Getting to Paris via Kosovo's energy choices

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Getting to Paris via Kosovo's energy choices

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The underlying question to the article, 'An analytic framework to assess future electricity options in Kosovo' [1], is how governments and donors decide to fund energy infrastructure projects. The case for consideration is the long suffering decision on the energy pathway for Kosovo's future. Kosovo needs 306 MW of renewables to meet 20% of their energy by renewables and is not far off from meeting it. Currently 10 MW of utility level PV, 53 MW hydro and 1.35 MW wind capacities are licensed and providing electricity to the grid [2]; adding the biomass resources (100 MW, sustainably) and the small scale PV installed[1] with imports coming from hydro-dominated countries, low carbon energy sources are being employed in the country. However, the key question (that many countries are facing)—is how to move away from a carbon driven economy to one that meets the environmental and energy objectives set forth by the US and more recently the Paris Climate Agreement, all while remaining affordable.

The question of moving energy towards a sustainable future while making it affordable, alone is incredibly challenging to answer. Even more so, for Kosovo, which holds only half a million households, a fraction of industry and a struggling and slowly improving business climate. The infrastructure is aging, unreliable and needs both rethinking and significant external investments, add to it that renewables need a flexible system to deliver and maintain energy flows. The article focuses narrowly on the levelized costs (LCOE) of different technology at the macro-investment level. These costs depend heavily on assumptions on the available technology, financing, and agreements among stakeholders with different objectives, and where the LCOE is only one of many considerations.

Globally, economically disadvantaged consumers are more dependent upon their environment but also more sensitive to price changes in critical goods and services. Layer on top of the issue is Kosovo's low-income household sector which accounts for 55% of the electricity demands [2] with additional demands of 170 MW capacity per year[2] in unsustainable wood consumption. Data on energy poor households and businesses indicate a reliance on lignite and spent engine oil for space heating [3, 4]; directly and indirectly impacting consumers, as they create numerous unregulated and unfiltered point sources of pollution[3]. These consumption decisions are driven by opportunity costs between the upfront investments in efficiency and renewables and the marginal costs of consuming cheaper, available, and reliable energy fuels with constrained incomes. For the energy poor in Kosovo to start improving their fuel type consumption and to decrease debts, the data shows that this occurs when the total costs of all energy spent is no more than 15% of monthly income [3]. As such, LCOEs of the paper oversimplify both these incremental and large scale changes that will move demand, supply and policy towards more sustainable sources. Customer centric or behavioral approaches and grid flexibility may provide better incentives and optimization of the investment and dispatch of renewables than the feed-in tariffs considered to reach the objective [5].

When considering affordability, the marginal costs of supplying electricity will be determined by the production cost mix and regional integration. On the Hungarian energy exchange market, base-load and peak-load prices for the October 2015–2016 year have not gone over 53.05 Euro/MWh and 46.37 Euro/MWh respectively. Over-investment in solar in Germany caused prices to drop below zero; therefore, improved interconnections in the EU ENTSO-E system will likely push excess energy in regional markets as investors recuperate costs. Though, the EU policies considered don't account for trade from renewables

[1] The market for private solar PV is operational for businesses and more affluent customers, though no measurement has yet to be done to gauge the capacity. In addition, 10% of the Ministry of Agriculture grants are required to go to renewable energy for 2016.

[2] Of the 2.03 million solid cubic meters, only around 1.2 million is considered sustainable.

[3] Air pollution measurements for the last year shows a significant increase during the winter months, to the point where pollution in Prishtina has been measured higher than in Beijing. As the power plants operate year round, the additional contributions are a result of this consumption (found at http://aqicn.org/city/kosovo/pristina/us-consulate/).

and if these sources count to the importing country's 2020 goals. Much less, how to pay for the domestically produced energy, as renewable feed-in tariffs are inefficient, resulting in high capacity charges, inflexible to market conditions and transfers the burden of planning and risk from the producers to the consumers[4]. Coupling the price impacts with policy, the result of the EU Energy Treaty's third package, which key provision removes cross-subsidized between tariff classes and will effectively charge consumers the costs of obtaining the energy, meaning any increases in price fall directly on consumers[5].

Timing is also everything in energy markets, as during winter when demand are prices are highest, a 4 kW solar system[6] would only produce around 254–288 kWh per month (the average electricity demand which is around 500–600 kWh, before wood fuel and lignite fuel sources are considered). In the summer months, electrical demand averages 300–400 kWh per household and supply from this system would capture 633–705 kWh[7]. These time-variant marginal costs are critical as often to the cost-benefit and to purchasing and planning for energy in the system. Net metering will be a challenge given the lack of balancing resources, planning or infrastructure needed to prevent intermittent drop-offs from collapsing the aging grid, costs not covered in the LCOEs. Improvements to modernize the distribution system are underway and better modeling can address some of these challenges [6].

All before considering the difficult to measure, job creation, unmet energy costs, the environmental costs, expectations of future supply etc. These same considerations need to be made when looking at all of Kosovo's energy pathways. Otherwise, the risk of building stranded assets, stagnating growth further or shifting the margin of consumers between stable and improving to energy poor. The policy suggestions in the paper neglect the complexity and several of the costs that the market participants face, a move that will exacerbate the environmental issues and decrease the energy options for Kosovo's future development.

References

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[3] English *et al* 2015 *Energy Consumption and Potentials for Energy Efficiency Implementation: Analyzing Low Income, Low Service Areas of Kosovo* 156 pp
[4] USAID 2016 *Oil Recycling Supply Chain Assessment* 34 pp
[5] SWECO *et al* 2015 *Study on the Effective Integration of Distributed Energy Resources for Providing Flexibility to the Electricity System* 179 pp
[6] KEDS 2014 *Plani Zhvillimor I Operatorit Të Sistemit Të Shpërndarjes 2014–2023* 58 pp

[4] For example, Spanish households pay around 14 Euros per month before even turning on any appliances resulting from the investments in renewables, compared to the 2 Euros that Kosovars currently pay in fixed charges.
[5] EC, 'Energy Community Implementation—Kosovo Electricity'. For 2015, the average price of 5.64 eurocents per kWh for households and 7.64 eurocents per kWh for non-households.
[6] Sized to average household demands, since business consumers are less uniform in their consumption. Current prices for solar fall around 1500 EUR/kW (without battery storage) for PV and about 2300 euro for 200L system for water heating.
[7] The solar production numbers come from the NREL solar calculator and the demand numbers come from the energy supplier KESCO.