the generation development, will improve the reliability & security of the interconnection with neighbouring transmission systems and will improve the real time data exchange relevant for the market.
- The World Bank is providing technical assistance to the Ministry of Energy and Mining (Lignite Power Technical Assistance Project-LPTAP project), and to KOSTT. The project supports the development of new generation capacities in Kosovo. World Bank has supported

the establishment of KOSTT (ESTAP III project), has designed the organisational scheme and has developed the technical codes. Under the LPTAP project the World Bank is supporting the preparation of the feasibility study for a new hydropower station HP Zhur in Kosovo (288 MW), and on developing a strategy for investments in energy efficiency and renewable energy sources.

Summary table presentation:

Donor	Projects	Start End
KfW	Construction of a new transmission substation Peja 3. EUR 15.25 Million (incl. EUR 4.75 million KCB co-funding).	Mid 2008-2009
	Refurbishment of a coal excavator for opening the new mine for existing power plants (EUR 8.0 million).	Oct 2008 - Jan 2011
	Construction of a new 400kV interconnection line Kosovo-Albania (under a grant agreement EUR 12.5 million).	2011 - 2013
	Transmission Network Expansion Study (2010 – 2025).	2010
USAID	Follow on Economic Development activity (under procurement)- includes support to MEM and ERO.	Aug 2007- Aug 2009
	Network and Supply Project-KEK.	Jan 2007- 2010
World Bank	Lignite Power Technical Assistance Project (LPTAP) \$ 8.5 million.	July 2007-July 2009

This project needs to be closely coordinated with other project/s for KOSTT and KEK either financed by them self, Kosovo Consolidated Budget (KCB) or other donors.

### 3.7 Lessons learned

The implementation of different project preparation facilities under the CARDS programme allowed drawing a number of useful lessons.

- *Ownership*: of beneficiaries is essential to ensure the longer term sustainability of supported investments. They should be in a lead position for the assessing the investment needs, identifying viable solutions and overseeing implementation, not least because of their borrower's responsibility. This can be best achieved through active involvement of beneficiaries in all phases of the process. In addition, this project will help Kosovo Institutions in improving the energy infrastructure and builds further the capacity for the sustainable development and its integration in the Energy Community in SEE.
- *Commitment*: of IFIs is another crucial element. To ensure effective leverage of IFIs loan financing, it is important that IFIs are part of the process and that they provide as well advice and technical suggestions to ensure high quality of investment proposals.
- *Synergies between EC grants and IFIs financing resources*: The success and impact of cooperation between the Commission and IFIs in the region will depend on our combined ability to help beneficiaries to identify the ideal mix of grants and loan support for the investments needed in the region.
- *Coordination*: Close consultation among the many stakeholders in the energy sector and a collaborative approach are essential to ensure that all these stakeholders are fully informed, and support the investments to be carried out.

**4. Indicative Budget (amounts in EUR million)**

			SOURCES OF FUNDING						
			TOTAL EXP.RE	IPA EU CONTRIBUTION		GERMAN GOVERNAMENT'S CONTRIBUTION			
ACTIVITIES	IB (1)	INV (1)	EUR (a)=(b)+(c)+(d)	EUR (b)	% (2)	Total EUR (c)=(x)+(y)+(z)	% (2)	IDA Loan EUR (x)	KfW Development Loan EUR (y)
Actions 1, 2, 3 and 4			17.5	4.0	23	13.5	77	5.0	8.5
Contract for Delegation Agreement with KfW		x	17.5	4.0	23	13.5	77	5.0	8.5
TOTAL IB									
TOTAL INV			17.5	4.0	23	13.5	77	5.0	8.5
<b>TOTAL PROJECT</b>			<b>17.5</b>	<b>4.0</b>	<b>23</b>	<b>13.5</b>	<b>77</b>	<b>5.0</b>	<b>8.5</b>

The percentage of the EU contribution is 23% of the total investment costs. The German Government's (through KfW) contribution is 77 %.

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

Contracts	Start of Tendering	Signature of contract	Project Completion
Contract for Delegation Agreement with KfW.	N/A	Q1 2012	Q1 2016

## 6. Cross cutting issues (where applicable)

A cross-cutting issues ranging from equal opportunities, environment, social inclusion and good governance will be correctly and properly addressed during the entire process of the project implementation. In this process, a serious attention will be paid to aspects related to equal opportunities of access to power supply at the right level. Women, minorities, long-term unemployed and aged people, as well as (unemployed) youth and other categories participation will be promoted as well.

### 6.1 Equal Opportunity

The European Commission is fully committed to a policy of equal opportunity. In all activities during this project, but particularly in training that may be provided throughout the implementation of the investment projects, steps will be taken to ensure the equal participation of men and women. It is important to mention that the partner KfW is also particularly sensitive to equal opportunity and gender related issues both in the form of specific focus in some of the investments supported and through mainstreaming and impact assessment approaches in the supported actions.

### 6.2 Environment

With regard to environment, this is one of the target sectors of the proposed intervention. Environmental impact assessment will be part of design phase for the actions included in the activity. Environmental action plans with measures to be undertaken by the implementing parties and beneficiaries will also be prepared for each action. Partner KfW is particularly careful in assessing the environment impact of supported investment and have developed throughout the years, relevant methodological material in the form of guidelines, impact assessment techniques and other.

### 6.3 Minorities

In all activities during this project implementation, necessary steps will be taken to ensure that the rights of minorities are considered.

### 6.4 Good governance

Will be fostered through the introduction of monitoring, evaluation and control mechanisms in the relevant beneficiary organisations for the implementation of project/s.

## **ANNEXES**

- ANNEX I: Log frame in Standard Format
- ANNEX II: Amounts contracted and Disbursed per Quarter over the full duration of Programme
- ANNEX III: Description of Institutional Framework
- ANNEX IV: Reference to laws, regulations and strategic documents:
- ANNEX V: Details per EU funded contract (\*) where applicable: not applicable

**ANNEX I: logical framework**

LOGFRAME PLANNING MATRIX FOR Project Fiche:	Programme name and number:		
<b>Support to Energy sector</b>	Contracting period) expires: Ref to section 1.10	Disbursement period expires: Ref to section 1.12	
	Total budget : <b>EUR 17.5 million</b>	IPA 2011 budget: <b>EUR 4.0 million</b>	
<b>Overall Objective</b>	<b>Objective Verifiable Indicators</b>	<b>Sources of Verification</b>	
To foster economic development in Kosovo by integrating the transmission network in the regional energy market in compliance with the Energy Community Treaties for SEE.	Requirements of the Energy Community Treaty are implemented. Improved supply of electricity. Improved communication infrastructure and real data exchange.	Reports of the Energy Community Secretariat. European Partnership action plan (action 147.9). European partnership 2008/213/EC. Annual report of the Ministry of Energy and Mining. KOSTT Grid Code. Regulatory Monitoring Reports of license activities. ENTSO-E rules (Policies 3 & 6). KOSTT Transmission Network Development Plan 2010 – 2019.	
<b>Project purpose</b>	<b>Objective Verifiable Indicators</b>	<b>Sources of Verification</b>	<b>Assumptions</b>
To upgrade, develop and improve the security of the transmission system and its interconnection infrastructure and improve the power exchange in the region.	Reduction of not supplied electricity. Elimination of the transforming bottle necks. Reduce power interruptions due to safety risk of the network. Compliance with license requirements for transmission system	Regular monitoring reports produced by KOSTT departments for planning and development. Technical study ESTAP I. Transmission Development Plan (TND) preparation 2009-2018. Commissioning Reports.	There is commitment of the Government and ERO to increase the technical ability and security of power supply. The co-financing partner (KfW) and the Beneficiary allocate on time and sufficient resources and funds to timely implement project.

	operator and market operator. Timely and accurately collected data. All are verifiable one year after project implementation.	Regulatory Monitoring Reports. Annual Allowed Revenues.	
<b>Results</b>	<b>Objective Verifiable Indicators</b>	<b>Sources of Verification</b>	<b>Assumptions</b>
1. Improved quality of power supply (voltage profile) in the 110kV network and increased safety in operation and the reliability of power supply at Peja 3 and Ferizaj 2 SSs. 2. Improved efficiency and safety of the real and market data exchange, voice communication operating network systems.	Number of power outages is minimised. Reducing of losses. The UCTE (N-1) security criteria is fulfilled at the mentioned SSs. Improved communication infrastructure. Improved data transparency.	KOSTT reports on power supply, demand and power exchange. KOSTT reports on electricity dispatch. Regular monitoring reports produced by KOSTT departments for planning and development. Progress reports of the Contractor and designated Supervisor.	KOSTT continues with investments to improve the security of network according to the development plans. KOSTT will have Electronic Highway as network dedicated to the data exchange between two TSO's and operates under the responsibility of the TSO's and managed by two NOC.
<b>Activities</b>	<b>Means</b>	<b>Costs</b>	<b>Assumptions</b>
1.1 Installation of 300MVA autotransformers at Peja 3 and Ferizaj 2 SSs including all necessary electrical equipment. 2.1. Replacement of the existing earth wire with Optical Ground Wire (OPGW) on interconnection points, installation of telecommunication equipment MUX. 2.2. Installation the new meters, current and voltage transformers on interconnection lines and fully integration on the existing Remote Metering and SCADA/EMS system.	<b>Means of implementation</b> 1. <b>Service Contract</b> (for consultancy services for preparation of the Tender Documentation including Technical Specification and supervision of installation works). 2. <b>Works Contract</b> for: 2.1. Installation of a second power autotransformer at Peja 3 and Ferizaj 2 SSs 400/110kV. 2.2. Installation of OPGW (Optical Ground Wire) on 400kV	<b>Total Cost: 17.5 Mil EUR</b> 1. Service Contract → <b>EUR 1.5 million.</b> 2. Installation of a second power autotransformer at Peja 3 and Ferizaj 2 SSs 400/110kV → <b>EUR 12.0 million.</b> 3. Installation of OPGW (Optical Ground Wire) on 400kV Interconnection Lines → <b>EUR 2.0 million.</b> 4. Installation of Metering Groups in interconnection lines → <b>EUR 2.0 million.</b>	Beneficiary/KOSTT allocates sufficient staff to the project activities. Beneficiary/KOSTT provides advice, information and inputs on the preparation of technical specifications. Relevant Commission staff mobilised for project monitoring



	<p>Interconnection Lines.</p> <p>2.3. Installation of Metering Group in interconnection lines.</p> <p><b>Means of verification</b></p> <p>Reports related to contracts execution</p> <p>Reports of stakeholders meetings and discussions.</p> <p>Projects documentation and forms.</p> <p>Loan agreements; financial and monitoring reporting.</p> <p>Studies and assessment of proposed projects, including (pre)-feasibility studies, technical designs, specific assessments, monitoring reports etc.</p>		
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**Pre-conditions:**

List all the pre-conditions identified during the project design

- KOSTT's commitment to implement the requirements of European Network of Transmission System Operators for Electricity/ENTSO-E (UCTE) and other requirements of the Energy Community Treaty.
- Correct and on-time planning the power outage schedule for interconnection lines.
- Bilateral arrangements with neighbouring countries.

**ANNEX II: Amounts (in EUR million) Contracted and disbursed by quarter for the project**

<b>Contracted</b>	<b>2011 Q4</b>	<b>2012 Q1</b>	<b>2012 Q2</b>	<b>2012 Q3</b>	<b>2012 Q4</b>	<b>2013 Q1</b>	<b>2013 Q2</b>	<b>2013Q 3</b>	<b>2014 Q4</b>
Contract for CA with KfW.		4.0							
<b>Cumulated</b>		<b>4.0</b>							
<b>Disbursed</b>									
Contract for CA with KfW.		4.0							
<b>Cumulated</b>		<b>4.0</b>							

### **ANNEX III: Description of Institutional Framework**

In the energy sector operates a power corporation KEK which is a joint stock company with four core functions: coal mining, power generation, distribution and supply. The power transmission function was unbundled in 2005 and an independent transmission system and market operator (KOSTT) was operationally established in July 2006.

Kosovo is a signatory party of the Energy Community Treaty for Southeast Europe and KOSTT is a member of the Southeast Transmission system Operator Task Force (SETSO Task Force).

Three laws were promulgated by UNMIK in June 2004, the Law on Energy, Law on Electricity and Law on Energy Regulator which established the Energy Regulatory Office (ERO). In Dec 2004 a new Ministry of Energy and Mines (MEM) was established responsible for developing strategies and policies for energy and mining sector development, whereas ERO develops the regulatory framework to enable the creation of a competitive and transparent energy market.

Under the current Kosovo's Government new structure, the Energy Sector belongs to the Ministry of Economic Development.

Potential beneficiaries of these actions could be, the Ministry of Economic Development, Ministry of Finance and Ministry of Trade and Industry. Other Target groups/Beneficiaries could also be state-owned companies under the responsibility of these Ministries (generation and suppliers in Kosovo) and regional Transmission System Operators of Montenegro, Serbia, FYROM and Albania. Municipalities could also benefit from the improved power supply.

**ANNEX IV: Reference to laws, regulations and strategic documents:**

- Kosovo Energy Strategy 2009 – 2018.
- Kosovo under UNSCR 1244/1999 2010 Progress Report (European Commission).
- MTEF 2011-2013 for Kosovo (Kosovo Authorities).
- Transmission Network Development Plan 2010-2019 on meeting requirements of the Law on Electricity (no 2004/8), the Law on Energy (no 2004/10) the requirements of the Transmission System Operator licence and meeting of requirements from Grid Code, N-1 criteria and Metering Code.
- Technical Codes and Market Rules, which derive from EC Directive 2003/54/EC and Regulation 1228/2003/EC.
- European Network of Transmission System Operators for Electricity/ENTSO-E Operational Hand Book
- Energy Community Treaty.
- Technical Paper on Energy (prepared for the July 2008 Donors Conference), June 2008 (European Commission / World Bank).
- 2010 Action Plan on Implementation of the European Partnership for Kosovo.

## **ANNEX V Details per EU funded contract (\*) where applicable:**

After the signature of Delegation Agreement with Kreditanstalt für Wiederaufbau (KfW), the EU co-financed IPA 2011 budget will be transferred to KfW bank account. The entire project will be implemented by the partner in accordance to the contract arrangements indicated in this Project fiche.

More details are presented below.

The proposed project "*Upgrade and development of the transmission capacities and interconnection infrastructure*" will be implemented through following actions:

### **Action 1 (Works contract)**

This action includes the installation of a second power autotransformer 300 MVA at 400/110 kV Peja 3 and Ferizaj 2 substations.

The technical specifications and the tender dossier will be prepared under this delegation agreement and includes the following:

- Design of the power transformer and the related equipment and devices,
- Manufacturing and factory testing,
- Supply and installation of the new transformer with all necessary electrical equipment and components,
- Site acceptance testing and provisional acceptance,
- Final acceptance after the defect liability period.

### **Action 2 (Works Contract)**

This action includes the installation of the OPGW (Optical Ground Wire) on interconnection lines.

The technical specifications and the tender dossier will be prepared under this delegation agreement and includes the following:

- Manufacturing and factory testing of OPGWs,
- Supply and installation,
- Site acceptance testing and provisional acceptance,
- Final acceptance after the defect liability period.

### **Action 3 (Works Contract)**

This action includes the installation of Metering Group for interconnection lines.

The technical specifications and the tender dossier will be prepared under this delegation agreement and includes the following:

- Manufacturing and factory testing of System Metering Groups,
- Supply and installation,
- Site acceptance testing and provisional acceptance,
- Final acceptance after the defect liability period.

### **Action 4 (Service Contract)**

Tasks in this action include:

- Preparation of the tender dossier including the technical specification and other necessary documents as part of the tender dossier,

- Assistance during tendering and evaluation period until conclusion of the works contract/s,
- Coordination and supervision prior to installation works,
- Coordination and supervision of installation, commissioning services and testing activities at site until issuing of taking/handling over certificate,
- Monitor Works Contractor/s performance related to environmental issues,
- Certification of all invoices, review and mitigate the claims and variations submitted by the Works Contractor/s, if any,
- Coordination and Supervision during the Defect Liability Period (Warranty Period) of Works Contract/s until issuing of Final Acceptance Certificate,

**Reference list of feasibility study** for the constructing works part of the contract as well as a section on investment criteria

- Survey of the Present State of the Transmission Network and its Investment Requirements, EC funded study in 2006.
- Project impact on Kosovo transmission network, KOSTT 2008.
- Project justification based on system planning analysis done by KOSTT in 2010.
- Transmission Network Investment and Development Programme 2007-2012.
- Transmission Network Development Plan 2010-2019.
- Transmission Network Expansion Study 2010 – 2025, finalised in 2010 (financed by KfW).

**Investment criteria** (applicable to all infrastructure contracts and constructing works):

#### **Rate of return**

##### Action 1

The following analysis derives from KOSTT computer simulations (PSS/E) of demand and losses incurred due to insufficient transformation capacity of Peja 3 and Ferizaj 2 substations.

Reduction of energy losses are calculated to be around 10,000 MWh. Calculated at a price of EUR 30 per MWh, the overall losses in terms of money are around EUR 300,000

The total amount of energy undelivered to costumers due to insufficient transformation capacity is around 4,800 MWh per year. Even calculating with the lowest market cost in the region of EUR 400 per MWh, the total value of undelivered energy in terms money will not be less than EUR 1.3 million per year.

Therefore, due to insufficient transformation capacity of both Peja 3 and Ferizaj 2 substations, the annual financial losses for KOSTT are over EUR 2.2 million. Subsequently this proposed investment action with the estimated cost of around EUR 12 million will be paid back in less than 5 years.

##### Action 2

Based on central geographic position of Kosovo, the KOSTT transmission system represents an important electrical node that can be seen from its powerful interconnections.

This project is complementary to other ongoing projects in KOSTT and will certainly have an impact on developing and modernising of system communication & control infrastructure in order to comply with ENTSO-E requirements (Operational Hand Book, Policy 6 Communication Infrastructure). In addition, the Policy 3 requires that each TSO shall continuously monitor the N-1 criteria of his own system. This can be achieved through an efficient communication infrastructure established with other

transmission operators of neighbouring countries. Therefore, this action foresees the installation of 169.5 km of Optical Ground Wires (OPGW) on the existing 400 kV interconnection lines.

The project will directly have an impact on the improvement of the real time data exchange relevant for the market and the reliability and security of the interconnection with neighbouring transmission systems.

#### Action 3

In order to comply with the obligations as an independent transmission network & market operator, KOSTT must ensure at least 15 minutes data exchange availability from all its boundaries with other network operators.

Currently, none of the existing interconnection meters are fully in line with the Metering Code, approved by Energy Regulatory Office.

The implementation of this action enables KOSTT meeting obligations deriving from Technical Codes and Market Rules (EC Directive 2003/54/EC and Regulation 1228/2003/EC). In addition the implementation of this action would support KOSTT in its future integration into the Regional and European mechanisms.

#### Action 4

This action includes services for the tender dossier preparation and/or supervision of three above mentioned actions implementation.

#### **Compliance with state aids provisions**

No state aid provisions are applicable to this project.

KOSTT will compensate eventual damages that could happen during the installation of Optical Ground Wires/OPGWs on the existing interconnection transmission lines.

#### **Co financing:**

Entire project will be co-financed with German Government through Kreditanstalt für Wiederaufbau (KfW). After the Commitment of IPA 2011 and the related German Government's funds, the co-financing arrangement and modalities will be officialised by the signature of a related Delegation Agreement.

#### **Ownership of assets (current and after project completion)**

The owner of assets will be KOSTT, the Kosovo Transmission System and Market Operator.