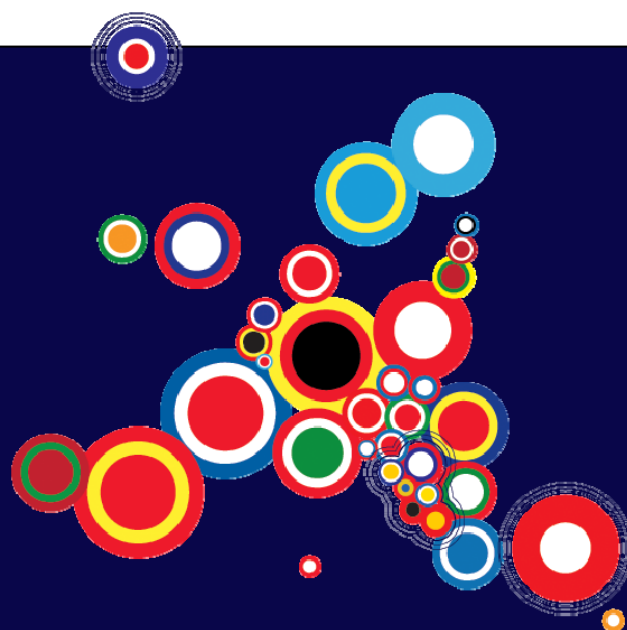




INSTRUMENT FOR PRE-ACCESSION ASSISTANCE (IPA II) 2014-2020

Kosovo*

Improving district heating in Prishtinë/Priština and Gjakova/Djakovica



Action summary

The aim of this action is to improve the district heating supply in Prishtinë/Priština and Gjakova/Djakovica in order to: a. decrease losses of heat energy in the district heating systems thus contributing to higher efficiency within the system; b. improve the quality of heating supply for the customers in order to substitute the use of electricity for heating purposes; c. improve environmental performance, i.e. reduce greenhouse gas emissions from the two district heating systems by switching to renewable energy sources (biomass) in Gjakova/Djakovica and by reduction of energy losses and improved energy efficiency within the Pristina district heating system.

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence

Action Identification	
Action Programme Title	2015 Annual Action Programme for Kosovo
Action Title	Improving district heating in Prishtinë/Priština and Gjakova/Djakovica
Action ID	IPA 2015/38066.6/Kosovo/ Improving district heating in Prishtinë/Priština and Gjakova/Djakovica
Sector Information	
IPA II Sector	Energy
DAC Sector	23070
Budget	
Total cost for action one	EUR 24 million
EU contribution	EUR 21 million
Management and Implementation	
Method of implementation	Direct management
<i>Direct management:</i> EU Delegation in Charge	European Union Office in Kosovo (EUO)
Implementation responsibilities	European Union Office in Kosovo (EUO)
Location	
Zone benefiting from the action	Kosovo
Specific implementation area(s)	Prishtinë/Priština and Gjakova/Djakovica
Timeline	
Deadline for conclusion of the Financing Agreement	31 December 2016
Contracting deadline	3 years following the date of conclusion of Financing Agreement
End of operational implementation period	6 years following the date of conclusion of Financing Agreement

1. RATIONALE

The use of electricity for space heating purpose in Kosovo comprises a substantial portion, more specifically in the households sector the share of electricity consumption for space heating is 25% and in the services it is 15%.

In absence of other heating alternatives, the use of electricity for heating purpose has contributed to frequent shortages in power supply as well as fuelling an unsustainable increase in power demand. The Government, in its heating strategy 2011-2018, has committed to ensure reliable heating supply based on alternative energy sources and new technologies in compliance with EU acquis and with the Energy Community Treaty. The Government has also committed to transpose the new Directive on renewables which promotes the use of cogeneration technologies where feasible.

According to historical data and forecasts, the heat demand will continue to increase on average 3% annually. The improvement of heating quality and development of heat production and distribution capacities plays an important role in reducing electricity demand growth. Moreover, transformation of current District Heating into the Combined Heat and Power plant would be a direct contribution to the sustainable energy development.

PROBLEM AND STAKEHOLDER ANALYSIS

District heating system in Pristina

The district heating system in Prishtinë/Priština ('Termokos') and the district heating system in Gjakova/Djakovica ('Ngrohtorja e Gjakoves') consist of three core businesses: heating production, distribution and supply. Both companies are licensed by the Energy Regulatory Office (ERO) for performing the three mentioned businesses. Both companies are public owned and are supervised by the municipality of Prishtinë/Priština and Gjakova/Djakovica respectively.

The district heating system in Prishtinë/Priština /Termokos was built in 70s. Termokos system consists of: heat production plant, distribution system with 326 substations and 71km of pipes. The heating plant was based on heavy fuel oil (mazut) boilers until November 2014 when the 'Cogeneration' project (see description of Cogeneration project in the next paragraph) started operation at unit B1 of Kosovo B power plant. Currently only about 23% of heating demand in Prishtinë/Priština is connected to Termokos. There is an available capacity at cogeneration plant for additional 30MW of demand to be supplied which means about 50 new substations can be connected to the system.

Through IPA 2008 the EU has provided EUR 14million in co-financing under a direct grant to the Kreditanstalt für Wiederaufbau (KfW) for implementation of the 'Cogeneration' project in Prishtinë/Priština with the purpose of improving the efficiency of district heating distribution system in Pristina and connection to cogeneration unit in Kosovo B power plant units. The total cost of 'Cogeneration' project reached EUR 37 million. It is co-funded by EU, German Government grant of EUR10 million and a KfW loan of EUR 5 million, the Swedish International Development Cooperation Agency (SIDA) and Luxembourg Duchy grant of EUR 3,3 million, Prishtinë/Priština municipality grant of EUR 3,8 million and the Kosovo government grant of EUR1,2 million. The 'Cogeneration' project consists of the following components: 1. Construction of transmission pipeline to connect the district heating network of Pristina to Kosovo B power plant; 2. Installation of cogeneration unit at Kosovo B power plant (B1 and B2 units); 3. Rehabilitation of the district heating network; 4. Rehabilitation of district heating substations.

The implementation of the 'Cogeneration' project started in 2013 with construction of transmission pipeline that connects the heating system of Prishtinë/Priština with Kosovo B power units. The connection at B1 unit was implemented in 2014 so the heating from the 'Cogeneration' project started in November 2014. The connection to B2 unit was completed in April 2015. Due to increase of 'Cogeneration' project cost¹ the

¹ originally EUR 19,7million was planned for transmission pipeline and installation of cogeneration plant at Kosovo B units and EUR 5,5million was planned for rehabilitation of the district heating network (substations and distribution pipes), whereas after the tendering procedure the actual cost increased to EUR 30,8million for transmission pipeline and cogeneration, and the budget for rehabilitation of distribution network had to decrease from EUR 5,5million to EUR 3,5million

budget available for rehabilitation of distribution network (substations and distribution pipes) is reduced (by 40%) and the rehabilitation is scheduled for 2015/2016. As part of 'Cogeneration' project 50 substations (of the total 326) and 5km of pipes will be rehabilitated (out of 35km that need to be replaced).

The district heating system in Prishtinë/Priština (Termokos) has suffered from lack of investments in the past decades and consequently was not able to deliver good quality service to the consumers. However since the 'Cogeneration' project was put in operation in November 2014, Termokos has delivered the best quality heating ever 24hrs/7days to its customers. However the heat losses remain high in the distribution network at about 20%. With the implementation of the 'Cogeneration' project, there is a huge interest on the consumer side to connect to Termokos network. For the last heating season Termokos has increased the revenue collection over 75% compare to 20% which it used to collect in the past years.

Termokos supplies only about 23% of heating demand of Prishtinë/Priština. Currently it supplies heating to the most crowded suburbs, namely Dardania, Ulpiana, Sunny Hill and City Centre. Termokos plans to extend the network to other adjacent suburbs to connect new customers/demand up to the available heat production capacity at cogeneration unit.

District heating system in Gjakova/Djakovica

The district heating company in Gjakova/Djakovica was established in 1980. The district heating system consists of: heating production plant with two boilers of total 38 MW based on heavy fuel oil (mazut), distribution system with 27 km of pipeline and 302 substations (of which 10 substations in commercial sector, 45 substations in residential collective buildings and 247 substations in individual houses). The distribution network consists of a North branch which suffers high losses of hot water due to bad technical conditions of the pipes, and a South branch which was rehabilitated in 2001 and is in good technical condition. The rehabilitation cost of the North branch and the transmission pipe of 1 km are estimated at around EUR 2,5 million which will be financed by the Kosovo Government through grant and possibly loan from the World Bank.

In the last couple of years due to increase of mazut prices in the market² the district heating (DH) company in Gjakova/Djakovica was not able to purchase sufficient mazut, consequently the company was not able to provide reliable and continuous heating supply to its customers, i.e. the company supplied heating for only 4 to 6 hours per day. The company receives subsidies from the Kosovo Government for mazut (EUR 0,5 million for each heating season) but this subsidy is not sufficient to purchase the required quantities to cover the heat demand. Consequently the company currently operates at a lower production capacity. The volatility of fossil fuel prices has made the operation of the plant uneconomic. The Government subsidies are planned in Midterm expenditure framework (MTEF) and will be available for financing biomass after switching from mazut to biomass. In the past the company has suffered from lack of proper maintenance due to low level of income as a result of poor heating supply quality. The heating tariffs will be revised during 2015 with the support of the World Bank to Energy Regulatory Office who is responsible for approval of district heating tariffs. The new tariffs will reflect the cost of heating production, distribution and supply therefore will cover the cost of operation and maintenance.

Furthermore burning mazut created huge negative impact in the air quality in the city due to high level of sulphur in the oil content.

Consequently the company had to investigate for environmentally friendly alternatives in order to continue with heating supply.

In 2014/15 a feasibility study for rehabilitation of the Gjakova/Djakovica district heating system and fuel switching from mazut to biomass was completed through EU funded technical assistance under WBIF³ programme. Based on the study the heat demand that would connect to the system will double in the next 3-5 years, i.e. from 10MW to 19.27MW if the company is able to provide good quality heating supply. The study has analysed two options/technologies both based on biomass: option A with 2 heat only boilers of 8MW each, and option B with one heat boiler of 8MW_{thermal} and a cogeneration (CHP) unit of capacity 8.2MW_{thermal} and 1.5MW_{electrical}. The study shows that the project is feasible both financially and economically. The advantage of option B with CHP unit is that for production of electricity based on

² The mazut price for the heating season 2014/15 was around EUR 700/tonne compare to EUR 500/tonne in the previous heating season.

³ WBIF-Western Balkans Investment Framework

biomass the company would be eligible for feed-in tariff (EUR 71.3/MWh) approved by the Energy regulatory Office, which would in turn improve the business of the company by increasing the income of the company. The existing heat tariffs approved by the Energy Regulatory office are calculated for the system based on mazut, but with the World Bank funded assistance the heat tariffs will be revised in order to reflect the cost of operation & maintenance. The fuel/biomass cost price is estimated at EUR 55 per tonne which is significantly lower than the mazut price (EUR 500-700 per tonne).

The WBIF feasibility study also analysed the supply chain of biomass and it shows that over 30,000 tonnes of biomass waste can be harvested annually in Gjakova/Djakovica district only. The district heating company would need between up to 9,000 tonnes annually and gradually increase to 15,000 tonnes. The company will need to have storage of biomass of 1,400m² size. The biomass storage will be constructed next to the new combined heat and power (CHP) cogeneration plant.

The WBIF feasibility study includes the Environmental Impact Assessment (EIA) for the project which is required for obtaining the environmental permit. The District heating company in Gjakova/Djakovica will apply for environmental permit once the project financing is secured (approval of IPA funds). The process of obtaining environmental permit is up to 2 months, which means that the permit will be obtained prior to starting construction works. Furthermore considering the minor environmental impact of the new heating plant due to switching to biomass instead of heavy fuel oil, the procedure for obtaining permit is simpler and faster.

This Action includes the upgrade of the Gjakova/Djakovica district heating system by switching to a combined heat and power (CHP) cogeneration plant based on biomass and rehabilitation of the district heating network, based on the feasibility study carried out under WBIF. By installing the CHP plant and by using the same amount of fuel/biomass to generate both electrical and thermal energy makes the company financially viable to operate without a need for Government subsidies in the future. However the Government will ensure sufficient funds/subsidy for purchase of biomass and maintenance of the new system until the company is financially capable of covering the full cost of operation and maintenance.

The construction of the new CHP plant based on biomass as well as increased efficiency through upgrade of the distribution network helps the District Heating Company in Gjakova/Djakovica on meeting the requirements of the Energy Community Treaty regarding environmental performance, increased energy efficiency, furthermore it helps the company become financially viable. This CHP project biomass based is supported by the Energy Community Secretariat and it represents a first CHP plant based 100% on renewable energy source not only in Kosovo but also wider in the Energy Community. Furthermore the use of biomass will have an impact of local economy development and on job creation for both men and women.

As recommended in the WBIF study the type of biomass which will be considered for utilisation at the DH plant will be: agricultural residue (corn stover, wheat and barley straw and vine pruning) and forest residue. At present all of the agriculture waste and wood waste is just burnt hence energy wasted because there is no demand yet for utilisation of agriculture waste as an energy source. In the Gjakova/Djakovica region are located 90% of all vineyards in Kosovo (3,200 ha) and mainly around Rahovec and some in Suhareka municipalities. There is about 6,000t of vine prunings in the Gjakova/Djakovica region (private vineyards) which generates 3,920t of biomass for DH plant in Gjakova/Djakovica.

The public forest area in Gjakova/Djakovica region amounts to 16,442 ha with annual volume growth of 3.0 m³/ha and private forest area is 10,311 ha with annual volume growth of 3.5 m³/ha. From the total waste wood quantity of 7,844t the estimated availability of biomass/wood chips for the DH plant in Gjakova/Djakovica is 4,706 t. Based on WBIF study the total amounts of biomass in Gjakova/Djakovica region is 12,797t/year of which: corn stalks 1,389 t/year, wheat/barley straw 2,782 t/year, wood chips from public forests 2,718 t/year, wood chips from private forest 1,988 t/year and vine pruning 3,920t/year.

Energy Regulatory Offices as an independent institutional body that sets the regulatory framework for a free energy market in Kosovo together with Municipalities of Prishtinë/Priština and Gjakova/Djakovica as the owners of respective DH companies will give support during to the entire process of the implementation and beyond it.

RELEVANCE WITH THE IPA II STRATEGY PAPER AND OTHER KEY REFERENCES

The European Commission's Indicative Strategy Paper for Kosovo (ISP) for Kosovo highlights the energy security of supply as a crucial factor for sustainable economic development. The Indicative Strategy Paper underlines the need to improve energy efficiency and to increase the share of renewable energy in the energy consumption. One of the expected results to be achieved under IPA II is the introduction of energy efficiency measures in public buildings and in district heating systems.

The Kosovo's energy strategy states that as part of measures to be undertaken in order to implement the policy for the District Heating should include the technological upgrade and promotion of CHP generation throughout Kosovo. The introduction of indigenous environmentally - friendly fuels for the purpose of Cogeneration, as the first of this kind, is a starting point that shall inspire others to transfer the pattern in their municipalities. Also, the Kosovo's heating strategy points out the role of biomass resources on improvement of the economic state of DH plants.

Security of supply, promotion of investment in the sector, environmental preservation and further development of the energy market are the main strategic goals of the new European strategy for the energy sector in the EU. Derive from these goals a number of important objectives, including the so-called 20% - 20% - 20%. Kosovo's EU approximation requires the implementation of the objectives of the EU 20-20-20 plan for energy, which requires Member States to 2020: Reduce by 20% the emission of gases that create the effect of 'greenhouse', increases in 20% participation of renewable sources in energy consumption and 20% improvement in energy efficiency.

These policies above are currently being developed and thereby they provide the basis for implementing in practice the sustainable issues to which Kosovo is declared to be committed.

The project for rehabilitation of DH system in Prishtinë/Priština and Gjakova/Djakovica is in compliance with the Government heating Strategy 2011-2018 and with the National Plan on Renewable Energy Sources 2011-2020.

Cogeneration project in Prishtinë/Priština has affected the reduction of environmental pollution caused in the past as a result of burning fuel oil. With the reduction of losses in the distribution network and increase the number of customers who receive services from Termokos there will be a direct impact on reducing the use of electricity consumption for heating and consequently reduction pollution.

This project is also in line with the strategic objective presented in ISP for Kosovo 2014-2020, strategic objectives of the energy strategy of Kosovo and the policies to protect the environment from energy sector activities presented in the Energy Strategy of the Energy Community.

SECTOR APPROACH ASSESSMENT

In respect to IPA assistance for investments in the development of infrastructure the needs across the sector are substantial. It will particularly address issues in the energy and agriculture sector as an interwoven link for the establishment of biomass supply chain. Kosovo aims within the energy strategy 2009-2018 and heating strategy 2011-2018 to work towards increased cooperation with local level, for promotion of CHP generation and the environmental safeguards.

Kosovo's budget resources are limited for investments in the Gjakova/Djakovica infrastructure, therefore a support by IPA and donors for implementation of the project are essential. The financing of the CHP plant based on biomass is claimed under IPA 2015 whereas the rehabilitation of the network will be financed through Kosovo Government grant and possibly a loan from the World Bank. The reduction of GHG emission at the urban/local level, with a system for economy-wide gradually helps to comply with EU requirements, which is the matter of urgency.

Positive implications, notably in energy, agriculture, rural development, transport etc. represents cross-sector benefits in line with climate action.

In Pristina the district heating system - Termokos was built in 1970 and almost never could have functioned without financial support of the Government, Municipality or donations. Since the start of the 'Cogeneration' project last November, the financial viability of Termokos has started to improve but there is still a great need for investments in the rehabilitation of the network and extension.

These projects are consistent with the strategic objectives and other strategic documents of the energy sector and the Indicative Strategy Paper for Kosovo from 2014 to 2020. All activity from the planning,

implementation and monitoring process of completing the project will be working closely with the Office of the European Union in Kosovo.

LESSONS LEARNED AND LINK TO PREVIOUS FINANCIAL ASSISTANCE

In the past the district heating company in Gjakova/Djakovica benefited from the donor assistance provided by EU, SIDA etc. on improvements of boilers, mazut reservoirs and on distribution system mainly in the areas which have a high population density and which include public facilities, such as hospitals, schools and administrative buildings.

Due to high prices of heavy fuel oil, the DH Gjakova/Djakovica is seeking for alternative ways to shift into the CHP system, replacing inefficient boilers which are not able to meet the demand properly. Furthermore, operation with these old boilers installed in 1980 and 1990 for years has contributed to enter the company in financial difficulties. To date, it has not proven to be self-sustainable without support from Kosovo Budget while the existing tariffs do not completely cover the costs of supply but are under review process by the Energy Regulatory Office with the support of World Bank. Hence, with the new CHP project in Gjakova/Djakovica due to cheaper fuel (biomass) source the cost of heating production will reduce in comparison to the cost of mazut based production, but also the reliability and quality of heating supply will improve (24hrs/7days) therefore customers satisfaction and revenues will increase. The experience has proven that market and low cost production process must advance hand to hand for a successful progress. The central heating services in those areas are provided traditionally, as an affordable option which prevents people seeking other alternative forms of heating. Also, the consumption based billing as an integral part of the system leads toward increase of public awareness for efficient use of energy.

Termokos has a good experience cooperating with donors. During 2000-2005 a number of projects sponsored by different (SIDA, DFID, EU, GIZ, etc.) have contributed to improving the quality and reducing heat losses. The EU assistance during 2000-2003 helped on improving the state of mazut-based boilers in the heating plant and also on supervising the heating production process.

Through WBIF program and EU funding a feasibility study for the 'Cogeneration' project in Pristina was carried out in 2009, consequently the implementation of the 'Cogeneration' project was financed through combined loan and grants from different donors (as described in pg 3 above).

During the implementation of the 'Cogeneration' project Termokos has gained know-how and expertise on better management of the district heating system. The focus is now on improving the customer care service by quickly responding to any technical problem reported by the costumers. Termokos has significantly improved the revenues in 2015 as a result of better costumers care and supply of good quality heating.

2. INTERVENTION LOGIC

LOGICAL FRAMEWORK MATRIX

OVERALL OBJECTIVE	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	
<p>To contribute to security of energy supply by reducing the thermal energy losses and by increasing the share of renewables in energy production.</p>	<p>Reduction of electricity demand for space heating purpose in the households sector and services sector.</p> <p>Increased heat production from biomass.</p>	<p>Energy Community Secretariat's annual report on Kosovo's progress in the implementation of the Energy Community treaty;</p> <p>Annual energy balance of Kosovo and ERO reports</p> <p>Kosovo's report of the National Plan for Energy Efficiency and Renewable Energy Sources</p>	
SPECIFIC OBJECTIVE	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	ASSUMPTIONS
<p>To improve the energy efficiency by rehabilitating the district heating network in Prishtinë/Priština and by switching the heat production in Gjakova/Djakovica to use the biomass for combined heat and power production.</p>	<p>Increased efficiency of the heat production capacities</p> <p>Reduction of heat losses in Prishtinë/Priština district heating network by up to 5%.</p>	<p>Reports of Feasibility Study project, WBIF</p> <p>Annual energy balance of Kosovo and ERO reports</p> <p>Financial reports from the company and auditors</p> <p>ESTAT database</p> <p>Kosovo's report of the</p>	<p>There is an interest in supporting this project on the central and local levels;</p> <p>The energy efficiency and renewable energy are given priority in Kosovo's strategy with the promotion of CHP generation throughout Kosovo;</p>

		National Plan for Energy Efficiency and Renewable Energy Sources Company Technical and financial reports monthly, quarterly and annual	
RESULTS	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	ASSUMPTIONS
<p>Result 1: Fuel switching from mazut fired boilers to biomass based combined heat and power production at Gjakova/Djakovica heating plant.</p> <p>Result 2: Improved quality of heating supply in Prishtinë/Priština by improving the district heating network conditions.</p> <p>Result 3: Improved environmental performance of the district heating systems and improved local economy by promoting the use of biomass and employment opportunities created for both women and men.</p>	<p>Increased efficiency of the heating production: 95% efficiency of biomass based boilers compare to 25-30% efficiency of the Heavy Fuel Oil (Mazut) boilers; Reduced operating cost of the DH system in Gjakova/Djakovica;</p> <p>Reduction of heat losses in the network up to 5%. Improved metering of the heat supplied; Increased number of customers connected to the network</p> <p>Improved environmental performance of Gjakova/Djakovica district heating system due to switching from heavy fuel oil to biomass in heating production:</p> <ul style="list-style-type: none"> • Reduction of CO₂ emissions from currently 49,094t (based on mazut) to 615t; • Reduced emission of CO as part of acid rain from 13.55t to 1mg; 	<p>Reports of Feasibility Study project, WBIF</p> <p>ROM reports</p> <p>Annual energy balance of Kosovo and ERO reports</p> <p>Financial reports from the company and auditors</p> <p>Kosovo's report of the National Plan for Energy Efficiency and Renewable Energy Sources;</p> <p>Regular Technical and financial reports of the district heating companies on monthly, quarterly and annual basis.</p> <p>ESTAT database</p>	<p>The Government of Kosovo as a contracting party of ECT supports the adoption of EU Directive on Energy Efficiency 2012/27/EU at the Ministerial Council in October 2015.</p> <p>Municipality of Gjakova/Djakovica as a IPA II beneficiary party ensures the smooth implementation of the project.</p>

3.3. Support on organising the biomass supply and on analysing the impact on environment and on local economy and employment;

and the Board of Termokos fully cooperate in the implementation of the project;
Termokos provides all the required information/reports for the purpose of implementing the project;

ADDITIONAL DESCRIPTION

This action consists of upgrade of district heating systems in Prishtinë/Priština and Gjakova/Djakovica as well as technical services for supervision of works in both district heating systems and for support in the operation of the new CHP plant in Gjakova/Djakovica.

The upgrade of the Gjakova/Djakovica district heating system includes construction of a combined heat and power (CHP) cogeneration plant based on biomass and rehabilitation of the district heating network, based on the feasibility study carried out under WBIF. By installing the CHP plant and by using the same amount of fuel/biomass to generate both electrical and thermal energy makes the company financially viable to operate without a need for Government subsidies in the future. However the Government will ensure sufficient funds/subsidy for purchase of biomass and maintenance of the new system until the company is financially capable of covering the full cost of operation and maintenance.

The construction of the new CHP plant based on biomass as well as increased efficiency through upgrade of the distribution network helps the District Heating Company in Gjakova/Djakovica on meeting the requirements of the Energy Community Treaty regarding environmental performance, increased energy efficiency, furthermore it helps the company become financially viable. This CHP project biomass based is supported by the Energy Community Secretariat and it represents a first CHP plant based 100% on renewable energy source not only in Kosovo but also wider in the Energy Community. Kosovo is committed to an Energy Community target that 25% of its energy consumed should come from renewable energy sources, and this project will help meet that target. Furthermore the use of biomass will have an impact of local economy development and on job creation for both men and women.

Based on WBIF feasibility study, operation and maintenance cost for the production of heat, storage of biomass and distribution network in Gjakova/Djakovica will be:

Annual maintenance cost: EUR 70,000; annual labour cost is EUR 160,000; biomass supply cost EUR 550,000. The annual cost of supply of mazut for the operation of the DH plant in Gjakova at present is EUR 2,5 million.

The Financial results for the DH Company in Gjakova/Djakovica according to WBIF study show that the Annual Revenues of the Company are from EUR 1,7 million in the first year of operation to EUR 2 million in the 3rd year of operation and to EUR 3 million in year 10 of operation. The annual O&M cost is EUR 744,000 in the first year of operation increasing to EUR 1,1 million in year 5 of operation and increasing to EUR 1,3 million in year 10 of operation. This means that the company operates at positive EBITDA (earnings before interest, tax, depreciation and amortisation) starting with EUR 962,000 in year one.

Until construction works are completed, the DH Company of Gjakova/Djakovica will apply for district heating tariff at the Energy Regulatory Office (ERO). According to the tariff methodology, the heat tariff reflects in the full the cost of O&M. According to WBIF feasibility study, revenues of the company in the first year of operation (after project implementation) will remain the same. Currently the district heating company in Gjakova/Djakovica operates with 31 employees. However, after the project implementation, as a result of switching to biomass fuel, the WBIF study recommends that the company will need only 25 employees, which means a decrease of 6 employees. However, 5 employees will be retired within 2 years. New skills such as biomass storage management and heat production based on biomass boilers will need to be introduced in the company. The DH Company has already obtained training in Sweden on biomass supply chain sponsored by SIDA. Also the CEO and engineers of the company have conducted a number of study visits to biomass fired cogeneration projects in different EU Member States.

The supply of biomass will be organised through an open tender procedure with criteria of selection based on the price offered. Inevitably, the main challenge is establishment of the biomass supply chain originating from locally available sources (agriculture residue and wood waste) as mentioned on page 4 in order to boost development of local economy and reduce the need for import of biomass. The environmental impact assessment and the procedure for obtaining the environmental permit will be carried out by the District Heating Company.

The existing heating plant in Gjakova/Djakovica is located inside the city. The existing facilities are old and in bad conditions. The existing location is sufficient for the new CHP installations however there is additional space required for the biomass storage. In the new urban plan of the municipality of Gjakova/Djakovica it is foreseen to

install the new CHP plant in the industrial park in the vicinity of the city. However currently the land parcel allocated for the CHP plant is under the auspices of the Kosovo Privatisation Agency (KPA). The transfer of land parcel from KPA to Municipality of Gjakova/Djakovica is expected by late September 2015. In case of failing to handle the transfer process of land to the municipality, the CHP plant can still be installed in the existing location of the old plant but then the Municipality would have to expropriate additional land (1,500m²) for biomass storage.

The upgrade of the district heating system in Prishtinë/Priština consists of rehabilitation of the distribution network i.e. replacement of about 6km of old pipes with preinsulated pipes, rehabilitation of 100 substations, extension of the network with additional 50 substations and installation of meters in 150 substations. Successful implementation of the 'Cogeneration' project in Prishtinë/Priština depends on the reliability of the distribution network. The heat produced at the cogeneration unit at Kosovo B power plant needs to be distributed to the costumers, thus the network (pipes and substations) need to be rehabilitated in order to reduce the level of heat and water losses, in order to increase energy efficiency and to provide good quality heating to the customers. The rehabilitation of the network means replacement of the old existing pipes with new pre-insulated pipes, upgrade of existing substations by replacement of heat exchangers and pumps, installation of heat meters, any civil works required in the substations, electrical installations, etc.

The Action includes also supervision services of the works to be carried out in the two district heating systems mentioned above. In addition, services will include operational support to the district heating system in Gjakova/Djakovica and staff training for the operation of the new technology CHP installed as well as on organising the supply of biomass and measuring the impact on environment i.e. reduction of GHG emissions as a result of switching from mazut to biomass. Support will be provided on preparing the tariff application for approval by the Energy Regulatory Office.

Risks and preconditions:

The following are the risks and preconditions for to the implementation of this Action:

- The Government to solve the transfer of the land parcel for the CHP plant which is currently with the Kosovo Privatisation Agency (PAK) to Municipality of Gjakova/Djakovica before the start of construction works, i.e. at the time of preparing the technical specification for 'Works' tender dossier. Alternatively the CHP project will be implemented in the existing location of the old plant within the city of Gjakova/Djakovica in which case the Municipality of Gjakova/Djakovica has to expropriate the additional land required for the biomass storage by the time the construction works will start.
- The District heating company of Gjakova/Djakovica needs to obtain the environmental permit prior to starting the heating plant construction.
- IPA II beneficiaries have to ensure parallel co-financing for the rehabilitation of the district heating network in Gjakova/Djakovica (estimated at EUR 2,5 million), and for the implementation of this Action in Prishtinë/Priština (estimated at EUR 0,5 million);
- Subsidies for the purchase of biomass in Gjakova/Djakovica (the subsidy of EUR 0,5 million/year already planned in the MTEF for fuel purchase) for the heating season when the new heating plant starts operation (expected heating season Q1 2018) should be continued unless the district heating company will be able to collect sufficient revenue to cover the operating costs in full (which is expected with the onset of the new heating tariffs).

3. IMPLEMENTATION ARRANGEMENTS

ROLES AND RESPONSIBILITIES

Direct responsible authorities in the process are:

- Ministry of Economic Development (MED) is responsible for supporting the company to maintain the activity during implementation of the action.
- Ministry of Environment and Spatial Planning is responsible for environmental protection permit.

- Municipality of Gjakova/Djakovica as the only shareholder of the company is responsible for providing construction permits on the production unit and distribution pipe areas.
- DH Gjakova/Djakovica is responsible to be fully engaged and ensure the facilitation of the works from the early stages until the final phase of the action.
- Energy Regulatory Office (ERO) as an independent body is responsible to monitor and approve licenses for cogeneration units from the biomass sources.
- Agency for Energy Efficiency (AEE) is responsible for implementation of Kosovo's plan on energy efficiency, renewable energy and for monitoring, reporting on the achievement of targets set therein.
- KEDS-KES/CO as a distribution and supply entity purchases the electricity from the CHP plant.

The following institutions have a decision-making role in consultation and determining objectives and the implementation of the Project for the network rehabilitation, reconstruction of thermal substations, heat meters installation and the extension of the network in Prishtinë/Priština:

- Municipal Assembly of Prishtinë/Priština through the relevant bodies for public enterprises

All agencies that have to do with determination and energy policy strategy, Energy Efficiency and alternative energy (renewable sources).

IMPLEMENTATION METHOD(S) AND TYPE(S) OF FINANCING

The project will be implemented through (one or two) 'Works' contract and one Service Contract.

Works Contract: Lot 1 Gjakova/Djakovica- construction of the new heating plant with cogeneration technology - CHP production unit and its connection to the distribution network in Gjakova/Djakovica. The implementation duration of this Contract is 18 months plus 12 months of warranty period.

Lot 2 -Rehabilitation of the distribution network in Pristina. The implementation duration of this Contract is 9 months plus 12 months of warranty period.

Service Contract- for supervision of works and for technical support in the operation of the plant.

The tenders will be open and international.

4. PERFORMANCE MEASUREMENT ACTION

METHODOLOGY FOR MONITORING (AND EVALUATION)

The Commission may carry out a mid-term, a final or an ex-post evaluation for this Action or its components via independent consultants, through a joint mission or via an implementing partner. In case a mid-term or final evaluation is not foreseen, the Commission may, during implementation, decide to undertake such an evaluation for duly justified reasons either on its own decision or on the initiative of the partner. The evaluations will be carried out as prescribed by the DG NEAR guidelines for evaluations. In addition, the Action might be subject to external monitoring in line with the EC rules and procedures set in the Financing Agreement. This action will be included in the ROM plan and a monitoring will be performed.

INDICATOR MEASUREMENT

Indicator	Baseline (2010)	Last available (2014)	Milestone (2017)	Target (2020)	Source of information
Kosovo: Reduction of electricity demand for space heating purpose in the households sector and services sector.	30%	25%	25%	20%	Kosovo's annual energy balance;
Increased heat production and electricity production from biomass (agriculture residue and forest residue/wood waste).	0	0	0	Heat: 45346MWh _{th} Electricity: 6232 MWh _e	Report on implementation of Kosovo's action plan on renewable energy sources;
Increased efficiency of the heat production capacities	30% efficiency of the existing boilers based on heavy fuel oil	30% efficiency of the existing boilers based on heavy fuel oil	30% efficiency of the existing boilers based on heavy fuel oil	95% efficiency of the new biomass based boilers	ERO register of renewable energy projects;
Prishtinë/Priština: Reduction of heat losses in Prishtinë/Priština district heating network by up to 5%.	19%	19.5%	15%	10%	Report on implementation of Kosovo's energy efficiency plan;
Improved metering of the heat supplied;	100 substations metered	150 substations metered	300 substations metered	All substations metered	Termokos report on billing;
Increased number of consumers connected to the network	10, 500 costumers	11, 500 costumers	12,950 costumers (or additional 12,5% of surface)		Reports of Feasibility Study project, WBIF

Gjakova/Djakovica: Improved environmental performance of Gjakova/Djakovica district heating system due to switching from heavy fuel oil to biomass in heating production: CO ₂ CO NO _x SO ₂	49,049t	49,049t	49,049t	615t	Annual energy balance of Kosovo and ERO reports MESP reports on environmental impact of energy activities and inventory of GHG
	13,55mg	13,55mg	13,55mg	1mg	
	135,52mg	135,52mg	135,52mg	12,21mg	
	3,069mg	3,069mg	3,069mg	22,6mg	
Local employment (female/male for the purpose of short-term (construction phase) and long-term jobs (biomass supply chain))	None	None	None	up to 100 people ⁽³⁾	Kosovo Agency for Statistics

(1) - (2) Due to limitations of providing full heat supply sale was in minimum on the year 2014 and the fuel costs are shown if the supply could meet demand.

(3) This includes people working during the construction phase and afterwards labours related to Biomass supply chain for the purpose of the CHP plant.

5. CROSS-CUTTING ISSUES

ENVIRONMENT AND CLIMATE CHANGE (AND IF RELEVANT DISASTER RESILIENCE)

The strong focus of the project on energy efficiency and renewable energy would contribute to a climate change mitigation.

Regarding the upgrade system in Gjakova/Djakovica it enables fuel switch from imported fossil fuels to the indigenous locally available biomass. Moreover, the agricultural residues traditionally in Kosovo are burned on the field hence it would provide manifold benefits for environment. Although is a relatively small capacity, the efficient energy use of the renewable energy sources found as a sufficient local potential in Gjakova/Djakovica municipality supports the concept of low-carbon economy and a step ahead the '20-20-20' targets which could be a good start point for other municipalities.

Regarding the rehabilitation of the district heating networks in Pristina it implies reduction of losses of scarce water resources and reduction of thermal energy/heat losses, also by network extension there will be new costumers connected to the district heating network who used to burn polluting energy fuels for heating purpose that release harmful gases to the environment. Achieving this project reduces pollution and directly affects the improvement of health of citizens of Prishtinë/Priština.

The reduce of GHG emissions from the two district heating systems by switching to renewable energy sources (biomass) in Gjakova/Djakovica and by reduction of losses and improved energy efficiency in Pristina district heating system are of particular importance.

Environmental impact assessment is needed in compliance with requirements of Law o EIA no. 03/L-214 and relevant permissions according to legal framework of Kosovo.

ENGAGEMENT WITH CIVIL SOCIETY (AND IF RELEVANT OTHER NON-STATE STAKEHOLDERS)

The civil society in Kosovo strongly supports promotion of the efficient energy as well as usage of renewable energy sources in order to phase out burning of fossil fuels for the purpose of energy production. In this view, benefits from this project are fully consistent with civil society aims. This project provides an opportunity to realize in practice calling for better utilization of energy and higher share of green energy in the final consumption. During the implementation phase the civil society will be engaged.

In addition to the above, some of the watchdog and advocacy functions are foreseen to be addressed with the Civil Society Facility 2015, which foresees the following actions and will likely cover areas addressed within this Action Document:

- CSO Coalitions: 3 grants to strategic coalitions of at least 4 CSOs to support their networking and advocacy efforts with regards to one of the priority areas of the Indicative Strategy Paper for Kosovo (Democracy and Governance, Rule of Law and Fundamental Rights, Energy, Competitiveness and Innovation, Education, Employment and Social Policies or Agriculture and Rural Development)
- a sub-granting scheme to support CSOs in their efforts to feed into decision-making processes, and thereby enhance CSO capacities and experience related to internal governance structures, strategic planning, communication, financial management, results monitoring and impact evaluation, networking and coalition-building, and advocacy, notably focusing on grass-root organisations.
- Grant scheme to provide operating grants to CSOs to enable advocacy activities and enhance profilisation, networking and coalition-building.

EQUAL OPPORTUNITIES AND GENDER MAINSTREAMING

In Kosovo's society, women spend more time of taking care for children and old people therefore the implementation of the project will help the raise of welfare conditions and would be of particular interest for

benefiting such occupants who are often stranded at home. Also, widows and pregnant mothers because of harshness of winter and power outages get trapped in their dwellings thereby it would have positive contribution for them. Likewise, women benefit from the employment opportunities that will be created, both during the construction and operation. The projects, during the all stages and to all participants, is open and equal opportunity for both genders. On this view, participation of women's CSOs is of particular importance.

MINORITIES AND VULNERABLE GROUPS

From this project will benefit people from all ethnic backgrounds will benefit, including minorities and vulnerable groups.

The location in Gjakova/Djakovica where would be build the CHP is near the social houses for RAE community therefore the distribution pipes easily may be installed to heat their houses.

The projects provide services for all citizens, regardless of their ethnicity or their social status

6. SUSTAINABILITY

Combined Heat and Power technology is the most effective in areas of high building density where the distribution network crosses. The trend toward density urbanization either in Prishtinë/Priština or Gjakova/Djakovica offers a growing market also in the area of sanitary hot water and/or cooling. The low-cost production can be an important part of a sustainable urban development policy thanks to such technology, based on renewable energy sources and/or served by very efficient systems. Successful implementation of these projects enables to decrease the reliance from the heavily budget state subsidy in the future. Moreover, it will create opportunities for economic growth by utilization of local energy sources.

These projects are intended for long term use. Implementation of these projects, as stated above will result in improvement of the service delivery, this means the capacity and opportunity to correct and improve long term maintenance of the facilities. By operating economically enables more opportunities and flexibilities for the management team of the DH companies to prepare long term plans and implementation of tasks.

7. COMMUNICATION AND VISIBILITY

Communication and visibility will be given high importance during the implementation of the Action.

The implementation of the communication activities shall be the responsibility of the IPA II beneficiary, and shall be funded from the amounts allocated to the Action.

All necessary measures will be taken to publicise the fact that the Action has received funding from the EU in line with the Communication and Visibility Manual for EU External Actions. Additional Visibility Guidelines developed by the Commission (DG NEAR) will have to be followed.

Visibility and communication actions shall demonstrate how the intervention contributes to the agreed programme objectives and the EU approximation process. Actions shall be aimed at strengthening general public awareness and support of interventions financed and the objectives pursued. The actions shall aim at highlighting to the relevant target audiences the added value and impact of the EU's interventions and will promote transparency and accountability on the use of funds.

It is the responsibility of the IPA II beneficiary to keep the EU Office and the Commission fully informed of the planning and implementation of the specific visibility and communication activities.

The IPA II beneficiary shall report on its visibility and communication actions in the report submitted to the IPA monitoring committee and the sectorial monitoring committee.

This action is a joint venture with customers and others stakeholders therefore communications with public have a crucial role during the implementation of the action. Moreover, it is related to the public services and hence their participation is desirable.

LIST OF ANNEXES

Note

Due to the impossibility of incorporating the following information into the above table, we have chosen to write them below

Repairing of existing substations:

The number of existing substations which have to be repaired is 100, of which 25 are in the region of Dardania, 20 in the region Center, 20 in the region of Ulpiana, 25 in the region of Kodra e Diellit and 10 in the region of University Clinical Centre of Kosovo (QKUK).

Construction of new substations:

50 new substations have to be installed in these areas:

25 new substations have to be installed in areas where there is an existing heating network (Center, Dardania, Ulpiana and Kodra e Diellit) by installing buildings located close to the existing network and 25 new substations have to be installed in areas where there is no existing heating network and have never before been connected to the heating network: 12 substations in Kalabria, 2 substations in Lagja e Spitalit and 10 substations in Mati 1.

In the table below are presented technical specifications of the pipes which have to be replaced through project of IPA II:

No. Re.	Address	Region	Pipe Ø [DN]	Length	
				M of trench	M of pipe
	From - To		Pipe to be installed (proposal)		
10	Termokos - Ch Iber Lepenc	Center	[DN600]	792	1584
11	Termokos - Hotel Baci	Ulpiana	Ø 508 [DN 500]	290	580
12	Farmed - Intersection Technical Faculty	Ulpiana	Ø 273.0 [DN 250]	200	400
13	Main substations – Zona e Lindjes, Entrance 17 Kodra e Diellit	K. e Diellit	Ø 355.6[DN 350]	995	1990
14	Zona e Lindjes, Entrance 13, Kodra e Diellit – Zona e Lindjes, Entrance 10, Kodra e Diellit	K. e Diellit	Ø 323.9 [DN 300]	250	500
15	Branch B	Center	Ø 323.9 [DN 300]	415	830

16	Rr. B. 3/1 - Rr. B. 4/7	Dardania	Ø 273.0 [DN 250]	274	548
				3216	6432

During 2015 through the current 'Cogeneration project' the following pipes are planned to be replaced with highest priority :

No. Re.	Address	Region	Pipe Ø [DN]	Length	
				M of trench	M of pipe
	From - To		Pipes to be installed (Proposal)		
1	Iber Lepenc - Ramiz Sadiku pump	Center	Ø 508 [DN 500]	700	1400
2	R.Sadiku Pump – Constitutional Court	Center	Ø 457.2 [DN 450]	400	800
3	Ch – Constitutional Court – Youth Center	Center	Ø 406 [DN 400]	550	1100
4	CH – Youth Center	Center	Ø 273.0 [DN 250]	135	270
5	Youth Center - OSCE	Center	Ø 355.6[DN 350]	250	500
6	OSCE - Sht. Shendetit	Center	Ø 323.9 [DN 300]	125	250
7	Branch B	Center	Ø 355.6[DN 350]	215	430
8	Intersection of Kodra e Diellit – Main substation	Ulpiana	Ø 406 [DN 400]	200	400
9	School Dardania - Rr. B. 3/1	Dardania	Ø 323.9 [DN 300]	71	142
				2646	5292

The aim of the 'Cogeneration project' is an emergent rehabilitation of the district heating substations limited to rehabilitation of existing max 50 substations and about 10km of pipes in order to improve the heating supply, meaning to make possible the replacement of the old non-insulated steel pipes which, due to old age and determination, were leaking quite often and took the system out of function causing an interruption in the supply of those areas.

The IPA 2015 Action will build on the 'Cogeneration project', the main aim of which is to lower the loss of water/energy, therefore increasing the efficiency of the energy usage. Another benefit of this project is that it makes possible the extension of the district heating network which leads to the possibility of increase in the number of customers.