Energy Sector Unit
Europe and Central Asia Region
World Bank

Kosovo: Kosovo Power Project
TERMS OF REFERENCE

for the

SFDCC Expert Panel

Dated: June 14, 2011

DESCRIPTION OF THE SCOPE OF WORK

SFDCC External Panel of Experts

Background

1. Coming out of post-conflict administration by the UN, Kosovo declared independence on February 17, 2008. However, its political stability and international recognition are not yet fully secured. By April 2011, Kosovo had been recognized by 75 countries. As a poor, post-conflict and fragile state, Kosovo is only eligible for International Development Association (IDA) credits and grants. With a GDP per capita of € 1,760 it is one of the poorest countries in Europe without easy access to markets. Out of its population of about 2 million people, about 45% were living below the poverty line in 2007. Kosovo has the weakest employment record in Europe: a very high (45%) unemployment rate (76% for the 15-25 year old age group) and a low (29%) employment rate. Health outcomes are extremely low: according to 2007 UNDP data, Kosovo had the highest child and infant mortality rates and the lowest life expectancy (69 years) in Southeast Europe (SEE). Its unreliable power supply is a major impediment to private sector investment, and the associated substantial and continuing fiscal drain, crowds out priority social sector expenditures. Abundant good quality lignite is virtually the only domestic source of primary energy for base-load electricity production. To achieve energy supply reliability, Kosovo needs to replace its aging, unreliable, and highly polluting power plants. It must also urgently commence lignite production from a new mine since existing mines will be depleted in less than two years. The social and political costs of very high unemployment among a young population, caused in part by an unreliable and inadequate power supply and fiscally burdensome power sector, could be very high for Kosovo and the region.

2. In July 2009, the Government of Kosovo articulated a five-pronged energy strategy comprising: (a) private sector investment in a new lignite-fired power generation project, (b) privatization of the electricity distribution and supply business, (c) private sector participation in rehabilitation and environmental upgrade of the Kosovo B Power Station (derated capacity of about 560 MW), (d) decommissioning of the Kosovo A Power Station by 2016-17, and (e) development of renewable resources (including small hydropower plants, wind, solar, biomass). The World Bank, in coordination with other development partners such as the European Commission and USAID, is supporting this strategy.

3. The current electricity annual demand in Kosovo is about 5,200 GWh, a high proportion of which is being met by Kosovo A and B. Both power plants are old (Kosovo A more than 40 years and Kosovo B 25 years) and poorly maintained, resulting in unreliable power supply. This demand is expected to rise to about 7,400 GWh by 2020. Kosovo is also connected with Serbia, Montenegro, and Macedonia through a 400-kV transmission line and has started the construction of an additional 400-kV transmission line to Albania. There have been recent discussions between Kosovar and Albanian system operators to operate as a single control area. Kosovo A is the largest point source of pollution in the region and having outlived its technically and economically useful life needs to be shut down. After the decommissioning of Kosovo A in about 2016-17, there will be a considerable supply shortfall. New generation is needed to address this shortage of supply and a portion of the rising demand by adding about 600 MW of new capacity, with more generation additions in future years if demand grows as expected. The Government has studied two configurations in depth: 1x500 MW and 2x300 MW.

4. The decision between the two configurations was taken taking into account system stability and reliability, comparative plant efficiencies, relative levelized costs and overall CO_2 emissions. It was concluded that a **2x300 MW configuration** would offer significant operational flexibility and lifetime reliability advantages over the larger 500-MW units, and are a more suitable addition to the Kosovo

power system taking into account its present and future size, characteristics, number of units, and current unit size and reserve requirement levels.

5. Kosovo is also a participant in the Energy Community of South East Europe (ECSEE) treaty that establishes a regional electricity market governed according to EU directives. Through United Nations Interim Mission in Kosovo (UNMIK) as a signatory to the treaty, **Kosovo is committed to meet** environmental standards of thermal power plants and mining, and mitigate social impacts, as outlined by various **EU directives**. In the event that the World Bank Group provides the envisaged financial assistance, the investments will have to **comply with the World Bank policies** on environmental and social safeguards.

6. The recently approved Energy Strategy of Kosovo (2009-2018) is built upon a number of analytical reports funded by the World Bank and other donors in the past ten years. Initially, the World Bank funded an Energy Sector Study leading to preparation of a White Paper on Kosovo's energy sector, adopted by the Government of Kosovo as its first Energy Strategy after the conflict, and periodically updated and revised. The Government strategy aims to: (a) reduce CO_2 emissions per MWh produced, (b) significantly reduce local air pollution, (c) manage end-user demand and create an enabling environment for energy efficiency by instilling payment discipline, and (d) facilitate private sector investment in generation as well as in other sectors of the economy. To that end, the Government has completed a technical analysis of the various technology options for the new lignite-fired thermal power plant. Also, with the help of IDA and Dutch grant funds, the Government has already started environmental encapsulation and clean-up of the old ash dump and a long-abandoned coal gasification plant at Kosovo A. In addition, the EC commissioned a detailed study on Kosovo A which reconfirmed that Kosovo A is a highly inefficient and polluting power plant at the end of its life cycle and that its immediate decommissioning would be advisable. In support of Government's energy strategy, Energy Regulatory Office with support from the World Bank completed an assessment of regulatory and legal framework, and feed-in-tariff, for incentivizing the development of renewable energy sources.

7. A pre-feasibility study was completed for the 300 MW Zhur Hydroelectric Power Plant, while the Government is currently starting a competitive selection process for private sector participation in construction of eighteen small hydro power plants. Going forward, with additional financing from the Bank, the Government proposes to pursue several low-carbon growth opportunities. It aims to create a **low-carbon growth strategy** that would include building an energy sector **greenhouse gas (GHG) inventory**; a study on the potential for **wind power** generation in Kosovo; a **carbon capture and storage** (CCS) feasibility study for certain geologic formations in Kosovo; and an **energy efficiency** study.

World Bank Group involvement

8. For the past few years, the World Bank has been active in Kosovo energy sector through the **Lignite Power Technical Assistance Project** (LPTAP), whose objectives are: (i) to help the Government strengthen the enabling policy, legal, and regulatory frameworks conducive to new investments in the energy sector; and (ii) to assist the Government in attracting qualified private investors to develop lignite mines and build new capacity for lignite thermal power generation guided by high standards of environmental and social sustainability. To achieve these objectives, LPTAP is financing, *inter alia*, the preparation of the Kosovo Power Project (known in Kosovo as the "Kosova e Re Project"), including the Transaction Advisor (PricewaterhouseCoopers), Legal Advisor (Hunton & Williams), and Safeguards Advisor (ERM Italia). While the work of the Transaction and Legal Advisors are ongoing, the Safeguard Advisor has completed its work with delivery of a *Strategic Environmental and Social Assessment* (SESA).

9. Other development partners are also active in the Kosovo energy sector: **USAID** has funded studies for assessing the technical and economic feasibility of rehabilitation of Kosovo B, while the **European Commission** has funded a feasibility study to assess decommissioning of Kosovo A thermal power plant. **KfW** has invested in mining equipment and substations, in addition to the 400-kV transmission system with Albania, and is leading the EC investigation of converting Kosovo B into a combined heat and power plant. Through another IDA Grant, the Bank is helping in environmental clean-up of Kosovo A ash dump, and an old, abandoned, coal gasification plant.

10. The Government has invited private sector investors to invest in the "**Kosovo Power Project"** that includes:

(a) build-own-operate a new lignite-fired 2x300 MW power plant called **KRPP**;

(b) rehabilitate-own- [or –lease-] -operate the 2x340 (derated 2x280) MW **Kosovo B** power plant; and

(c) build-own-operate-transfer a new lignite mine called the **Sibovc South Lignite Mine**. KRPP will be an extension of the Kosovo B site and have some common facilities.

11. In parallel, the Government has also launched privatization of the Kosovo Electricity Distribution and Supply company (**KEDS**) that will help improve operational and financial efficiency, demand side management, and reduce losses. IFC has been engaged as Transaction Advisor for the privatization of KEDS.

12. The Government intends to request that a portion of its IDA lending envelope be allocated for an **IDA partial risk guarantee (PRG) for the "Kosovo Power Project"** described in paragraph 10. MIGA and IFC are also expected to participate. The Government may also request, if necessary, a second IDA partial risk guarantee to support privatization of KEDS if so required by the private investors.

13. The Government has prequalified four international consortiums to bid for the construction and operation of the Kosovo Power Project. The winning bid will be chosen through a two-stage transparent bidding process. The advisory team, with input from the inter-ministerial **Project Steering Committee** (PSC), has finalized the Draft RFP that includes key technical, financial, and legal parameters of the transaction. The Draft RFP was issued to the prequalified bidders in August 2010 to obtain their comments which have been since received. The Final RFP, revised with due consideration to the bidders' comments, is expected to be issued by August 2011, and the final bids are expected to be evaluated in the first quarter of 2012. The selected investor will be required to submit environmental management plans for the power plants and the lignite mine, and a mine opening plan, to the relevant regulatory authorities in Kosovo. These documents will also have to be submitted to the Bank by the investor before financial support is approved by the Bank.

SFDCC Expert Panel

14. *Strategic Framework For Development and Climate Change* (2008) (SFDCC) provides the World Bank Group policy on participation in coal-based power generation projects. The SFDCC outlines the following criteria based on which the World Bank Group could support a particular coal project:

(i) there is a demonstrated developmental impact of the project including improving overall energy security, reducing power shortage, or access for the poor;

(ii) assistance is being provided to identify and prepare low-carbon projects;

(iii) energy sources are optimized, looking at the possibility of meeting the country's needs through energy efficiency (both supply and demand) and conservation;

(iv) after full consideration of viable alternatives to the least cost (including environmental externalities) options, and when the additional financing from donors for their incremental cost is not available;

(v) coal projects will be designed to use the best appropriate available technology to allow for high efficiency and, therefore, lower GHG emissions intensity; and

(vi) an approach to incorporate environmental externalities in project analysis will be developed.

15. These criteria are applicable for new coal-based electricity generation facilities, and rehabilitation and modernization of existing coal power plants. However, the rehabilitation and modernization projects are excluded from complying with criteria (i) and (v) in cases where rehabilitation projects result in reduction in lifecycle GHG emissions relative to the relevant counterfactual.

16. In line with the above, *Operational Guidance for World Bank Group Staff* on *Criteria for Screening Coal Projects under the Strategic Framework for Development and Climate Change* (March 2010), referred to herein as the Operational Guidance, necessitates the project team to prepare an assessment of project compliance with the six SFDCC criteria following the Operational Guidance methodology. Furthermore, the Operational Guidance also requires the engagement of an **External Expert Panel** to evaluate the proposed project's compliance with the screening criteria. The Panel will include three experts in the fields of (a) power systems planning and economics, (b) energy policy including evaluation of low-carbon options for the energy sector, and (c) power technologies. One of the members will be appointed as the Panel Chair.

17. The objective of the Panel is to (i) review the concept for the proposed Kosovo Power Project, and (ii) assess the compliance of the Kosovo Power Project with the six screening criteria of the SFDCC. When assessing whether the proposed project has passed the screening criteria, the Panel will be guided by the Operational Guidance, and the documents available in **Annex 1,** which includes the project team's assessment of the application the SFDCC criteria to the Kosovo Power Project, and the large amount of analytical work listed in **Annex 2**.

18. The World Bank will appoint each of the Experts as Short-Term Consultants to the Bank for the provision of the assignment. The appointment of each member of the Panel will expire upon resignation, replacement for due cause, or completion of these Terms of Reference. Subject to the Budget approved by the Bank, the Chairperson will have the authority to appoint short-term specialists, subject to the agreement of the Bank and with supplemental funding as may be required, for specific assignments.

19. These Terms of Reference of the Panel, along with the names and resumes of the Panel members, will be made available to the public on the World Bank website.

Scope of work

20. The "assignment" of the Panel is to review the Kosovo Power Project (described at paragraph 10) according to the six SFDCC screening criteria, prepare two written reports, and thereby advise the World Bank Group whether the Kosovo Power Project complies with the SFDCC criteria and specifically meets the requirements of the Operational Guidance, including the set of monitoring indicators. The Panel will base its review on available documents, including **Annex 1** and those listed in **Annex 2**. The Bank will provide these documents and others, as requested, on a timely basis.

21. **Phase One**. The Panel will prepare a short Phase One Report to assess whether the project complies with the six SFDCC criteria. The Panel would also assess the consistency between the specifications in the Draft RFP and the best appropriate available technology criterion. The assignment may include one field trip to Kosovo of about 3-5 days in-country. The Coordinator will assist with arranging meetings in Kosovo.

22. **Phase Two**. Phase Two of the assignment relates to the review of the proposal of the winning bidder as negotiated with the government. The Panel will review any modifications to the technical specifications or the technology offered by the selected bidder in their proposal, and assesses compliance with the SFDCC best appropriate available technology criterion. Phase Two is expected to commence after a successful bidder is selected and ratified, during the project contract finalization period and be completed before presentation of the proposed IDA PRG to the World Bank management and the Board of Executive Directors. The Initial budget is indicated at paragraph 36.

23. The Coordinator will arrange for internal Bank experts to answer questions by telephone, as reasonably requested.

24. In the event that the Panel has reservations about how some criteria have been applied, it would provide practical and viable recommendations to the Bank to make this project consistent with the objectives of the SFDCC.

Deliverables

25. **Phase One Report** (about 15-20 pages) will be prepared by the Panel assessing whether the project complies with the six SFDCC criteria based on the methodology provided in the Operational Guidance. The report will also assess the consistency between the specifications in the Draft RFP and best appropriate available technology criterion. The Phase One Report will be due one month after appointment of the Expert Panel and before the Final RFP is issued.

26. The **Phase Two Report** of the Panel will be a concise report reviewing any modifications to the technical specifications or the technology offered by the selected bidder in their proposal, and assessing compliance with the SFDCC best appropriate available technology criterion. The work of the Panel is expected to be completed within two months (see paragraph 36 for Initial Budget) from the start of Phase Two. However, the work of the Panel may be extended to review any modifications that may be made during negotiations of the project agreements. Therefore, the Panel may be called for further review up until the time of approval of the proposed IDA PRG by the Bank's Board of Executive Directors.

Procedure for submission of reports

27. **Draft Final Reports**. For each Phase, a Draft Final Report should be submitted to the Government and the Bank for their comments, primarily to check factual accuracy before the Final Report is published. The intent of seeking these comments is to ensure the factual accuracy of the report and not in any way to influence the conclusions and recommendations of the Panel. The Panel will be free to deal with these comments as it considers appropriate.

28. The Final Report, after incorporating the comments received from the Bank and the Government of Kosovo as considered appropriate by the Panel, will be submitted to the Coordinator, for immediate delivery to the Sustainable Development Network Vice-Presidency (SDNVP), with copies to the Europe and Central Asia (ECA) Vice Presidency/Managing Directors (RVP/MD) of the World Bank, and to Executive Vice-Presidencies (MIGA/IFC, as needed), as input to their respective decision-making

processes. The Final Report of each phase will be posted on the World Bank Group website as soon as submitted.

Panel mandate

29. In performing its duties, the Panel will:

(a) uphold the highest standards of integrity and provide an unbiased, independent viewpoint;

(b) provide expert advice that is objective and is based on documented information, discussions, and field observations;

(c) maintain records of its work and its findings;

(d) conduct their work in a transparent way and from time to time during the performance of the assignment inform the Bank and the Government;

(e) work collaboratively to provide the assignment as an integrated team so that members will not only address their own areas of specialty, but will also contribute to an interdisciplinary perspective and maximize opportunities for synergy and cross-fertilization;

(f) report on the results of their work in a professional and timely manner;

(g) maintain confidentiality of any information or documents pertaining to the commercial or proprietary aspects of the project that the Panel may receive from the Bank, the Government or sponsors; and

(h) deliver their Final reports to the World Bank in a form suitable for public disclosure.

Expert not to be engaged in certain activities

30. Each Expert agrees that, during the term of his or her appointment and after its termination, the Expert and any entity affiliated with the Expert shall be disqualified from providing goods, works, or assignment (other than the assignment or any continuation thereof) for any project resulting from or closely related to the assignment.

Confidentiality

31. The Experts will not disclose or publish any proprietary or confidential information relating to the project, this Contract, the Government, the Bank, any Sponsor, except as otherwise permitted in the assignment or in a separate confidentiality agreement with any such party relating only to such party's confidential or proprietary information.

32. The foregoing confidentiality obligations of the Experts do not apply to any information that is or shall become available to the general public in a printed publication.

33. The confidentiality obligations contained in the assignment shall survive termination or expiration of the appointment of each Expert.

34. The Experts will enter into individual confidentiality agreements with the Bank, the bidders, the sponsors, and the Government on mutually acceptable terms, if requested by any such party prior to

receiving information from such party. These agreements should be consistent with paragraphs 31 to 33 of these terms of reference, and satisfactory to the Bank.

Administration

35. The Panel should note the following:

A. Coordinator

The Bank has designated Scott Sinclair, as Coordinator. The Coordinator shall be responsible for the coordination of activities under the assignment, for receiving and approving invoices for payment, and for acceptance of the deliverables.

B. Hiring Department

For the purposes of the assignment, the "hiring department" of the Bank is the Europe and Central Asia Energy Group (ECSS2).

C. Timesheets

During the course of his work under the assignment, including field work, the Experts may be required to complete timesheets or any other document used to identify time spent, as well as expenses incurred, as instructed by the Coordinator.

D. Records and Accounts

The Experts will keep accurate and systematic records and accounts in respect of the assignment, which will clearly identify all charges and expenses. The Bank reserves the right to audit, or to nominate a reputable accounting firm to audit, each Expert's charges and expenses.

E. Payment Conditions

Payment to each Expert shall be made in USD by direct electronic deposit (or check by mail, if requested) following submission of a "Request for Payment of Short Term Consultants (STC) & Short Term Temporaries (STT)" (Form 2370), with appropriate backup, in duplicate to the Coordinator.

Remuneration and Reimbursables

36. Each Expert shall be entitled to receive remuneration as defined in paragraph A below and reimbursable expenditures as defined in paragraph B below, subject to paragraph C below.

A. Remuneration

The Bank will pay each Expert for assignment at the rate per day spent, ratable over a day of eight hours (but in no case more than the stated daily rate for any day), in accordance with the Expert's Short-Term Consultancy appointment letter.

B. Reimbursables

The Bank will pay the Expert for reimbursable expenses, which shall consist of and be limited to:

(i) normal and customary expenditures for official travel, accommodation, printing, and telephone charges; official travel will be reimbursed a the cost of less than first class travel and must be authorized in advance by the Coordinator;

(ii) other such expenses as are approved in advance by the Coordinator.

C. Budget

Notwithstanding any provision herein, no Expert shall be authorized or obligated to spend hours rendering assignment nor to incur reimbursable expenses in excess of amounts budgeted therefor in the then-current Budget (a copy of which shall be provided from time to time by the Coordinator). The Initial Budget is detailed in Table 1. In no case will the Panel or its members incur time or expenditures for which a source of funding has not been identified and committed in writing.

Table 1: Initial budget for SFDCC Expert Panel

	Staff-days	
	Phase One	**Phase Two**
Power technology expert	**15**	**10**
Power systems planning and economics expert	**15**	**5**
Energy policy including evaluation of low-carbon for the energy sector expert	**15**	**5**

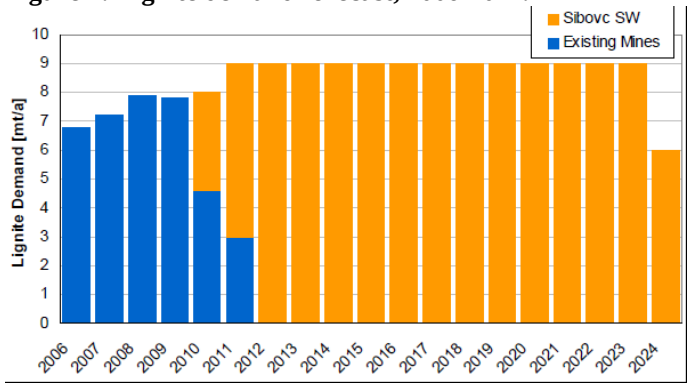
ANNEX 1—SFDCC Criteria for Screening Coal-Based Power Projects

General Assumptions:

1) Energy Demand forecast is based on the "medium growth" scenario as outlined in the Energy Strategy of the Republic of Kosovo for the period 2009-2018.
2) Funding is available for various components of the project funded by other donors.
3) Installation of new rotors etc in 2010-11 at Kosovo B, improving output from 260 MW to 335 MW[1], implementation of a life extension through 2030 or later.
4) KRPP is completed, and adds 580 MW (net) of base-load capacity to Kosovo Power System, on schedule in 2016-2017.
5) Kosovo A (390 MW) is decommissioned by 2017.
6) KEDS is privatized and achieves improvements in its operational and financial performance.

Criteria and Impacts	Description	Quantitative Indicators
(i) ***Criterion: There is demonstrated developmental impact of the project, including improving overall energy security, reducing power shortage, or access for the poor*** **Impact**: significant increase in access to	**Reducing power shortages**. The proposed **Kosova e Re Project** will make a substantial improvement in overall power supply and reliability by replacing and supplementing the highly polluting old units of Kosovo A. Provided there is also progress on billing and collections (largely being managed under a USAID program), the current load shedding regime could be reduced or ended. Timely opening of the new Sibovc South Lignite	• **Reliability of power supply**: o The gap between unmet electricity demand and generation was 477 GWh[2] in 2009. The medium growth demand scenario[3] forecasts that electricity demand would rise to about 7,000 GWh in 2018. The project is expected to fulfill this demand after accounting for the loss of generation capacity due to the decommissioning of Kosovo A.[4] o Demand of about 9 million tonnes of lignite from new mine from 2012. The new mine is expected to supply the required lignite to maintain generation.

[1] Kosova "B" Investment Requirements and Rehabilitation Feasibility Study, USAID, 2010.
[2] Energy Regulatory Office, Kosovo, Annual Report 2009.
[3] Demand Growth Forecast from Energy Strategy of the Republic of Kosovo for the period 2009-2018, MEM, September 2009 which takes inputs from Energy Sector Technical Assistance Project I Study, September 2002.
[4] World Bank staff estimates, 2010. Inputs of Demand Growth Forecast from Energy Strategy of the Republic of Kosovo for the period 2009-2018, MEM, September 2009, which takes inputs from Energy Sector Technical Assistance Project I Study, September 2002. Data Inputs from Development of Power Generation in South East Europe, Implications for Investments in Environmental Protection, World Bank and SEEC, April 2005, and South East Europe Generation Investment Study, update 2007.

Criteria and Impacts	Description	Quantitative Indicators
electricity and/or reliability of power supply for sustained economic growth and poverty reduction	Mine will avoid a situation where the lignite supply will no longer be able to meet generation demand, which would lead to a reduced electricity supply and significant economic losses for Kosovo and general hardship, especially for the poor. Conversely, timely implementation of KRPP will improve business confidence, the economy in general and the employment situation. The Government budget would also show positive impacts, because of increased revenue from, and decreased expenditures for, the energy sector. Life extension of **Kosovo B** will make a significant contribution to system flexibility, reliability, and stability, and affordability of tertiary reserves. **Energy access for the poor**. The lack of supply has led to load shedding and poor quality of service. The poor have the least ability to afford expensive back-up supply and either shift to dirtier fuels (*e.g.*, for heating during winter) or suffer in terms of quality of life and economic activities. **Energy security**. By using efficient technologies and improved management, maintenance and operation, **KRPP** and a rehabilitated **Kosovo B** will greatly increase energy security. This would be	**Figure 1: Lignite demand forecast, 2006-2024.**[5]  ○ Addition of 580 MW (net) of base-load capacity to the system by KRPP by end-2017. ○ Improvement in the perceived business climate in Kosovo: Currently, 9 out of 10 firms cite electricity supply as a constraint to doing business.[6] • **Access to electricity**: Maintenance of 98% or higher level of **reticulation** by KEDS. • **Energy Security**: Current generation plants are unreliable. ○ Kosovo B1 in 2009 had 33 outages, 19 of them were system failures and 14 disconnections. It underwent repair for 40 days, there were also 2 additional repairs for nine days each. Unit B2 had 14 outages, of which 10 were disconnections and 4 system failures. It underwent repair for 40 days and had 2 additional repairs for nine days each[7]. The rehabilitation of Kosovo B will significantly reduce outages and failures. ○ From a net exporter in 2000 Kosovo became an importer of electricity – importing 12.6% of its total consumption.[8]

[5] Equipment Required for the Opening of Sibovc South West Mine, Recommendations for the Government, USAID, May 2008.
[6] BEEPS At-A-Glance 2008 Kosovo,, January 2010
[7] Energy Regulatory Office, Kosovo, Annual Report 2009.
[8] Energy Strategy of the Republic of Kosovo for the Period 2009-2018, MEM, September 2009.

Criteria and Impacts	Description	Quantitative Indicators
	combined with improved exchanges of power with neighboring networks such as the one from Albania, which is largely hydro-power based and therefore highly complementary to Kosovo's lignite-based system.	
(ii) ***Criterion: Assistance is being provided to identify and prepare low-carbon projects*** **Impact:** identification and possible support to Renewable Energy (RE), Energy Efficiency (EE), and other low-carbon interventions, projects, and policies, and identification of associated reductions in GHG emissions, exploiting the synergies between Bank/IFC/MIGA policy dialogue and action plans	Low-carbon projects. Kosovo has limited low-carbon electricity generation opportunities. The Government is in the process of looking for private investors in the Zhur hydroelectric project, for which a pre-feasibility study was completed under LPTAP. The Gazivoda pumped storage hydroelectric scheme needs to be progressed once security situation improves in the northern part of the country. Work on a PPIAF (Public-Private Infrastructure Advisory Facility) funded study to help Energy Regulatory Office implement "Feed-in" tariffs for renewable was completed recently. In addition, Kosovo also exchanges off-peak thermal power with Albania in return for Albania's hydropower. The volume of power exchange between them would further increase on completion of construction of a 400 kV transmission interconnection between Albania and Kosovo. The Bank had funded a feasibility study and KfW is financing	• **Renewable energy**: o IDA funded a **preparation study for the Zhur Hydro Power Plant (May 2009)**. The objective of the study was to prepare a pre-feasibility study and a preliminary Environmental and Social Impact Assessment. o The Danish development agency has funded a **study of potential for developing small hydropower plants** in Kosovo. The study estimates a potential of 63 MW.[9] o **Preparation of a wind feasibility study** (in cooperation with work by REPIC/AUK). This work is ongoing; IDA proposes to supplement the project with funding for an expanded wind survey database. IDA-funded study is proposed to begin in early 2011 after approval of additional financing for LPTAP and complete in six months. The Energy Regulatory Office (ERO) Board has recently issued a preliminary authorization to the "Kosova Ter. Windparkcompany" to develop wind energy generation capacities of 100 MW. o ERO has adopted 'feed-in' tariffs for small hydropower and wind farms. o The Government has set as a target for Kosovo to reach a renewable share of 7% by 2016.[10] • **Energy efficiency**: o See criterion (iii). • **Other**: o **Preparation of a greenhouse gas inventory** for the energy

[9] Prefeasibility Study for Identification of Small Hydro Power Plant in Kosovo. Albanian Association of Energy and Environment for Sustainable Development. May 2006.
[10] Energy Strategy of the Republic of Kosovo for the Period 2009-2018, MEM, September 2009.

Criteria and Impacts	Description	Quantitative Indicators
	construction of this transmission interconnection. The Bank proposes to support a number of initiatives, some in cooperation with other donors, to promote a longer term strategy of reduction in carbon dioxide intensity. The Government's Energy Strategy of Kosovo (September 2009) includes a framework and indicative targets for Energy Efficiency and Renewable Energy.	sector. This study will necessarily precede the preparation of a low-carbon growth strategy. An IDA-funded study is proposed to begin after approval of additional financing for LPTAP and complete in six months. o **Preparation of a feasibility study for carbon capture and storage (CCS)** in Kosovo. This study will be funded by the CCS Trust Fund for completion in 2011. o **Preparation of a low-carbon growth strategy** for the energy sector in Kosovo. Building on the projects and studies mentioned above, work on the proposed low-carbon growth strategy is slated to begin in mid-2011 and complete by year-end 2011 under IDA funding. o **Capacity building** in the Ministry of Environment and Spatial Planning. IDA-funded program to enhance the skills of Government to evaluate and monitor environmentally and socially important projects. Proposed to begin in 2011.
(iii) ***Criterion: Energy sources are optimized, looking at the possibility of meeting the country's needs through energy efficiency (both supply and demand) and conservation*** **Impact**: evaluation of existing plans on future energy requirements by incorporating EE (both demand and supply) and energy conservation interventions and quantifying their impacts. If not satisfactory, help in their establishment and implementation to	**Improved energy efficiency**: (i) development of an initial Energy and Energy Efficiency Database for Kosovo, a survey of energy efficiency in public sector buildings and an energy efficiency education program by the American University in Kosovo; (ii) ongoing through a management contract funded by USAID (a) a commercial loss reduction program, inter alia through improved metering and billing and collection programs; and (b) improved demand side management practices initially focusing on large industrial and commercial consumers ; (iii) through loss reduction and efficiency improvement targets to be set as part of multi-year tariff compact with to-be-privatized KEDS (IFC hired by the Government as Transaction Advisor)	• **Energy efficiency**: o Completion of the KfW-funded feasibility study on **cogeneration for district heating** in Pristina.. Incorporation of the results of the feasibility study in the Final RFP for the Kosova e Re Project. o Completion of the **Energy and Energy Efficiency Database** as designed by American University of Kosovo by the end of 2011. It also includes an energy efficiency survey of the public sector buildings and an education campaign by end of 2011. o Expansion of **improved metering** of KEDS customers by 2012. • **Energy conservation**: o **Reduction of commercial losses** (theft and non-payment) (about 35% in 2009) and **technical losses** in distribution (17% in 2009) by privatizing distribution and supply of electricity. Targets for loss reduction and efficiency improvements in distribution will be part of the privatization agreements and incorporated in the tariff review process by the regulatory agency.

Criteria and Impacts	Description	Quantitative Indicators
facilitate a full cost economic comparison of supply and demand resources to meet energy needs capitalizing on the synergies between Bank/IFC/MIGA policy dialogue and action plans.	(iv) supply-side efficiency through improved management practices at Kosovo B and KRPP and at KEDS; (v) EC, GTZ is leading an energy efficiency capacity building program; World Bank Institute would supplement this effort through a regional program. KfW is examining the feasibility of potential cogeneration of heat and power at Kosovo B and/or KRPP to provide steam for the Pristina district heating system. Under the RFP for the Kosova e Re Project, bidders will be required to implement this option if the results of the feasibility study are positive. Provision of heat through cogeneration could potentially save the district heating system up to 10,000 tonnes of heavy fuel oil per year.	
(iv) ***Criterion: After full consideration of viable alternatives to the least cost (including environmental externalities) options, and when the additional financing from donors for their incremental cost is not available*** **Impact**: project is confirmed to be the least cost after full consideration of alternatives and inclusion of environmental	**Viable alternatives**. Kosovo has no other viable alternatives for large-scale base load power generation besides lignite. It has no access to natural gas imports. Hydroelectric and wind power opportunities are limited in size. Opportunities to import power from neighboring countries are limited due to transmission constraints as well as the high cost of imported power in the tight regional market. The regional Generation Investment Study 2004 (referred in Section (i)), and its update in 2007 to reflect changes in the price of fuel and carbon, concluded that Kosovo lignite power would be the least cost in varying	• **Least-cost analysis**: ○ **Least-cost analysis will be updated at the time of appraisal** of the proposed PRG from the 2006 analysis taking into consideration the updated project costs and environmental externalities, and EU directives. ○ The analysis done in 2006 shows that the project is least-cost after consideration of alternatives and factoring in environmental externalities costs into the levelized cost of electricity under investigated environmental cost scenarios with costs of greenhouse gas (GHG) emissions ranging between €5-19/tonne CO_2-eq.

<table>
<tr><th>Criteria and Impacts</th><th>Description</th><th>Quantitative Indicators</th></tr>
<tr>
<td>externalities in the analysis; in case other options are economically viable, availability of additional financing from donors to cover incremental costs have been pursued and assessed (but ultimately does not materialize).</td>
<td>capacity (between 2000 to 4800 MW) under various scenarios of carbon costs, fuel prices, and regional integration[11].

Kosovo already swaps some power off-peak with the predominantly hydroelectric system in Albania. KfW is financing a new 400-kV transmission system between Albania and Kosovo, which should allow improved optimization between the two systems.</td>
<td>
Table 2: Levelized cost with and without environmental externalities, 2006 (in eurocents/kWh)[12]
<table>
<tr><th rowspan="2">Technology</th><th rowspan="2">Without environmental externalities</th><th colspan="2">With environmental externalities</th></tr>
<tr><th>CO_2-eq €5/tonne</th><th>CO_2-eq €19/tonne</th></tr>
<tr><td>Lignite subcritical</td><td>3.60</td><td>4.92</td><td>6.30</td></tr>
<tr><td>Lignite supercritical</td><td>3.55</td><td>4.84</td><td>6.09</td></tr>
<tr><td>Lignite ultra-supercritical</td><td>3.58</td><td>4.83</td><td>6.02</td></tr>
<tr><td>Natural gas combined cycle*</td><td>5.47</td><td>5.95</td><td>6.51</td></tr>
<tr><td>Fuel oil</td><td>6.48</td><td>7.82</td><td>8.77</td></tr>
</table>
*Kosovo has not known gas resources or supply source. However, in the region several proposals for building a gas pipeline through South East Europe have been discussed for several years at a conceptual level by market players and the governments. Though highly uncertain, an assessment was carried out on the assumption that gas becomes available for power generation in Kosovo.

• Environmental Externalities:
o Environmental externalities were quantified for the project and alternate generation technologies in 2006. Environmental and particularly health impacts related to air emissions of SO_2, NO_x, NH_3, NMVOC, and primary particles, and the emission of GHG
</td>
</tr>
</table>

[11] Generation Investment Study, Update 2007. Volume 1. Summary Report.
[12] Table compiled with inputs from LPTAP Project Appraisal Document, 2006 and World Bank staff estimates, Kosovo Lignite Power Initiative – Economic Analysis, 2006.

Criteria and Impacts	Description	Quantitative Indicators
		(CO_2, CH_4, and N_2O) were considered. ○ Estimated cost of environmental/health impacts range from 0.69-0.76 eurocent/kWh for coal technologies to 0.75 eurocent/kWh for fuel oil and 0.24 eurocent/kWh for combined cycle. ○ Emissions of GHG range from 0.92-1.02 kg/kWh for coal technologies to 0.81 kg/kWh for fuel oil and 0.42 kg/kWh for combined cycle natural gas.[13] Valuing such emissions at **€19/tonne** of CO_2-equivalent the carbon costs of the lignite plant are about 1.75-1.94 eurocents per kWh, while the fuel oil plant has a climate cost of 1.54 eurocents. These prices are 0.41-0.45and 0.37 eurocent/kWh, respectively, at a price level of CO_2-eq **€5/tonne** (approximately the price of CDM certified emissions in 2006) as was investigated in the Economic Analysis carried out by the Bank team. The CCGT plant would have a carbon cost of 1.04 eurocents[14] at a price level of CO2-eq €19/tonne but is not feasible due to unavailability of natural gas in Kosovo. .
(v) ***Criterion: Coal projects will be designed to use the best appropriate available technology to allow for high efficiency and, therefore, lower GHG emissions intensity*** **Impact**: assessment of the appropriateness of the	**Best appropriate available technology**. Kosovo has a relatively small power system – total demand about 1000 MW. Determination of the maximum unit size is the result of comprehensive analysis and power system planning. Kosovo's Transmission System and Market Operator (KOSTT) expressed its concerns regarding the possible addition of a single	• **Analysis of alternative technology options**: ○ **Comparison between continuing of Kosovo A with KRPP:** Retirement of Kosovo A from active service by end-2017 and replacement by KRPP, would increase efficiency from about 25%[20] to at least 37%. ○ The **technology analyses** for KRPP were completed in February-April 2010. The technology alternatives considered were ultra-supercritical pulverized coal (PC) with a thermal efficiency of 42% and circulating fluidized bed (CFB)

[13] World Bank staff estimates, Kosovo Lignite Power Initiative – Economic Analysis, 2006.
[14] LPTAP Project Appraisal Document, 2006.

Criteria and Impacts	Description	Quantitative Indicators
selected technology option, factoring in specific system constraints and size requirements, technical, local environmental situation, commercial availability of technology, and environmental performance.	500-600 MW unit and supported instead a 2X300 MW configuration.[15] The main concerns were: • Balancing issues as a result of tripping a large (500 - 600 MW) unit or the 400-kV transmission line close to such power plant. Such issues are particularly important during low demand periods. • The need to keep a higher tertiary reserve with a large unit; this will reduce the available capacity for power exchanges with neighboring systems. This analysis was carried out by Parsons Brinckerhoff (PB) in two reports (March and April 2010[16]). The conclusion of these studies is the following: "Economically, the transaction generation planning results reveal a modest advantage to the larger 600 MW units. However, it should be noted this is because the required level of reliability (less than 100 hours per year of LOLE) is not achieved by the KRPP project during the planning period 2010 to	subcritical with a thermal efficiency of 38 to 39% depending on the unit size.[21] o **Implementation of KRPP with a thermal efficiency higher than 37%**. The RFP for the Kosova e Re Project requires the investor to use the best available technology with a minimum thermal efficiency of 37% for KRPP. Selection of the winning bidder will depend, in part, on the efficiency of the proposed technological solution. o Completion by investor of **environmental rehabilitation of Kosovo B** by end-2017; compliance of Kosovo B with EU LCP directive for existing plants. The *Kosova "B" Investment Requirements and Rehabilitation Feasibility Study* will present alternatives that would be costed out by the investor and presented to the govt. to make a decision. The investment decision would be further presented to the regulatory agency for review and approval. • **Extension to Regional Analysis**: o Assessment of regional considerations for the project and technology choice completed in 2004 (updated in 2007). Regional analysis does not change the technology choice and finds Kosovo lignite to be the least cost power generation options in South East Europe.[22]

[20] Study for Decommissioning of Kosovo A Power Plant, Evonik. March 2010.
[15] Generation Sizing in View of the Technical and Commercial Requirements of the Kosovo Power System by KOSTT, February 2010.
[16] Generation Planning and Unit Sizing, Parsons Brinckerhoff and PricewaterhouseCoopers, March 2010, and Unit Sizing, Parsons Brinckerhoff and PricewaterhouseCoopers, April 2010.
[21] Generation Planning and Unit Sizing, Parsons Brinckerhoff and PricewaterhouseCoopers, March 2010, and Unit Sizing, Parsons Brinckerhoff and PricewaterhouseCoopers, April 2010.

[22] South East Europe Generation Investment Study, Volume 1,Update 2007.

Criteria and Impacts	Description	Quantitative Indicators
	2029. From an operational standpoint, PB are of the opinion that ***having the entire Kosovo power system demand supplied by one single (500-600 MW) generating unit for any period of time is unacceptable***. PB strongly advises the KRPP stakeholders to avoid moving in this direction as a matter of principle. If two 300 MW units were introduced in 2015, this would mean a maximum of 270 MW rather than 540 MW of load would be at risk of being shed at any one time, for the same increase in capacity, with superior operational flexibility, and without worsening the tertiary reserve requirements." The draft RFP for the Kosova e Re Project specifies, inter alia, the 2x300 MW unit sizes, and creates financial incentives for the tendering of the most cost-efficient design meeting Kosovo, EU, and World Bank environmental guidelines. At this unit size, KRPP will most likely not employ supercritical boiler technology. In addition, the quality of coal would not support this technology. **Kosovo B**. The rehabilitation will improve the environmental performance of existing units to bring them in line with the EU LCP criteria for existing plants, the dust criteria in particular. Continued operation of the units of Kosovo B is important to the operation of the system. Regional Network: There are significant transmission constraints on	

<table>
<tr><th>Criteria and Impacts</th><th>Description</th><th>Quantitative Indicators</th></tr>
<tr><td></td><td>interconnections within the region following a fault outage.[17] Additionally, the lack of “two shifting” capability in existing plants creates load surpluses for export in hours of minimum regional demand that receive no payments.[18]

A larger generation unit creates the need for much larger tertiary reserves than current levels, more than half of which would have to be contracted from the regional system.[19]</td><td></td></tr>
<tr><td>(vi) An approach to incorporate environmental externalities in project analysis will be developed
Impact: develop a methodology for assessment of net local (SOx, NOx, and PM) and GHG emissions at the project level. Such methodologies will be included in the analysis of alternatives and least cost options in criterion (iv) above.</td><td>Technology switching values for carbon dioxide can be calculated during appraisal if so desired, although assumptions regarding realistic alternative fuel supplies are risky. Emissions from Kosovo B will be reduced through rehabilitation.

The Kosova e Re Project will include monitoring of emissions at the project site.</td><td>• Environmental externalities:
o An economic analysis that took into consideration environmental externalities was completed in 2006 and a summary is included in the Project Appraisal Document for LPTAP.
A new economic analysis will be carried out at project appraisal that includes a new and expanded evaluation of switching values, based on the results of the competitive tender for the Kosova e Re Project.

• Baseline values and projections:
Table 3*: Total projected air emissions from power generation (tonnes per annum)[23]
<table>
<tr><th>Air emissions in tonnes p.a.</th><th>Before KRPP commissioning</th><th>After KRPP commissioning</th><th>Reduction</th></tr>
<tr><td>SOx</td><td>14,000</td><td>4,180</td><td>70%</td></tr>
<tr><td>NOx</td><td>12,600</td><td>3,580</td><td>72%</td></tr>
</table>
</td></tr>
</table>

[17] Generation Sizing in View of the Technical and Commercial Requirements of the Kosovo Power System, KOSTT, February 2010.
[18] Ibid.
[19] Ibid.
[23] World Bank staff estimates, 2010. Data inputs from Development of Power Generation in South East Europe, Implications for Investments in Environmental Protection, World Bank and SEEC, April 2005; Energy Strategy of Kosovo, September 2009; and Draft RFP for the Kosova e Re Project, August 2010.

Criteria and Impacts	Description	Quantitative Indicators

PM	20,000	565	97%
CO_2	8,010,000	7,400,000	8%

Table 4*: Total projected air emissions from power generation (tonnes per GWh)[24]

Air emissions in tonnes/GWh	Before KRPP commissioning	After KRPP commissioning	Reduction
SOx	2.43	0.58	76%
NOx	2.20	0.50	77%
PM	3.49	0.08	98%
CO_2	1,400	1,030	26%

*Assuming

1) Zhur hydro comes online in 2014-15

2) Kosovo B comes in compliance in 2016.

[24] Ibid.

ANNEX 2—Key Reports

Key project documents relating to compliance with SFDCC:

1. *Energy Strategy of the Republic of Kosovo (2009-2018)*, September 2009.
2. *Draft Request for Proposals* for the Kosovo e Re Project, issued 10 August 2010.
3. Technical Background Paper Energy Sector for the Donors Conference, 2008.
4. *Strategic Environmental and Social Assessment*, ERM Italia, 2008.
5. *Regional Balkans Infrastructure Study—Electricity (REBIS) and Generation Investment Study (GIS)*, prepared by PwC Consortium (PricewaterhouseCoopers LLP, Atkins International plc, MWH), 31 December 2004, updated 2007.
6. *Project Appraisal Document on a Proposed International Development Association Grant in the Amount of SDR 5.8 million (US$ 8.5 million equivalent) to the United Nations Interim Administration Mission in Kosovo for the Benefit of Kosovo for a Lignite Power Technical Assistance Project*, World Bank, September 2006.
7. *Project Appraisal Document on a Proposed International Development Association Grant in the Amount of SDR 3.8 million (US$ 5.5 million equivalent) to the United Nations Interim Administration Mission in Kosovo for the Benefit of Kosovo for an Energy Sector Clean-up and Land Reclamation Project*, World Bank, May 2006.
8. *Studies to support the development of new generation capacities and related transmission—Kosovo UNMIK*, prepared by Pöyry Consortium (Pöyry, Cesi, Terna, and Decon), August 2007.
9. *Study for Decommissioning of Kosovo-A Power Plant*, Final Report, prepared by Evonik Industries, 15 March 2010.
10. *Economic and Technical Feasibility of the Rehabilitation of Units of Kosovo A Power Plant*, European Agency for Reconstruction Contract 04KOS01/03/007, prepared by A3i Consortium (Application Européenne de Technologie et de Services, AEA Technology plc, Allplan, Iberdrola S.A.), Task Report, September 2005.
11. *Scoping Statement for Environmental Assessment for Rehabilitation of Thermal Power Plant Kosovo B*, Final Report, prepared by Advanced Engineering Associates International et al, 6 April 2010.
12. *Kosova "B" Investment Requirements and Rehabilitation Feasibility Study*, prepared by PA Government Services for USAID, August 2010.
13. *Improvement of District Heating in Kosovo,* KfW. February, 2009.
14. *Development and Climate Change, A Strategic Framework for the World Bank Group: Technical Report*, World Bank Group, January 2009.

15. *Criteria for Screening of Coal Projects under the Strategic Framework for Development and Climate Change*, Operational Guidance for World Bank Group Staff, March 2010.

16. *Generation Sizing in View of the Technical and Commercial Requirements of the Kosovo Power System*, prepared by KOSTT, February 2010.

17. *Generation Planning and Unit* Sizing, prepared by Parsons Brinckerhoff and PricewaterhouseCoopers, March 2010, and *Unit Sizing*, prepared by Parsons Brinckerhoff and PricewaterhouseCoopers, April 2010.

18. *MEM Report on Energy Efficiency. November 2007. Update May 2008.*

19. *Prefeasibility Study for Identification of Small Hydro Power Plant in Kosovo*. Albanian Association of Energy and Environment for Sustainable Development. May 2006.

20. Energy Regulatory Office. Kosovo. Annual Report 2009.

21. *Letter from Minister Pula requesting funding for Carbon Capture pre-feasibility study from specialized funds in the World Bank. Dated: 5May 2010.*

22. *Equipment Required for the Opening of Sibovc South West Mine. Recommendations for the Government*. USAID. May 2008.

23. *Energy Sector Technical Assistance Project I Study*. World Bank Group. September 2002.

24. *Private Sector Participation in Kosovo Power Distribution – Key Issues Report*. International Finance Corporation. February 2010

25. *Kosovo Energy Strategy - Management Briefing Note*, November 2009

26. *Kosovo Energy Sector PER*. December 2009.

27. *Kosovo Lignite Power Initiative – Economic Analysis*. 2006.

28. *Feasibility study of converting Kosovo B into combined heat and power plant, KfW (report expected in June 2011)*

29. Information pertaining to successful bid when available.