Low Carbon Ukraine

Policy advice on low-carbon policies for Ukraine

Supported by:

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

based on a decision of the German Bundestag

Aspects of RES-support in Ukraine

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Berlin / Kyiv 2019

Berlin Economics

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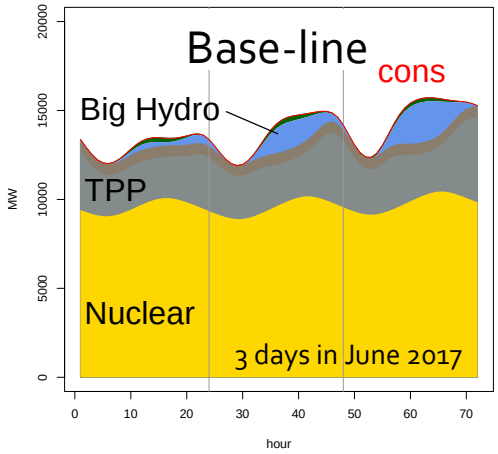
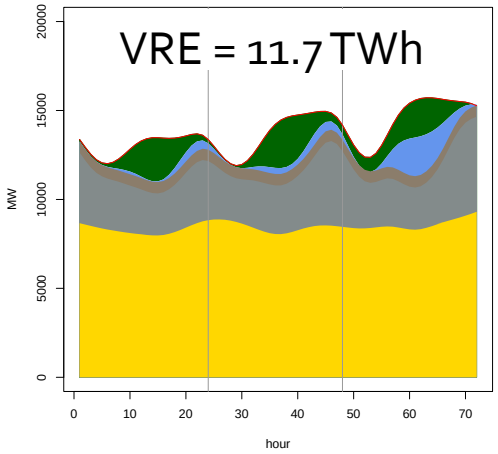
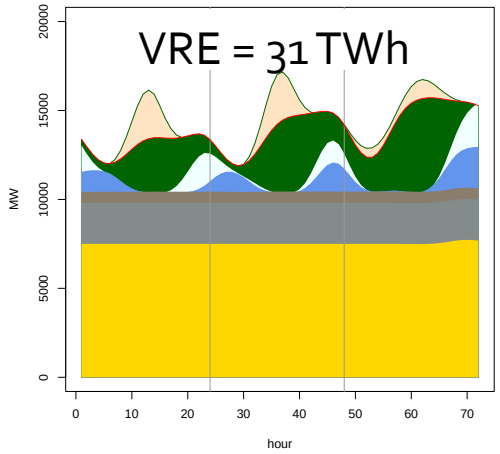
Ukraine can absorb up to 15 GW of RES with current system

Proven flexibilities of UA's electricity system sufficient to balance higher shares of RES

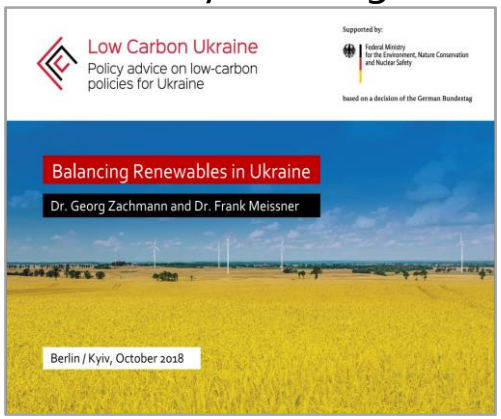






- **Up to 15 GW of variable RES** can be balanced by the currently installed conventional capacities in Ukraine
- The **aging power plant park needs to be updated** in the medium to long run
- Integration of variable RES above 15 GW needs **investments into additional flexible capacities**

See: Policy Briefing No.1



Analysis based on a dispatch optimisation model taking into account the flexibility of the Ukrainian power plant park

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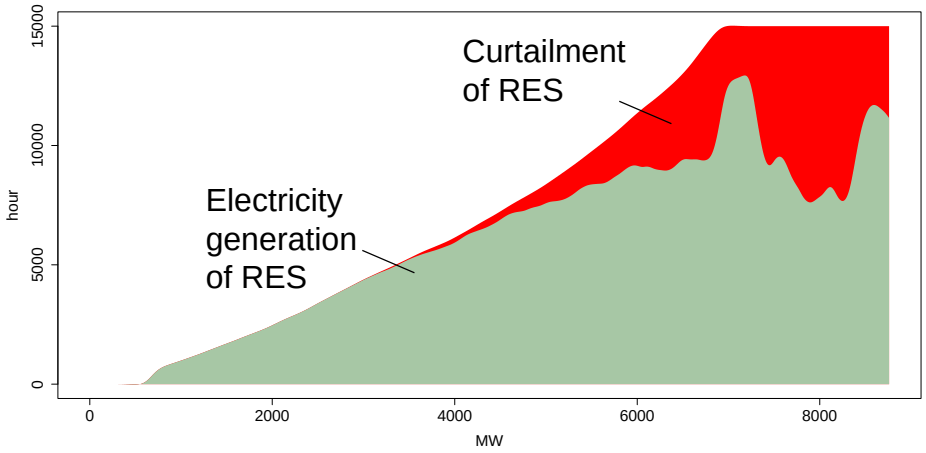
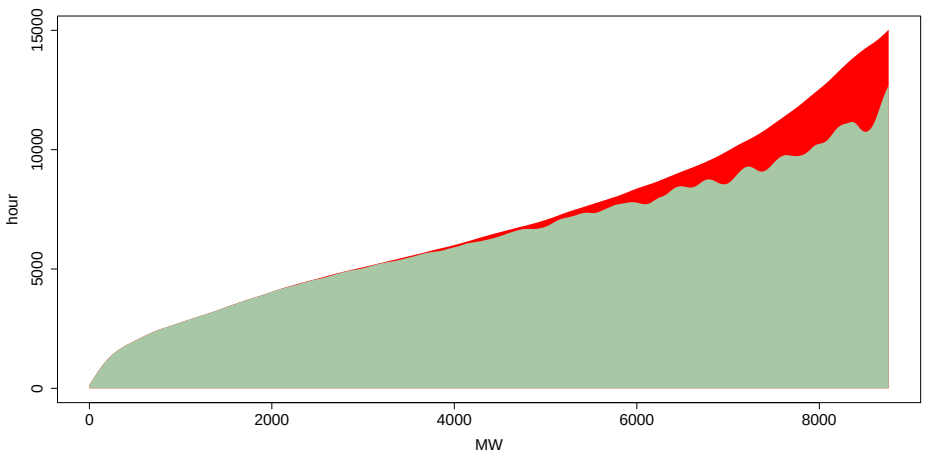
Geographical distribution of variable RES reduce curtailment of RES and system costs

Curtailment losses of 15GW Wind installations for different distributions

Installation at only **one** location



Even distribution of installations



- Wind and solar installations should not be concentrated at the most windy/ sunny locations but should be **distributed more evenly across the country**

- Policy should strive for an **optimal mix of wind and solar** installations in order to reduce system cost

See: Policy Briefing No.2

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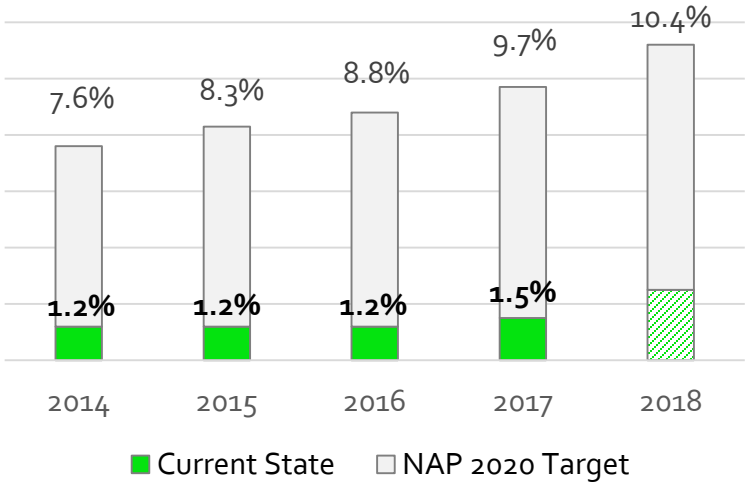
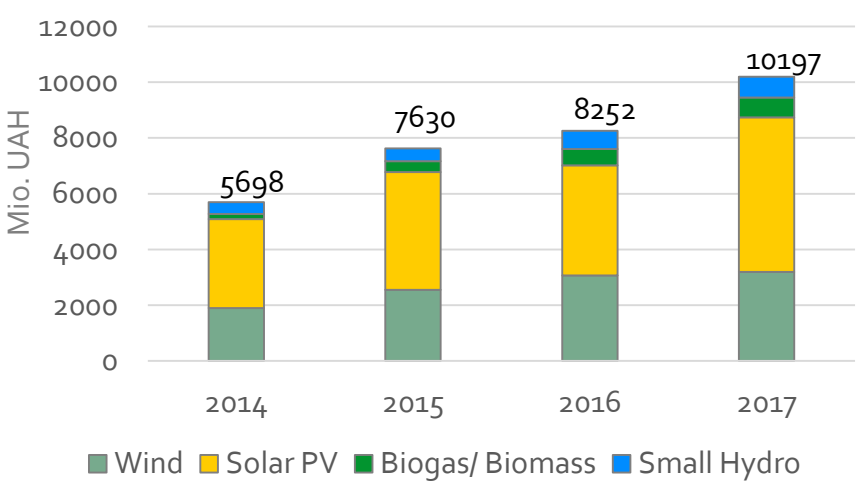
Low RES development at high costs – adjustment of support scheme needed

RES share in electricity generation and NAP 2020 goals



Annual costs of Green Tariff in million UAH



- Auctioning will reduce costs and fasten RES development **if well designed** & **if necessary preconditions are met**
- In addition, support of small RES projects needs **fundamental review** as mainly large projects are realized
- Adjustment of support for small projects allows to exploit additional **benefits** (e.g. reduction of network losses)

See: Policy Briefing No.3

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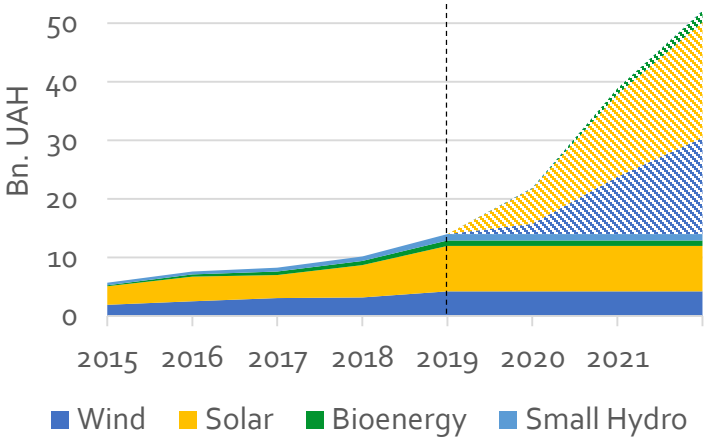
Adjustment of FIT towards RES generation costs would reduce cost for Green Tariff significantly

- Approx. **4.6GW** of new RES projects between 2019 and 2021 expected
- FIT is clearly above Levelized Cost of Electricity (LCOE) so that **cost for society can be reduced**
- Quick FIT reduction (slightly above LCOE) could save around **5bn. EUR** until 2030

High cost for upcoming RES projects (2019-2021) expected



See: Policy Briefing No.4

To avoid high cost for RES support in future and to allow for a stable RES development, the current draft law needs adjustments (e.g. support period, support for small RES)

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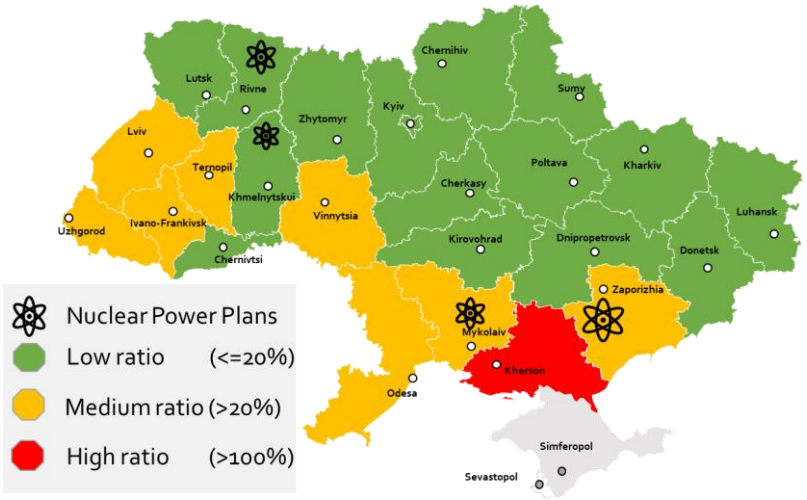
Incentives to increase the distribution of RES in Ukraine will decrease balancing needs and network cost

- Concentration of variable RES in high-yield regions will **increase balancing needs** and grid constraints
- The new auctioning scheme should incentivize a more **distributed location selection**
- We propose a "**regional curtailment charge**" that reduces the RES-tariff for new installations in most constraint areas

Max. demand coverage by variable RES in %



See: Draft Policy Briefing No.5

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