

Clean Energy Event of the Balkans

Towards a Low Carbon Economy in 2050

Coal Regions in Transition (10:30-10:40, morning of Sept. 19th)

Region of Western Macedonia Roadmap on Clean Energy Transition

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Brief Talking Points

- Introduce myself, including what the World Bank is doing to assist the Government, and my role in that.
- Others in this conference are speaking with much more knowledge and authority than me on the specifics of Western Macedonia, and its energy transition. I would just like to share a few ideas and suggestions.
- The fundamental idea almost goes without saying: any energy transition needs to preserve and promote employment. People obviously need jobs, and transitions need to be carefully designed with that objective at the forefront of everyone's mind.
- Equally obviously, energy transitions in specific places, such as Western Macedonia, take place in specific circumstances – local conditions matter – but we can identify some common elements across energy transitions these days.
- One very striking feature is that clean energy – particularly solar and wind – are getting dramatically cheaper, and will probably continue to get even cheaper. In parallel, ways of managing the intermittency of solar and wind – particularly different forms of energy storage – are becoming cheaper, so the overall power system cost of renewables is falling fast.
- In some parts of the world, solar/wind with storage is a cheaper source of firm electricity than fossil fuels, and that is very likely to spread fast. Let me say that again in case you missed it: renewables with storage is rapidly getting cheaper than fossil fuels as a source of electricity. That's obviously going to be revolutionary in many places, and Greece is probably one of them.
- The economics of electricity is changing very quickly; technology has become highly disruptive in a sector that had not been very used to rapid change. It has become very challenging – but extremely important – to adapt quickly to the disruption, if employment

is to be preserved and promoted, and economic competitiveness enhanced.

- Any challenge is of course also a great opportunity. In regions with a currently high use of fossil fuels, and with employment quite dependent on the production and use of fossil fuels, for example lignite as in Western Macedonia, the falling cost of solar, wind, and various types of energy storage could save that employment, save some of those jobs.
- Let's consider the example of Western Macedonia: land that could be used for PV and wind, perhaps land **repurposed** from lignite mines; land that could be used for **batteries** to store PV and wind and provide a service to the power system; lakes (or flooded land) that could be used for **pumped storage projects** or for floating PV; PV and wind that could produce green hydrogen that could be used in power plants instead of lignite; PV and wind that could provide electricity so cheap that it could fuel power plants instead of lignite, utilizing **molten salts tanks** to store energy so that the plant could continue to provide **baseload power** and heat post-lignite; the potential for biomass to provide heat and power in Western Macedonia, creating income in the agricultural sector. And so on.
- Some of these are ideas where the economics could work today, and some maybe a little in the future. None of this is science fiction – all are ideas worth studying in-depth to determine the feasibility. All depend on taking existing assets in Western Macedonia – power plants, transmission lines, land, lakes, labor – and seeing what can be done to preserve and enhance their value. These ideas taken together preserve the energy identity of Western Macedonia, and we could take inspiration from other coal regions that have taken similar paths – Appalachia in the US would be one example.
- In this way, Western Macedonia could remain an energy hub at the centre of Greece's recovery and prosperity, but with alternative energy and energy storage, rather than lignite, as the hub of the future. Serving power systems in neighboring countries as well as in Greece, enabling the energy transition. It's a concept up for a very important debate.