



RESOLUTION

Sustainable and Safe energy Generation

Adopted at the YEPP Council Meeting in Vienna, 13.04.2019

Acknowledging that:

- Fossil fuelled power stations are major emitters of carbon dioxide (CO₂) and other substances of destructive nature. This causes degradation of the environment. The sole advantage of coal and gas power stations is low energy market price with huge externality costs that affect climate and quality of living.
- European Union remains, despite its considerable efforts towards energy independence, too dependent on geopolitical realities. We are importing about 225 million tons of natural gas each year and out of that about 40% from the Russia¹. The planned gas pipeline Nord Stream 2 may increase import of natural gas from Russia. Regarding the crude oil, EU imports are about 87%². We import 32% from Russia, about 30% from OPEC, 12% from Norway and the rest is imported from other countries³.
- The wind and solar power stations are an interesting alternative. On the other side, some consider, they put a serious strain on electric power transmission. According to the studies and experiments currently carried out, the abundant overproduction during a day cannot be efficiently used without an effective energy storage. The geographic location also plays a significant role and the most of Europe receives low amount of sunlight with high deviation from average. The capacity factor of solar power stations in Europe ranges somewhere between 11% to 22% with power density 4.1 W/m² to 9 W/m²⁴. Solar power density is even lower with 0.5 W/m² to 1.5 W/m². In comparison with coal, gas or nuclear power stations energy density that ranges between 100 W/m² to 2000 W/m², that is quite low⁵. That simply means that replacement of current energy sources with wind and solar will require 25 to 200 times more space.
- On the other hand, research and development has increased the efficiency of energy sources and energy storage. As an example, Lithium-Ion battery development will be showcased: Price of Li-Ion battery dropped from 200 US\$/Wh in 1991 to 0.2 US\$/Wh today and Wh/kg increased from 1.2 in 1990s to 90-235 Wh/kg today. About 2% GDP in EU goes to R&D and out resources are also allocated into Energy research. Most investment plans (ESFI) are focused on state interconnectors.

¹ <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/46126.pdf> (last downloaded: 17/03/2019)

² <https://ec.europa.eu/energy/en/topics/energy-security> (last downloaded: 17/03/2019)

³ <https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2c.html> (last downloaded: 17/03/2019)

⁴ V. Smil, Power density primer: <http://vaclavsmil.com/wp-content/uploads/docs/smil-article-power-density-primer.pdf> (last downloaded: 17/03/2019)

⁵ http://www.afs.enea.it/buceti/Texts/SustainablePowerDensityInElectricityGeneration_OpenVersion.pdf (last downloaded: 17/03/2019)

- The relationship of generated electricity and installed capacity of wind and solar is nonlinear from year to year. For example: The installed capacity in 2015 Germany was 39.2 TW and power generation 38,7 billion-kW. The installed capacity grew to 40.7 TW in 2016 but the power generation fell to 38,1 billion-kW⁶. In 2017, the installed capacity was 42.4 TW and generation 39,9 billion-kW. Quite similar pattern can be observed with wind. There can be a year where the wind and solar generation is simultaneously low.

Recognising that:

- The current situation regarding crude oil is dependent on geopolitical realities that can affect our energy supply. Nord Stream 2 that is now under construction will increase our natural gas dependence on Russia. This will also cause a lower volume of gas transportation through Ukraine in the first years of deployment and increase the ability of Russia to exploit the situation.
- To ensure energy independence fully desired by all Member States, the EU needs to drift away from fossil fuel power generation. The energy transition away from fossil fuels may take decades as a global transition. It took oil 50 years from the first commercial production in the 1860s to capture 10% of the global primary energy, and another 30 years to increase its share to 25% of the total⁷. The energy transition is not just a question of power generation, the whole infrastructure systems are connected to it.
- Part of the system is a fossil fuel-run transportation. If all vehicles were converted to electric ones, EU countries would have to increase the installed capacity by about 40-45%⁸. It would be hard to supply this new electric demand with solar and wind due to its non-linear relationship of installed capacity and electricity supply.
- Large improvements in reduction of pollution and CO2 emission levels can be reached by targeted support of energy transition in Balkan and Ukraine.
- From a global point of view, since Climate change is a global reality and its implications go beyond our continent, we should aim to find a global solution and encourage countries like China and India to make improvements. The diplomatic push for reduction of pollution and CO2 emission levels could reduce ecological strain on the global ecosystem.
- The sustainable and clean energy path development example is France with just 84gCO2eq/kWh and a good stability of electric power transmission with about 64% energy consumption generated by nuclear⁹. In comparison, German energy mix emits 388gCO2eq/kWh with 35% coal power consumption.
- Chernobyl and Fukushima nuclear disasters are heavily imprinted in our memories. The overall risks, costs and safety of nuclear power need to be clearly presented and stressed. The fallouts, nuclear discharges, A-bombs, Chernobyl and

⁶ To simplify this: In 2016 Germany installed 4% more solar and generated 3% less energy

⁷ V. Smil <http://energyskeptic.com/2015/vaclav-smil-why-energy-transitions-take-such-a-long-time/> (last downloaded: 17/03/2019)

⁸ <http://euanmearns.com/how-much-more-electricity-do-we-need-to-go-to-100-electric-vehicles/> (last downloaded: 17/03/2019)

⁹ <https://www.electricitymap.org/?page=country&solar=false&remote=true&wind=false&countryCode=FR> and <https://www.rte-france.com/en/eco2mix/eco2mix-mix-energetique-en> (last downloaded: 17/03/2019)

Fukushima generated about 0.3% of ionizing radiation (the harmful radiation)¹⁰. According to the World Health Organisation and a research carried by the University of Tokyo, in relation to the radiation leak in Fukushima no distinct future health effects should be expected¹¹. The risks presented by for example air pollution are more pressing than the potential threats posed by nuclear power¹².

- Regarding the pressing issues of nuclear waste, if measured by cubic meters per TWh, solar power produces 300 times more waste¹³. The current technologies enable storing the nuclear waste safely in old, not used and non-profitable coal mines.

YEPP calls for:

- The European Commission, as the body responsible for proposition of legislation and of the EU budget, to prioritize R&D in the field of energy, energy storage, small nuclear reactors and renewables, most notably high efficiency solar panels.
- The European Union and its member states continue to develop the Energy union toward more sustainable and fully integrated energy market, in order to provide secure, affordable and clean energy for EU citizens and businesses.
- The European Union, while realizing the current importance of nuclear in the energy supply of citizens, should promote the search for alternatives that are safer, more efficient, environmentally conscious and profitable for citizens.
- The European Union, by combining respect for the environment and the improvement of the daily lives of citizens, must take into account the realities and needs of different countries in our Union
- The European Commission to extend the scope of policies that increase the opportunities of youth participation in future-oriented fields, such as renewables, electric mobility, small nuclear reactors and nuclear research.
- Member states to adopt a more integrated and coordinated approach to energy strategy that includes the use of the most efficient locations for wind and solar with respect to individual country specificities and, at the same time, that may include nuclear power in the mix.

¹⁰<https://www.climatedepot.com/2018/10/09/analysis-rich-world-scientists-in-the-grip-of-a-dystopian-malthusian-vision-have-for-40-years-manipulated-public-fears/> (last downloaded 26/03/2019)

¹¹ http://www.world-nuclear-news.org/RS_The_health_effects_of_Fukushima_2808121.html (last downloaded 28/03/2019)

¹² <https://www.bloomberg.com/news/articles/2018-05-01/air-pollution-kills-7-million-people-a-year-who-reports> (last downloaded 26/03/2019)

¹³ https://www.gao.gov/key_issues/disposal_of_highlevel_nuclear_waste/issue_summary See also: <http://environmentalprogress.org/big-news/2017/6/21/are-we-headed-for-a-solar-waste-crisis> (last downloaded 26/03/2019)