

2012 Annual Programme

Upgrade of Transmission System Infrastructure: 09 -2012 / 03

1 IDENTIFICATION

Project Title	Upgrade of Transmission System Infrastructure
CRIS Decision number	2012 / 022-940
Project no.	09
MIPD Sector Code	5. Energy
ELARG Statistical code	03.15
DAC Sector code	23040
Total cost (VAT excluded)¹	€13.5 million
EU contribution	€3.5 million
Management mode	Indirect centralised management with the Kreditanstalt für Wiederaufbau (KfW)
EU Delegation in charge	European Union Office in Kosovo*
Implementation management	Kreditanstalt für Wiederaufbau (KfW), in accordance with Article 54 of the Financial Regulation
Implementing modality	The project will be implemented through Indirect Centralised Management Implementing Arrangements with Kreditanstalt für Wiederaufbau (KfW) by means of a Delegation Agreement
Project implementation type	C01
Zone benefiting from the action(s)	Kosovo

¹ The total project 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.

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.

2 RATIONALE

2.1 PROJECT CONTEXT: ISSUES TO BE TACKLED AND NEEDS ADDRESSED

The Kosovo transmission network needs a considerable upgrade in order to ensure a secure and reliable power supply, and thereby fulfil its customers' demands and the obligations derived by grid code requirements. The present condition of the Kosovo electricity transmission network still does not comply with the planning standards of the Grid Code. It does not meet the Grid Code's N-1 security criterion, so the existing 110kV Substations should be reconfigured to a double bus-bar configuration with bus coupler in order to achieve the desired and required network flexibility.

In addition, the Kosovo Energy Strategy 2009 – 2018 has as objective to increase investments in order to improve the transmission and distribution networks to ensure their full integration within the regional and European Electricity networks and reduce the technical losses to a level required by international recognised standards.

In other words, for example, the outage of single 110kV circuit or 220/110kV high voltage switchgear would in many cases put the system at an unacceptable high risk. Kosovo's electricity supply system is very often exposed to this risk. This kind of problems and their frequency are not compliant with international standards and codes. In addition these problems have a negative impact and consequences for both system operators and consumers. Since 2006 the independent operator KOSTT j.s.c is the Kosovo electricity transmission, system and market operator. KOSTT's Investment and Development Plan (IDP) emphasizes this problem and the related consequences and recommends measures how to overcome it.

One of consequences of the lack of investment in obsolete and outdated facilities and network components is very poor reliability and safety of 110kV circuits that are over 40 years old and still in operation. If there will be no further investments, low-rated high-loss conductors (many of whose strands) will be inevitably corroded and damaged. The result will be an unacceptably high level of transmission losses and serious bottlenecks that will consequently reduce the electricity delivered to the grid: this would lead to serious economic constraints, taking into account the current situation of very limited generation production capacities.

Due to the limited power handling capacity of many of the 110kV circuits, transmission losses would be further increased. In addition the voltage quality at the interface points with the distribution network could be seriously deteriorated. This would possibly lead to even higher distribution losses and load-curtailement.

Thus, the reduction of avoidable transmission losses and support for projects to reinforce the transmission/distribution interface/s and fulfil the N-1 criteria as per the requirements of the Grid Code and the ENTSO –E are important objectives for the Transmission Investment and Development Plan (IDP).

2.2 LINK WITH MIPD AND SECTOR STRATEGIES

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

In the MIPD 2011-2013, one of the three priority areas for IPA assistance is Private Sector Development. The priorities in this area include: support for infrastructure for future economic development, improvement of business environment to ensure that Kosovo's socio-economic development can continue. One of the objectives of EU financial assistance is to

support Kosovo in its efforts for reforms and help it advance towards compliance with EU standards in terms of quality and reliability of power supply.

A qualitative and reliable power supply will improve the business environment, attract the investments and ensure the continuation of Kosovo's economic growth.. In addition, this project will have a positive impact on private sector development through an improvement of the business environment and support Kosovo's continued efforts to improve the environment for businesses and facilitate possible future trade agreement negotiations with the EU.

Stabilisation of power supply for the market needs of Kosovo remains one of the top priorities of the Government of Kosovo. This constitutes a fundamental basis for business development and cost reduction. Projections for continued economic growth of Kosovo indicate that a need for increased demand for electricity. According to estimations provided in long-term balance of electricity in Kosovo 2011-2020 (KOSTT study), by 2018 the electricity demand will grow from previous year (2011) demand 5,726GWh to more than 7,900 GWh.

The project links to the priorities identified in Kosovo's latest mid-term expenditure framework (MTEF 2012-2014), on the implementation of the Transmission Development Plan and on meeting requirements of the Law on Electricity (no 03/L-201), the Law on Energy (no 2004/10) requirements of the Transmission System Operator licence and meeting of requirements from Grid Code on N-1 security criteria.

The objective of MTEF 2012-2014 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 to customers, to decrease the technical losses in the network and to improve the voltage profile. All these activities will support KOSTT to become a member of ENTSO-E (UCTE).

2.3 LINK WITH ACCESSION PARTNERSHIP (AP) / EUROPEAN PARTNERSHIP (EP) / STABILISATION AND ASSOCIATION AGREEMENT (SAA) / ANNUAL PROGRESS REPORT

All key documents on the Enlargement Strategy and the European perspective 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 importance of collaboration with IFIs engaged in promoting infrastructure investments is also emphasised.

The EPAP priority for energy sector policies is making progress on meeting commitments under the Energy Community Treaty in particular to upgrade the electricity transmission system and the participation of Kosovo to the regional mechanism for energy market operation. The Treaty obliges the contracting parties including Kosovo to implement the Generally Applicable Standards² of the European Community, including requirements of the UCTE³ related to the technical operation of the transmission network operators.

² 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

³ UCTE - Union for Coordination of the Transmission of Electricity

The Commission's Progress Report for Kosovo 2011 highlights that the need for reliable power supply and upgrading infrastructure impairs the efficiency of market mechanisms and limits Kosovo's ability to conform to standards set under the Energy Community Treaty.

2.4 PROBLEM ANALYSIS

Since 2006 the independent operator KOSTT j.s.c is the Kosovo electricity transmission, system and market operator. Based on the law on Electricity, KOSTT has obtained two licenses issued by the Energy Regulatory Office (ERO) for transmission system operation (TSO) and for market operation (MO). KOSTT has developed a 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 especially at voltage level 110kV which impacts the supply of electricity within the Kosovo's territory.

During the period 2006-2010, important projects for Kosovo transmission system have been completed which have significantly improved the quality of KOSTT services and reduced bottlenecks. In particular support has been given by Kosovo Budget and donors, such as the European Union through its office in Kosovo, and the German Government through the German Development Bank (KfW) for the following projects: the construction of new 400/110kV substation Peja 3 (KfW & KCB), the ongoing project for the construction of the new substation 400/110kV Ferizaji 2 with associated overhead transmission lines (through EU-IPA 2008 Programme), the construction of new 400kV overhead transmission interconnection line Kosovo – Albania (KfW & KOSTT), the installation of second power transformer & Replacement of High Voltage equipment in the substation 220/110kV-Prizreni 2 and the installation of an IT System Platform for Market Operator (EU-IPA 2009 Programme).

The Transmission Network Development Plan (TNDP) 2012-2021 prepared by KOSTT and a Study Report on “Transmission Network Expansion Project” indicate the priorities of intervention needed to let the network systems operate safely and efficiently. These include: transmission, cross-border connections, modulation and general technical system security standards issued where applicable via the European Committee for Standardization (CEN). The identified priority infrastructure interventions are: the “Construction and commissioning of the new 110kV OHL SS Peja 3 – SS Peja1; the replacement of the 110kV High Voltage Switchgear with the Gas Insulated Switchgear (GIS) at the SS 110/35kV Peja 1“; the “Revitalisation of 110kV Transmission Line 126/2 SS Peja2-SS Deçan” with the approximate total length of about 14.57km and “Replacement of power Circuit Breakers at the substation 220/110kV Pristina 4”.

The investment needed to upgrade the transmission network in terms of capacity, security and reliability are very costly, and in the mid-term time frame cannot be covered from Kosovo Budget and/or KOSTT revenues. On other hand the alignment of the transmission network to the European Technical Standards⁴ is a requirement deriving from the Energy Community Treaty for integration in the regional and European Energy System in compliance with European technical standards.

4 Technical standards have been defined under the frame of Energy Community Treaty therefore the compliance is mandatory for signatory parties

KOSTT needs financial support for the following priority projects:

1. Preparation of Tender Dossier and Supervision of the project – (service contract/s),
2. Construction and commissioning of a new 110kV Line, SS Peja 3 – SS Peja 1 and the replacement of 110kV High Voltage Switchgear from AIS to GIS in SS 110/35kV Peja 1 – (works contract),
3. Revitalisation of 110kV Line 126/2, SS Peja 2 – SS Deçan, – (works contract),
4. Replacement of Circuit Breakers at Pristina 4 220/110kV SS – (works contract).

2.5 LINKED ACTIVITIES AND DONOR COORDINATION

Since 2001/02 KOSTT has received different kind of infrastructure and institutional support from European Community and International Financial Institutions. Therefore there are sufficient absorption capacities to safely and reliably operate and maintain the new implemented facilities.

Other donors' projects that support the energy sector are:

- KfW is supporting KOSTT in improving the transmission infrastructure. In 2008 a grant agreement was signed for the construction of a new transmission substation Peja 3 (400/110 kV) and for the 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 the 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 provided technical assistance to the Kosovo's Government (Lignite Power Technical Assistance Project-LPTAP project), and to KOSTT in the past. The project supported the development of new generation capacities in Kosovo. The 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 has supported the preparation of the feasibility study for a new hydropower plant Zhur in Kosovo of 305 MW, and the development of a strategy for investments in energy efficiency and renewable energy sources.

Achievements from the implementation of all projects in the past including those funded by EU (high voltage metering system, implementation of the System for Control and Data Acquisition - Local SCADA system at Kosova B Substation, new construction and rehabilitation of high voltage substations, building and rehabilitation of transmission lines, and other infrastructure & institutional support on upgrading Kosovo's Transmission System to meet EU technical standards and codes) are essential and very well absorbed by Kosovo Transmission System and Market Operator – KOSTT. In particular: the construction of all necessary overhead lines in order to connect the newly constructed Ferizaj 2 Substation to the existing transmission network, the ongoing project for the installation of the third power transformer and the replacement of High Voltage equipment at Prizreni 2 Substation and the installation of IT System Platform for KOSTT Market Operation.

As it is already stated, the investment needed to further upgrade the transmission network in order to increase the capacity and improve the reliability and the security are very costly and in the mid term can not be covered from Kosovo Budget and/or KOSTT revenues. On the

other hand, the transmission network upgrade to the level of European technical standards is a mandatory requirement deriving from the Energy Community Treaty for integration in the regional and European energy system. Therefore further support from donors and International Financial Institutions is needed.

2.6 LESSONS LEARNED

The recently finalised project for building of 400/110kV Peja 3 substation (co-funded KfW and Kosovo Budget) and the project for building of a new 400/110kV Ferizaj 2 substation (co-funded under IPA 2008 Programme) identified in the IDP will significantly improve the security and reliability of power supply in the western part and south-east part of Kosovo. The IPA 2012 projects are complementary actions towards increasing the network stability, security and reliability and consequently improving the quality of power supply.

Close consultation among the stakeholders of the energy sector and a collaborative approach are essential to ensure that all stakeholders are fully informed and support the reforms to be carried out.

The involvement of beneficiaries as counterparts in projects is crucial for ‘ownership’ of projects. This project helps Kosovo institutions in implementing energy reforms and builds the capacity for the sustainable development and its integration into the Energy Community in South-Eastern Europe.

3 DESCRIPTION

3.1 OVERALL OBJECTIVE OF THE PROJECT

The overall objective is to foster the economic development in Kosovo by improving the security and reliability of the power supply.

3.2 SPECIFIC OBJECTIVE(S) OF THE PROJECT

The specific objectives are to improve the security and reliability of the transmission network, to support the reinforcement of the transmission/distribution interface points; to fulfil the N-1 criteria as per Grid Code and ENTSO –E requirements; and to reduce technical losses to a level required by international standards.

3.3 RESULTS

- Reduction of not supplied power (around 1,000MWh per year),
- Reduced power outages due to security risks in the network,
- Increase of the transmission capacity in a 110kV network,
- Reduction of Transmission losses (around 2,500MWh per year) and indirectly reduction of CO2 and other gas emissions,
- Fulfilling Grid Code’s requirements especially the N-1 security criterion, which is one of the ENTSO-E (UCTE) requirements,
- Maintenance process optimisation.

3.4 MAIN ACTIVITIES

Action 1:

1. All necessary services for preparation of the Tender Dossier including the Technical Specification, BoQ, and other necessary documents that part the tender dossier,
2. All necessary services for the supervision of all above mentioned activities.

Action 2:

1. Construction, installation and commissioning of approx 30km of the new 110kV line with the conductor ASCR 240/40mm², earth wire with OPGW between SS Peja 3 and SS Peja 1,
2. Reconstruction of 110kV High Voltage Switchgear of SS Peja 1 (110/35kV), which is more than 50 year old. The risk of operation of the Substation Peja 1 with actual condition is very high. Refurbishment of substation is also necessary in order to accommodate the additional 110kV line from Peja 3 substation. Therefore there is need for proper configuration of the related 110kV bus bar system as well,
3. Construction, installation and commissioning of a new OHL Bay in SS Peja 3.

Action 3:

1. Replacement of existing conductors ASCR 3x150/25mm² by ASCR 3x240/40mm² with the total length of about 14.57 km and the replacement of the existing obsolete insulators by the new composite insulators on the 110 kV line, no. 126/2, direction SS Peja 1-SS Decani.

Action 4:

1. Replacement of existing circuit breakers on 220kV and 110kV side at Pristina 4 SS 220/110kV,
2. Implementation of all associated civil and other necessary works.

3.5 ASSESSMENT OF PROJECT IMPACT, CATALYTIC EFFECT AND CROSS BORDER IMPACT (WHERE APPLICABLE)

The project will have an impact on power supply by improving the technical conditions of Kosovo's existing electricity transmission system. The project will increase the capacity of the transmission network which will enable a more reliable power supply to consumers and will directly have an impact on real time data exchange for the market and the reliability of the transmission system with neighbouring countries' transmission systems. In addition the project will enable KOSTT to meet obligations arising from technical codes and market rules, which derive from relevant EU Directives and standards.

The 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.

3.6 SUSTAINABILITY

The project will improve technical and operational conditions of the power transmission system; it will increase its capacity which will enable more reliable electricity supply to consumers (industrial and household). The replacement of existing high voltage equipment on main transmission substations, that is part of this project as well, will have an impact on the

operational and power supply security. A reliable power supply is one of most important preconditions for encouraging private sector development and investments in Kosovo.

KOSTT is one of most efficient beneficiaries and partners for the Commission and KfW. Its technical and economic performance is considerable. The Commission and KfW have made very good experience in the implementation of projects with KOSTT and expect that all aspects of sustainability such as safe and reliable operation & maintenance are well taken into account. Even the reinvestment costs are covered by the specific structure of the tariff.

3.7 ASSUMPTIONS AND PRE-CONDITIONS⁵

The Government and ERO will provide a continued and uninterrupted support in order to increase the technical ability, security and reliability of power supply.

The Beneficiary/KOSTT and KfW will timely allocate sufficient resources and funds to timely and correctly implement the project. KOSTT will continue with necessary investments to improve the security of network according to the investment and development programs.

The Beneficiary/KOSTT will be committed to implement the requirements of the European Network of Transmission System Operators for Electricity/ENTSO-E and other requirements of the Energy Community Treaty.

The power outage schedule for the concerned overhead lines and substations will be timely planned.

4 IMPLEMENTATION ISSUES

The project will be implemented through Indirect Centralised Management with the Kreditanstalt für Wiederaufbau (KfW) by means of a delegation agreement. KfW has extensive experience in the energy sector in Kosovo and will co-finance the project with €10 million.

The Commission will be prominently represented in all events related to the projects (signing of agreements, ground breaking ceremonies, project sign boards, press releases, etc.). Visibility of the Commission is stipulated clearly in respective agreements between KfW and the Commission. In this regard, the experience in the implementation of joint projects between the Commission and Germany/KfW is very good.

Beneficiary/KOSTT shall support with the budget for expropriation of lands for the new tower constructions for 110 kV lines (Component 2 and Component 3) and shall allocate sufficient staff to the project activities (including on site supervision and necessary reporting);

⁵ 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.

also will support in the preparation of technical specifications, preparation of time schedule for outages, etc.

4.1 INDICATIVE BUDGET

Indicative Project budget (amounts in €)

			SOURCES OF FUNDING						
			TOTAL EXP.RE	IPA EU CONTRIBUTION		GERMAN GOVERNMENT CONTRIBUTION			
ACTIVITIES	IB (1)	INV (1)	€ (a)=(b)+(c)+(d)	€ (b)	%(2)	Total € (c)=(x)+(y)+(z)	% (2)	KFW Grant € (x)	KfW Development Loan € (y)
Actions 1, 2, 3 and 4			13.5	3.5	26	10	74	3	7
Contract 1 (delegation agreement with KfW)		x	13.5	3.5	26	10	74	3	7
TOTAL IB									
TOTAL INV			13.5	3.5	26	10	74		
TOTAL PROJECT			13.5	3.5	26	10	74	3	7

NOTE: DO NOT MIX IB AND INV IN THE SAME ACTIVITY ROW. USE SEPARATE ROW

Amounts net of VAT

- (1) In the Activity row, use "X" to identify whether IB or INV
(2) Expressed in % of the **Total** Expenditure (column (a))

4.2 INDICATIVE IMPLEMENTATION SCHEDULE (PERIODS BROKEN DOWN BY QUARTER)

Contracts	Start of Tendering	Signature of contract	Project Completion
Delegation Agreement with KfW	N/A	Q1 2013	Q1 2017

4.3 CROSS CUTTING ISSUES

4.3.1 *Equal Opportunities and non discrimination*

The Commission is fully committed to a policy of equal opportunity. In all activities during this project, particularly in preparation of specification, participation on training, Factory Acceptance Tests 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 and KOSTT as a beneficiary are 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.

4.3.2 *Environment and climate change*

With regard to environment, this is one of the target sectors of the proposed intervention. Environmental impact assessment will be part of design phase of 110kV line with approximately 30km lengths, 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.

Disaster resilience and risk prevention and management should be integrated in the planning, preparation and implementation of projects.

4.3.3 *Minorities and vulnerable groups*

In all activities during the design and implementation of project, necessary steps will be taken to ensure that the rights of minorities and vulnerable groups are properly taken in account.

4.3.4 *Civil society/stakeholders involvement*

During the activities for design of 110kV line and implementation of the project, all necessary steps will be taken to involve the civil society through the public discussion for construction of line and their proposal for line route. In all activities will be implemented as per the Kosovo Law and KOSTT Grid Code in close cooperation with the related Municipalities.

ANNEXES

- 1. Log frame**
- 2. Description of Institutional Framework**
- 3. Reference list of relevant laws and regulations only where relevant**
- 4. Details per EU funded contract(*) where applicable**
- 5. Project visibility activities**

1. Logical framework matrix

LOGFRAME PLANNING MATRIX FOR Project Fiche		Project title and number		Upgrade of Transmission System Infrastructure
		Contracting period expires 3 years after signing the financing agreement.		Execution period expires 2 years following the final date for contracting.
		Total budget:	€13.5 million	
		IPA budget:	€3.5 million	
Overall objective	Objectively verifiable indicators (OVI)	Sources of Verification		
To foster the economic development in Kosovo by improving the security and reliability of power supply.	Requirements of the Energy Community road map for electricity are implemented. Electricity supply improved. Reduced power interruptions due to safety risk in the network.	Reports of the Energy Community Secretariat. European Partnership action plan. Study Report "Transmission Network Expansion Project" - prepared by Fitchner and financed by KfW. KOSTT Grid Code.		
Specific objective	Objectively verifiable indicators (OVI)	Sources of Verification	Assumptions	
To improve the security and reliability of the transmission network, support the reinforcement of the transmission / distribution interface points, fulfil the N-1 criteria as per Grid Code and ENTSO –E requirements and reduce technical losses to the level required by international standards.	KOSTT's compliance with UCTE (ENTSO-E) criteria. Reduction of not supplied electricity. Reduced number of faults in the network. Reduced power outages due to security risks in the network.	Provisions of System Operator and Transmission Operator licenses. Regulatory Monitoring Report on License compliance. Transmission Development Plan 2012-2021. Study Report "Transmission Network Expansion Project" , prepared by Fichtner.	Continued support of the Government and ERO in order to increase the technical ability, security and reliability of power supply. KfW and the Beneficiary/KOSTT allocate on time and sufficient resources and funds to timely and correctly implement project.	
Results	Objectively verifiable indicators (OVI)	Sources of Verification	Assumptions	
Reduction of not supplied power (around 1,000MWh per year), Reduced power outages due to security risks in	The number of faults during the operation is minimised. The number of power outages is minimised.	KOSTT's daily/monthly reports on supply and demand and power exchange. KOSTT reports on electricity dispatch.	KOSTT continues with investments to improve the security of network according to the investment and	

<p>the network, Increase of the transmission capacity of the 110kV network, Reduction of Transmission losses (around 2,500MWh per year) and indirectly reduction of CO2 and other gas emissions, Fulfilling Grid Code's requirements especially N-1 security criterion, which is one of ENTSO-E (UCTE) requirements, Maintenance process optimisation.</p>	<p>The ENTSO-E (UCTE) security criterion (N-1) is fulfilled. Energy losses are reduced by around 2,500 MWh/year. Reduced undelivered energy.</p>	<p>Records in the substation control system. Regular monitoring reports produced by KOSTT departments for planning and development. Progress reports of the Works Contractors and Designated Supervisor.</p>	<p>development programs.</p>
Activities to achieve results	Means / contracts	Costs	Assumptions
<p>Action 1: Necessary services for preparation of the Tender Dossier (including the Technical Specification, BoQ, etc.) and the supervision of all below mentioned actions.</p> <p>Action 2: Construction, installation and commissioning of approx 30km of the new 110kV line with the conductor ASCR 240/40mm², earth wire with OPGW between SS Peja 3 and SS Peja 1, Reconstruction of 110kV High Voltage Switchgear of SS Peja 1 (110/35kV), which is more than 50 year old. The risk of operation of the Substation Peja 1 with actual condition is very high. Refurbishment of substation is also necessary in order to accommodate the additional 110kV line from Peja 3 substation. Therefore there is need for proper configuration of the related 110kV bus bar system as well, Construction, installation and commissioning of a new OHL Bay in SS Peja 3.</p>	<p>Contracts: Services contract/s for preparation of the Tender Dossier (including the Technical Specification, BoQ, etc.) and the supervision of all proposed works. Three works contracts for the implementation of supply, installation and commissioning activities.</p> <p>Means of verification Reports related to contracts execution. Reports of stakeholders meetings and discussions. Projects documentation and forms. Loan agreements; financial and monitoring reporting. Different studies and assessments of proposed projects.</p>	<p>Action 1: Preparation of the Tender Dossier and supervision of the project for upgrade of Kosovo's Transmission System Infrastructure. €1.3 million. <i>Service contract/s</i> <i>1.3 million</i></p> <p>Action 2: Construction and commissioning of new 110kV OHL SS Peja 3 - SS Peja 1 and the replacement of 110kV High Voltage equipment from AIS to GIS at the SS 110/35kV Peja 1. <i>Works contract</i> <i>8.5 million</i></p> <p>Action 3: Revitalisation of 110kV Transmission Line 126/2 SS Peja2 -SS Deçan " with the total length of approx 14.57 km. " <i>Works contract</i> <i>1.5 million</i></p> <p>Action 4: Replacement of power Circuit breakers at Pristina 4 SS 220/110kV. <i>Works contract</i> <i>2.2 million</i></p>	<p>Beneficiary/KOSTT allocates sufficient staff to the project activities (including on site supervision and necessary reporting). Beneficiary/KOSTT provides all necessary support in the preparation of technical specifications. Good Cooperation between all parties involved in the project. Relevant EU Office staff mobilised for the project monitoring.</p>

Action 3:

Replacement of existing conductors ASCR 3x150/25mm² by ASCR 3x240/40mm² with the total length of about 14.57 km and the replacement of the existing obsolete insulators by the new composite insulators on the 110 kV line, no. 126/2, direction SS Peja 1-SS Decani.

Action 4:

Replacement of existing circuit breakers on 220kV and 110kV side at Pristina 4 SS 220/110kV,

Implementation of all associated civil and other necessary works.

2. Description of the Institutional Framework

In the energy sector of Kosovo the power corporation is KEK (Kosovo Energy Cooperation) 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, 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.

3. Reference list of relevant laws and regulations

- Kosovo Energy Strategy 2010 – 2019.
- MTEF 2012-2014 for Kosovo (Kosovo Authorities).
- Transmission Network Development Plan 2011-2021 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 and 2011 Action Plan on Implementation of the European Partnership for Kosovo.

4. Details per EU funded contract (*) where applicable:

After the signature of Delegation Agreement with Kreditanstalt für Wiederaufbau (KfW), the EU co-financed IPA 2012 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.

The KOSTT Transmission Network Development Plan (TNDP) 2011-2021 and the Fichtner 's Study Report on “Transmission Network Expansion Project” give a high priority to the proposed project that will include the construction and commissioning of the new 110kV OHL SS Peja 3 – SS Peja1 & the replacement of the 110kV High Voltage Switchgear with the Gas Insulated Switchgear (GIS) at the SS 110/35kV Peja 1“, the revitalisation of 110kV Transmission Line 126/2 SS Peja2 -SS Deçan“ with approximately total length of about 14.57km and the replacement of power Circuit Breakers at 220/110kV Pristina 4 SS.

The proposed project "*Upgrade of Kosovo's Transmission System Infrastructure*" will be implemented by KfW through the following actions:

Action 1 (Service Contract/s)

Tasks in this action include:

- Preparation of the Tender Dossier Documentation (including the technical specifications, BoQ, etc) for the actions 2 – 4,
- Assistance during the tendering period until all works contracts are concluded,
- Overseeing the overall performance program of the implementing parties (contractor/s) for actions 2 – 4,
- Assist during the design phase on assessing and approving the design submitted by the contractor/s,
- Check the quality of the equipment and systems supplied to ensure compliance with the contract and relevant technical standards and check and approve the corresponding invoice claims,
- Check and approve testing procedures including site acceptance tests as well as the commissioning of installations and issuing of the related Provisional Acceptance Certificates,
- Assist on handling fault or defect claims in the supplies and systems during the Defect Liability Period,
- At the end of the Defect Liability Period, issue the related Final Acceptance Certificate/s.

Action 2 (Works contract)

This action includes the construction and commissioning of a new 110kV Line, SS Peja 3 – SS Peja 1 with approx 30 km and replacement of 110kV High Voltage Switchgear from AIS to GIS in SS 110/35kV Peja 1.

The technical specifications and the tender dossier will be prepared under this contribution agreement and will include the following:

- Design of the lines, High Voltage Switchgear and other necessary equipment and devices,
- Manufacturing and factory testing,
- Supply and installation of all necessary equipment, components and facilities foreseen under this works contract/s,

- Site acceptance testing, commissioning and provisional acceptance,
- Final acceptance after the expiry of the defect liability period.

Action 3 (Works Contract)

This action includes the Revitalisation of 110kV Line 126/2, direction SS Peja 2 to SS Deçan with the total length of approx 14.57 km.

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

- Design, manufacturing and factory testing of all necessary equipment and components to implement the action,
- Dismantling of the existing equipment that need to be replaced and their transport to a location as per KOSTT's instruction,
- Supply and installation,
- Site acceptance testing and provisional acceptance,
- Final acceptance after the defect liability period expires.

Action 4 (Works Contract)

This action includes the replacement of circuit breakers at 220/110kV Pristina 4 substation.

The technical specifications and the tender dossier will be prepared under this contribution agreement and will include the following:

- Design, manufacturing and factory testing of High Voltage Circuit Breakers and associated necessary equipment and components,
- Dismantling of the existing equipment (circuit breakers and associated equipment and components) that need to be replaced and their transport to a location as per KOSTT's instruction,
- Supply and installation,
- Site acceptance testing and provisional acceptance,
- Final acceptance after the defect liability period.

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 2012-2021,
- Transmission Network Development Plan 2011-2021,
- 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:

This action includes services for the tender dossier preparation and supervision of actions mentioned below.

Action 2:

Based on the registered historical statistical data, the power supply outage in Peja, Deqani and Gjakova region is the result of the tripping of lines Peja 1 – Peja 3 and Gjakova 1 – Gjakova 2. The Lose of Load Probability occurred from line trip is estimated in the level of 0.15%, (13 hours per year out of operation due to the line congestion and faults in SS Peja 1). In this case the energy not supplied was calculated to around 1,600MWh per year. If the proposed new line is not constructed, the amount of not supplied electricity in this region will increase. In addition, a very poor technical and operational condition of the over 50 years old 110/35kV Peja 1 Substation shall be considered as well.

The impact of the second line on the reduction of power losses is significant. Computer calculation of the energy transmission losses with and without the new proposed line shows clearly the yearly loss reduction by around 2,500MWh.

With the €30 per MWh losses and €400 per MWh for energy not supplied the yearly benefit of the project can be estimated as follow:

$$B = €30 * 2500 + 400 * 1,600 = 0.715 \text{ Million per year.}$$

The cost of energy not supplied can increase in the future, depending on Kosovo's economic development.

Action 3:

One of consequences of lack of investment in obsolete over 40 years equipment and components of the network is that many of old 110kV circuits that are still in operation will be inevitably corroded or damaged. Therefore, there is a risk for having a high level of transmission losses that for sure will reduce the electricity delivered on the grid. This need to be considered as a serious economic constrain, taking into account the current situation of the limited generation production capacity in Kosovo.

The analysis of the planned transmission system, as was defined from probabilistic reliability analysis, leads to the conclusion that it is necessary to reinforce the 110 kV transmission lines that is selected based on age of the equipment and the level of losses.

The implementation of this action will reinforce the Kosovo's 110kV Transmission Network. Any possible failure of a proposed 110 kV line, would put another important 110 kV Line (direction SS Peja1-SS Peja 2– SS Decan – SS Gjakova 1) at a risk due to high overload that would appear. As consequence, the substations Peja 2, Deçan, Gjakova 1 and Gjakova 2 will lose their loads accordingly. Therefore by increasing the transmission capacity of this line, the mentioned overloads of other lines in case of failure/s will be avoided, power losses will be reduced accordingly and will enable KOSTT in fulfilling the N-1 criterion for this part of transmission network.

This action foresees the replacement of the existing conductors ASCR 3x150/25mm² by ASCR 3x240/40mm² and the replacement of the existing outdated insulators with the new composite insulators. The total length of the line that needs to be replaced is about 14.57 km. Due to increase of the weight of conductors for around 60 %, additional civil works and reinforcement activities on the existing concrete and steel towers will be performed as well. Computer calculation of the energy transmission losses with 40% decrease of the line

resistance due conductor replacement shows clearly the yearly loss reduction by around 1000MWh. Based on statistic historical data and technical condition of the line the yearly the Lose of Load Probability occurred from line trip of the mention line is estimated in the level of 0.10%, (respectively 9 hours out of operation per year, taken in consideration repair time). Due to lose of this line in the winter period the amount of energy not supplied, can reach the level of 1,100MWh (loses of demand for SS Peja 1, SS Deçani and SS Gjakova1&2). This level will increase in the future in quadratic function with demand increase, for the case that project is not implemented.

For the calculated prise of €30 per MWh losses and €400 per MWh for energy not supplied, the yearly benefit of the project can be estimated as follow:

$$B = €30*1,000+400*1,100= 0.47 \text{ Million per year.}$$

Action 4:

The existing circuit breakers installed at Pristina 4 substation are very old and have exceeded the design lifetime period. The statistics historical data indicate that most of the faults recorded in the substation in the last few years result from unreliable operation of Circuit Breakers. System planning studies carried out by KOSTT specialists have shown that the operation of the circuit breaker is not reliable if the calculated short-circuit level at a bus bar exceeds 80% of the rating of the adjacent circuit breaker. Therefore, the existing Circuit Breakers do not fulfil technical requirements based on Electrical Equipment Code (approved by ERO).

The most critical outage in the SS Pristina 4 is trip of the transformers if the faults occurs in 110kV or 220kV bus bars or lose of both 220kV supplied lines from the main 400/220 kV Substation Kosovo B. In this case the Pristina with surrounding demand will be lost (around 25% of total local demand).

This action can be justified by the fact that the Pristina 4 SS is very close to the existing Kosovo's generation units, which means that the expected level of fault currents can be very high. These short circuit currents can be even higher and will for sure exceed the breaker ratings in the substation, considering the fact that in near future are planned to be built new generation capacities (near to the existing generators).

This action includes dismantling of existing circuit breakers and design, supply, installation, testing and commissioning of new ones, on two 220 and 110 kV overhead line, bus coupler, and transformer bays.

This action is complimentary to the actual ongoing contract for the replacement of HV equipment at Prizreni 2 Substation as part of IPA 2009 Programme. Also the Transmission Network Development Plan (TND) 2011-2021 prepared by KOSTT gives high priority to the implementation of this action.

With 0.1% estimated of Lose of Load Probability initialized from faulted circuit breakers in SS Pristina 4 and for extreme outages, the amount of energy not supplied can reach high values (around 2,000MWh per year)

For the e €400 per MWh calculated price for energy not supplied the yearly benefit from the project can be estimated as follow:

$$B = €400*2000= 0.80 \text{ million per year.}$$

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:

The entire project will be co-financed with German Government through Kreditanstalt für Wiederaufbau (KfW). After the Commitment of IPA 2012 and the related German Government's funds, the co-financing arrangement and modalities will be formalised through the signature of a Delegation Agreement.

Ownership of assets (current and after project completion)

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

5. Project visibility activities

The European Union is prominently represented in all events related to the projects (signing of agreements, ground breaking ceremonies, project sign boards, press releases, etc.). Visibility of EU is stipulated clearly in respective agreements between KfW and EU. In this regard, the experience in implementation of join projects between EU and Germany/KfW is very good.

Indeed KfW finances the larger part of the proposed project package. However, it will be strongly emphasized throughout the communication that a larger/reasonable investment package is only possible thanks to the EU contribution. Otherwise, it is impossible for KfW to provide market funds/leverage in the public sector.