



July 16<sup>th</sup>, 2012

## **INDEP, Sierra Club, and RAEL's Reply to the World Bank Group's *Kosovo's Energy Options: Response to the Sierra Club/INDEP Report: Re- evaluating Kosovo's Least Cost Electricity Option***

### **Introduction**

In January 2012, the Sierra Club and the Kosovo Institute for Development Policy (INDEP) issued a report entitled *Re-evaluating Kosovo's Least Cost Electricity Option (Sierra Club/INDEP Report)*.<sup>1</sup> This report evaluated the World Bank's proposed Kosovo Power Project, as described in the Bank's December 2011 study, *Development and Evaluation of Power Supply Options for Kosovo: A Background Paper (Background Paper)*. We pointed out a number of faulty assumptions and methodological limitations in the *Background Paper* that, taken together, substantially undermine the *Background Paper's* claim that Kosovo needs a new coal-fired power plant to meet its demand for energy services. Indeed, the *Sierra Club/INDEP Report* concluded that the proposal to build a new 600 MW lignite fired power plant and rehabilitate Kosovo B would produce significant excess base load capacity that ratepayers would need to pay for, and therefore would likely necessitate a sharp rise in electricity tariffs.

It also found that Kosovo could meet its pressing energy development needs through a system-wide solution at significantly less cost and risk, and with much greater economic and environmental benefits. This would include a mix of (1) reduced transmission system losses; (2) demand side management; (3) base load lignite-fired generation from a refurbished Kosovo B plant; (4) peaking hydropower from within Kosovo and from neighbors with substantial hydropower resources (and possibly wind power); and (5) peaking natural gas-fired units. These conclusions have been reinforced by a more detailed analysis of Kosovo's energy alternatives conducted by Dan Kammen of the Renewable and Appropriate Energy Laboratory (RAEL) at the University of California at Berkeley, the Bank's former Chief Technical Specialist for Renewable Energy. Dr. Kammen's analysis identified a "low-carbon path" to meet Kosovo's energy needs that would significantly reduce human and ecological damage and provide almost

---

<sup>1</sup> Bruce Buckheit, 2012. *Reevaluating Kosovo's Least Cost Electricity Option Preliminary Evaluation of the World Bank's December, 2011 "Background Paper, Development and Evaluation of Power Supply Options for Kosovo"*, available at

[http://action.sierraclub.org/site/DocServer/Reevaluating\\_Kosovo\\_s\\_Least\\_Cost\\_Options\\_for\\_Electricity.pdf?docID=8861](http://action.sierraclub.org/site/DocServer/Reevaluating_Kosovo_s_Least_Cost_Options_for_Electricity.pdf?docID=8861)

30% more jobs, and would do so “at an estimated cost savings of 50% relative to a base-case scenario that includes a new coal power plant.”<sup>2</sup>

On April 15, the World Bank responded to the *Sierra Club/INDEP Report. (Response)*. We welcome the Bank’s efforts to consider our concerns, and to engage in a substantive exchange around the issues we have raised. Unfortunately, while the *Response* provides some useful clarifications and concessions, it mostly reprises the shortcomings of the *Background Paper*. In particular, it treats the *Background Paper* as a comprehensive economic analysis of Kosovo’s energy options, even though the *Background Paper* (1) considered only base load “thermal supply” options, and did not model the opportunities to reduce transmission and distribution losses, improve end-use efficiency, or employ other demand-side management strategies; (2) did not analyze the real shortage of load following and peaking electric generating capacity in Kosovo; and (3) failed to consider the economic impacts of the tariffs increases that will be needed to support the proposed project.

The *Background Paper* therefore does not provide an appropriate basis to move forward with appraisal of the project, either as a matter of sound alternatives assessment or as a matter of compliance with the requirement of the *Operational Guidance for World Bank Group Staff: Criteria for Screening Coal Projects under the Strategic Framework for Development and Climate Change (Operational Guidance)*. These concerns are set out in further detail below.

## **1. Need to prioritize reductions in transmission and distribution losses.**

Sierra Club/INDEP and the World Bank agree that losses in the transmission and distribution system are a major problem in Kosovo’s energy system. However, Sierra Club/INDEP and the World Bank differ significantly on what the World Bank should do about it. We contend that the World Bank and the Government of Kosovo should address this problem as a matter of urgency by taking aggressive, near-term actions to reduce these losses before investing in new thermal base load generating capacity that will not be needed for many years. To support this position, we note that if technical and non-technical losses are each reduced to 5 percent, (levels commonly experienced throughout the world), a refurbished Kosovo B could supply almost twice Kosovo’s 2010 firm base load consumption. (*Sierra Club/INDEP Report*, at 9-10). At such loss levels, the refurbished Kosovo B plant can meet full base load demand through at least 2023, assuming the *Background Paper’s* high-end base load demand growth estimate of 4.5 percent per year. (*Sierra Club/INDEP Report*, at 11-12). Assuming demand grows at the *Background Paper’s* low-case rate of 2.9 percent, the refurbished Kosovo B plant could serve base load demand through 2030. Additional end-use efficiency initiatives would further delay the need for new base load capacity.

In contrast, the World Bank doesn’t propose to take any affirmative steps to address this problem. No efforts to reduce system losses are included in the proposed project. The *Background Paper* recommends no specific programs, considers no new investments, and evaluates no alternatives to reduce technical losses. Instead, citing no evidence or causal mechanisms, it simply assumes that it will take 15 years (!) to cut the rate of these losses in half.

---

<sup>2</sup> Daniel M. Kammen, M. Mozafari and D. Prull, 2012. *Sustainable Energy Options for Kosovo: An analysis of resource availability and cost*, at 6. available at, <http://rael.berkeley.edu/energyforkosovo>;

(*Background Paper*, at 54). Similarly, the *Background Paper* proposes no specific programs or investments to address the problem of non-technical losses. Rather, it assumes that these losses will be organically reduced as a result of the increased “commercial discipline” that will accrue from privatizing the distribution system. (*Background Paper*, at 54).

Moreover, the *Background Paper* makes these assumptions about loss reduction rates purely for the purpose of modeling future demand. It makes no effort to ask the most basic questions regarding the level of loss reduction that could be achieved if the Bank were to focus attention and resources on the problem: *i.e.* What policies, programs, and investments could the Bank support to reduce losses as quickly as possible? How much new supply capacity could be rendered unnecessary by these alternatives? At what cost?

It is difficult to see how the Bank can support a costly expansion of supply capacity before answering these threshold questions. Indeed, the *Operational Guidance* requires the Bank to address them before proceeding. The *Operational Guidance* places the burden of proof on the Bank to assess supply side efficiency options that are available, quantify their potential savings, and demonstrate that they are not sufficient to avoid or delay the proposed generation expansion, before going forward with a coal-fired project.<sup>3</sup> The *Background Paper* contains no such analysis.

## **2. The need to prioritize investment in end-use efficiency improvements.**

The Sierra Club/INDEP and the World Bank also agree that the end-use efficiency of Kosovo’s energy system should be improved. However, as with the problem of transmission and distribution losses, the Sierra Club/INDEP favors a dramatically more proactive approach than the Bank. Here again, we believe that the World Bank and the Government of Kosovo should address this problem as a matter of urgency, before investing in new thermal base load capacity. To support this approach we note that (a) the Independent Evaluation Group and many others have concluded that systemic improvements in end-use efficiency are generally the fastest, cheapest, cleanest, and most resilient actions developing countries can take to help meet their energy needs;<sup>4</sup> and (b) the Independent Evaluation Group has also found that the World Bank’s efficiency programs—such as programs to distribute compact fluorescent light-bulbs (CFLs)—have among the highest economic rates of return in the World Bank’s energy sector portfolio.<sup>5</sup>

Although the *Background Paper* recognizes that there is “considerable potential” to improve end-use efficiency in areas such as buildings, the proposed project does not actually evaluate that potential or include funding for any programs or policy interventions to promote such improvements. According to the May 1 *Country Partnership Strategy for Kosovo*, the Bank is now considering a US\$32.5 million *Energy Efficiency and Renewables Project* for FY13 that would target inefficiencies in public buildings and household heating. This is certainly welcome

---

<sup>3</sup> *Operational Guidance*, at 8.

<sup>4</sup> World Bank Independent Evaluation Group, (2008). *Climate Change and the World Bank Group, Phase I: An Evaluation of World Bank Win-Win Energy Policy Reforms*; UN Secretary General’s Advisory Group on Energy and Climate Change, 2010. *Energy for a Sustainable Future*; Amory Lovins, 2005. *Energy End-Use Efficiency*. [www.rmi.org](http://www.rmi.org).

<sup>5</sup> World Bank Independent Evaluation Group, 2010. *Phase II: The Challenge of Low-Carbon Development: Climate Change and the World Bank Group*, at 81.

as far as it goes, but inadequate in terms of appropriate energy planning. As with transmission and distribution losses, neither the *Background Paper* nor the *Country Partnership Strategy* assesses the potential savings from end-use efficiency improvements, or compares the economic costs and benefits of efficiency options to those of expanded thermal generation. Yet, as noted above, the *Operational Guidance* requires the Bank to quantify the potential savings from initiatives to promote end-use efficiency, and demonstrate that they are not sufficient to avoid or delay the proposed generation expansion.<sup>6</sup>

### **3. The problem of excess base load capacity in the World Bank proposal.**

The *Sierra Club/INDEP Report* found that taken together, the renovation of Kosovo B and the construction of a new 600 MW coal plant would lead to a substantial overcapacity of base load power. As a result, Kosovo B, Kosovo C, or both will have to be run at uneconomic capacity factors, substantially reducing the amount of time they will be online and generating income. (*Sierra Club/INDEP Report*, at 4-5, 7).

The *Response Paper* responds to these concerns about excess capacity in three ways. It argues that (1) Kosovo C is necessary to meet base load and intermediate load; (2) Kosovo C will be cheaper than a gas-fired plant for meeting intermediate load; and (3) overcapacity will not be a problem because “unnecessary cycling of coal units will be avoided by taking units out of service, especially during periods of low demand....” (*Response*, at 3-4).

None of these arguments is persuasive. First, the *Background Paper* does not actually address the distinction between base and intermediate loads. It lacks any analysis of Kosovo’s intermediate load needs, or any discussion of how they can best be met.<sup>7</sup> The *Background Paper* assumes that Kosovo C will be run as base load (i.e. with 85 percent capacity factor), and that a refurbished Kosovo B will follow in the merit order, operating at a utilization factor of between 55 and 33 percent. (*Background Paper*, at 28, 42). However, these estimates appear to be based on total demand (including peak) rather than base and intermediate needs. (*Background Paper*, at 16-18). Because Kosovo B will not be used to meet real peak demand, it is likely to be used even more sporadically. And, the *Background Paper* does not analyze the “break even” capacity factor for Kosovo B; the capacity factor at which it ceases to be least cost; or the impacts on tariffs of running Kosovo B at such low utilization rates. Since Kosovo B can be refurbished at far lower cost than constructing a new Kosovo C unit, an appropriate economic analysis of whether to build the new unit should have assumed that the new unit will operate intermittently.<sup>8</sup> At load factors of 33-50 percent, a new lignite-fired base load unit is not the low-cost solution. (*Background Paper*, at 33, 42).

Second, the *Response Paper’s* conclusion that a gas-fired turbine would be expensive for load following purposes assumes that it would use open/simple cycle technology. (*Response*, at 4). But the appropriate technology for such an application would be a far more efficient combined-

---

<sup>6</sup> *Operational Guidance*, at 8.

<sup>7</sup> In fact, Kosovo has adequate base load capacity—its shortages now and for the indefinite future are in load following and peaking generation.

<sup>8</sup> We recognize that if both units are built, Kosovo C may well be dispatched more frequently than Kosovo B, but that is a separate issue than determining whether to build the new unit.

cycle unit with a heat recovery steam generator for efficiency and duct burners for peaking needs.

Third, while taking coal units out of operation may avoid unnecessary cycling, it will not do anything to solve the problem that idle units do not generate revenue. The need to recoup costs over more limited operating schedule may necessitate tariffs up to four times higher than current rates. (*Sierra Club/INDEP*, at 15). In addition, it will not address the problem of providing electricity during periods of peak demand.

#### **4. The problem of dramatic tariff increases associated with the project.**

The Bank's *Response Paper* confirms our critique that the *Background Paper* did not estimate the tariff increases that will be needed to finance the proposed project. (*Response*, at 5; *Sierra Club/INDEP*, at 15). The *Response Paper* defends this shortcoming on two grounds: (1) the *Background Paper* "undertakes an economic analysis and does not deal with financial matters such as tariffs;" and (2) "because the lignite plant has the lowest economic cost of all the thermal generating [base load] options analyzed...it will also require the lowest financial increase in electricity tariffs out of the thermal options." (emphasis added). (*Response*, at 5-6).

Neither of these justifications is compelling. First, even as an economic analysis, the *Background Paper* is deficient. As the *Response Paper* points out, an economic analysis is supposed to address the costs of a proposal "to a country's economy or society as a whole." (*Response Paper*, at 5, fn 4.). A dramatic increase in the electricity rates paid by firms and households is sure to have significant impacts on Kosovo's economy. Yet, by failing to take these effects into account, the *Background Paper* essentially assumes that there will be no economic impact whatsoever. Given that tariffs up to four times higher than current rates may be needed to service the total new investments, this is a surprising assumption indeed. (*Sierra Club/INDEP*, at 15).

Second, limiting the alternatives analysis to "thermal generating options" is untenable. *Operational Policy 10.04-- Economic Evaluation of Investment Operations* stresses that the economic analysis is used "to determine whether the project creates more net benefits to the economy than other mutually exclusive options." (para. 1). Accordingly, appropriate consideration of alternatives is "one of the most important features of a proper economic analysis." (para. 3). Alternatives to be assessed must include "other designs involving differences in such important aspects as...types of outputs and services, production technology, location, starting date, and sequencing of components." (para. 3). The *Operational Guidance* applies this principle to the economic assessment of coal-fired power plants by requiring that transmission and distribution improvements, end-use efficiency and renewable energy alternatives be assessed on equal footing with new thermal supply. (*Operational Guidance*, at 6,8,9).

Thus, the *Background Paper's* failure to include these alternatives in the economic assessment is contrary to both basic principles of economic analysis and Bank policy and guidance. The exclusion of alternatives to reduce transmission and distribution losses and improve end-use efficiency are particularly problematic, as they have greatest potential to displace the purported need for new thermal generating capacity, and are thus "mutually exclusive" with respect to the proposed project under *OP 10.04*.

## **Conclusion**

The *Response Paper* does little to redress the fundamental shortcomings of the *Background Paper*. Even with the clarifications that the Bank has provided, it remains evident that the *Background Paper* (1) considered only base load “thermal supply” options, and did not model the opportunities to reduce transmission and distribution losses, improve end-use efficiency, or employ other demand-side management strategies; (2) did not analyze the real shortage of load following and peaking electric generating capacity in Kosovo and (3) failed to consider the economic impacts of the tariffs increases that will be needed to support the proposed project. These issues should be fully assessed before the Bank moves forward with an appraisal of the proposed project.