



Low Carbon Ukraine

Policy advice on low-carbon policies for Ukraine

Policy Briefing #3

Supported by:



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

based on a decision of the German Bundestag

Exploiting benefits of small solar and biogas

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Berlin/Kyiv, November 2018

Implemented by

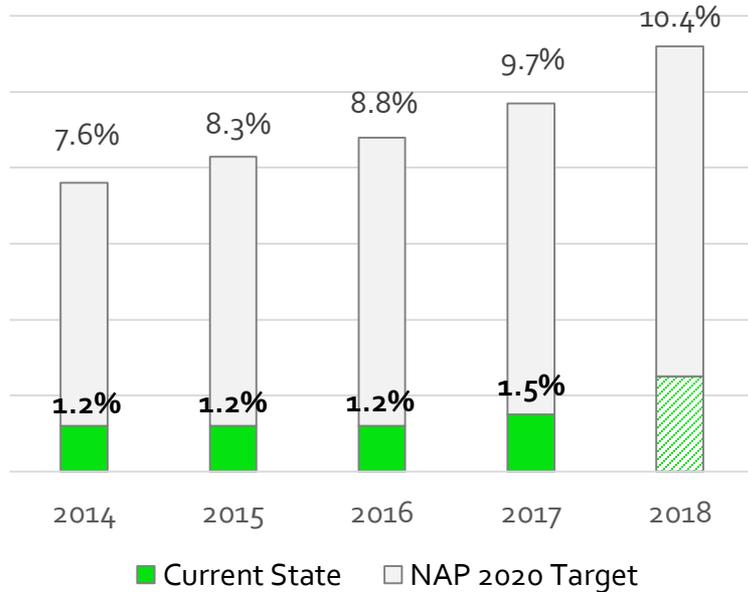
 Berlin
Economics

Key Messages

- 1 Support for renewables (RES) under the existing Green Tariff failed to reach deployment targets but causes high cost
- 2 If well designed, auctioning for large renewables projects allows to achieve deployment targets at reasonable cost
- 3 Small renewables projects can have important side benefits, but an auctioning scheme will fail to encourage their development
- 4 Well targeted feed-in tariffs can support a cost-efficient deployment of the most beneficial installations

Green Tariff failed to achieve deployment targets and proved quite expensive

RES share in electricity generation and NAP2020 goals

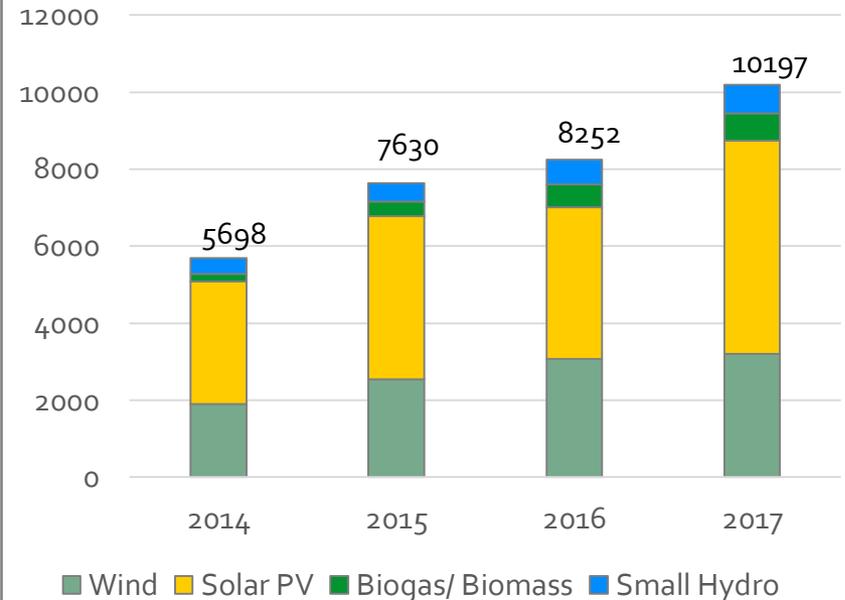


Source: Data of SE Energoynok, NAP 2020, Dixi Group

RES development lacks behind **but strong increase** in QI/QII 2018:

→ 270 MW (~17% of total RES cap.)

Annual costs of Green Tariff in million UAH



Source: Data of SE Energoynok, NBU, Dixi Group

In addition, **high costs**: Green Tariff represents 7-8% of wholesale electricity prices in 2017

Ukraine pays higher wind and solar tariffs than Germany, but lower biogas tariffs

Technology	Germany (2018)	Ukraine (Green Tariff 2018)	Difference (Ger : Ukr)
Wind	6 €ct/ kWh (auctions; onshore)	10 €ct/ kWh (> 2 MW)	1 : 1.6
Solar (Households)	11 €ct/ kWh (< 40 kWp; EEG 2017)	18 €ct/ kWh (< 30 kW)	1 : 1.6
Biogas	14 €ct/ kWh (< 150 kW; EEG 2017)	12 €ct/ kWh	1 : 0.8

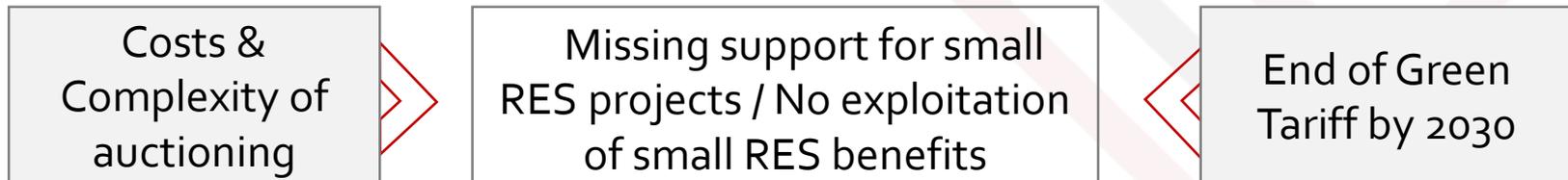


Low deployment of biogas



Auctions: Fail to support small RES projects

- Introduction of auctioning system [Draft Law No. 8449-D (05/12/2018)] is in line with a global trend towards increased competitiveness of RES support scheme
- However, success of auctioning scheme is not granted: Institutional, technological and market-related preconditions need to be met
- If well-designed, auctioning allows for:
 - **Effectiveness: enables the achievement of RES targets,**
 - **Cost-efficiency: targets achieved at low costs,**
 - **Transparency: which means predictable, simple and inclusive.**
- BUT:



Small RES installations offer co-benefits

‣ **Biogas (<500 kW)**

- Additional GHG-emission reduction through utilization of agricultural residuals, such as manure
- Additional fuel savings through co-generation of power and heat
- Additional flexibility option for the power system (fast ramping/ storage option)
- Abundance of biomass feedstocks in Ukraine
- Flexibility of operation and assured performance, therefore suitable to support balancing
- Additional income options for small and medium agricultural companies

‣ **Solar (<30 kW)**

- Reduction of network losses (e.g. through self-consumption)
- Increased grid reliability (if installations are well located)
- Wider public acceptance of RES

Reforming Green Tariffs to support small RES at low costs

If Ukraine wants to exploit the benefits of small solar and biomass installations at reasonable cost, a reformed Green Tariff for small RES installations is needed:

- Project-based support guarantee for 10 to 20 years (i.e., beyond 2030)
- Increase incentives for biogas-electricity production from residuals [example from Germany follows]
- Apply FIT scheme which controls quantity and sets price caps [example from Germany follows]
- Rules for “grid-friendly” solar development can be introduced to avoid expensive congestion management (grid development/ balancing)

Biogas support in Germany: Differentiation by size

Auctioning: for plants > 150 kW



Target 2017 – 2019: 150 MW p.a.
2020 – 2022: 200 MW p.a.



New biogas plants under auctioning are supported for 20 years



Flexibility surcharge if system is dispatchable according to the requirements of the electricity grid – 40 Euro/ kW_{el} per year, for 20 years

FIT: for plants < 150 kW



Different tariffs and additional compensations depending on utilization of residuals

e.g. > 80% manure & plant size ≤ 75 kW \rightarrow tariff 23 €/kWh

Solar support in Germany: Differentiation by size

Auctioning: for plants > 750 kW



Target 600 MW p.a.



Solar plants under auctioning are supported for 20 years

FIT: for plants < 750 kW



Target 1,900 MW p.a.

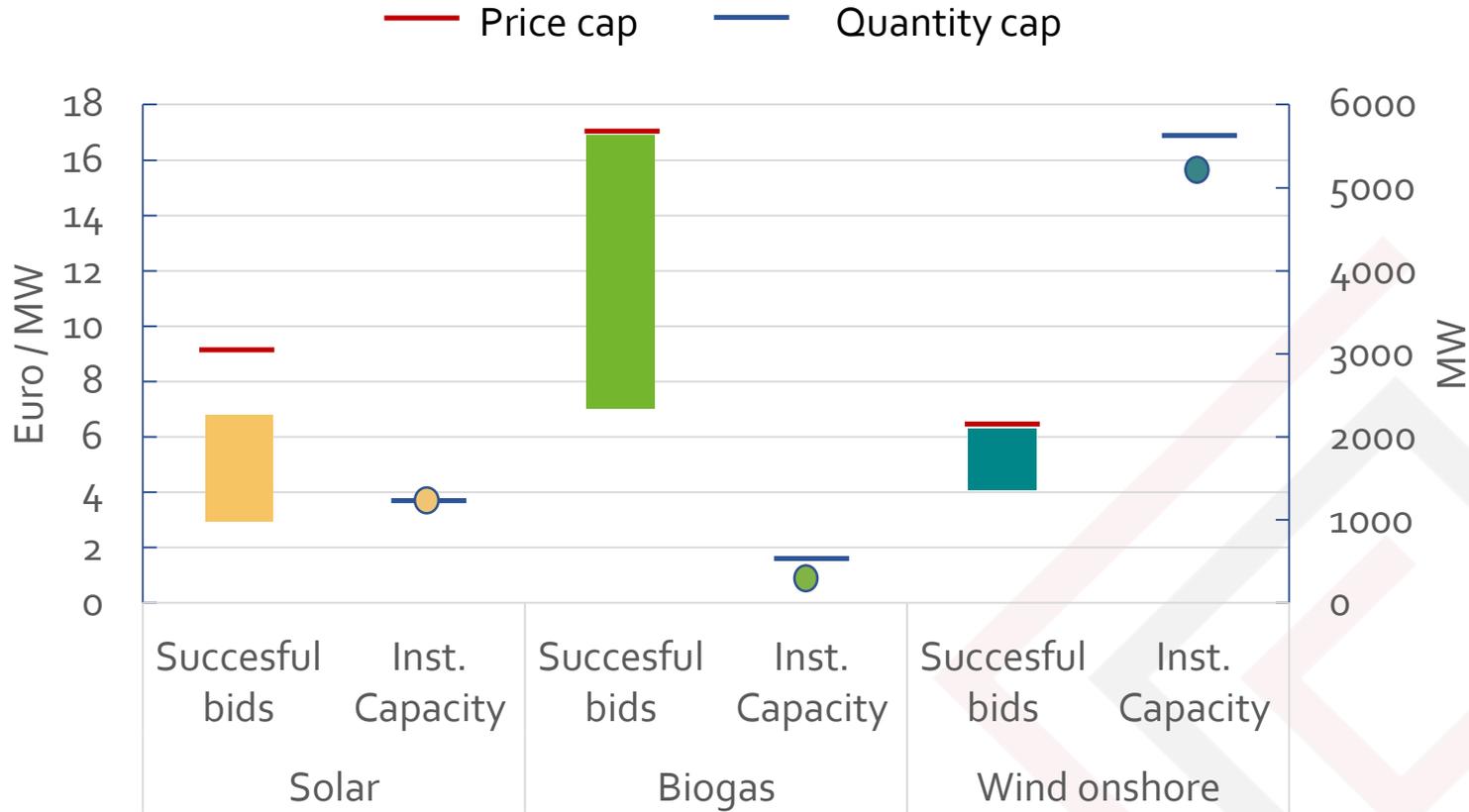


FIT depends on size of installed capacity (thresholds: 10, 40 and 100 kW_p)



FIT adjustment, following actual solar deployment

Auctioning prices & capacity in Germany 2017-2018



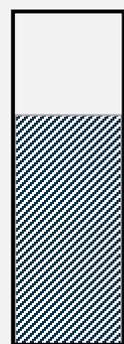
Source: <https://www.next-kraftwerke.de/wissen/direktvermarktung/anzulegender-wert>

- Wind and solar targets were largely met – with solar auction prices being substantially below the envisaged price cap
- Biogas targets were missed, possibly due to too low price cap

Tariff adjustment in Germany is guided by predefined rules (solar and wind)

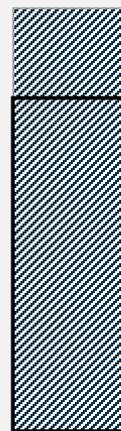
- If quarterly target of RES development is...
 - ...met → FIT decreases by **0.5%** per month
 - ...exceeded → FIT decreases **faster**
 - ... missed → FIT decreases **slower**
- For solar, FIT might actually increase if target is widely missed

RES development **misses** target



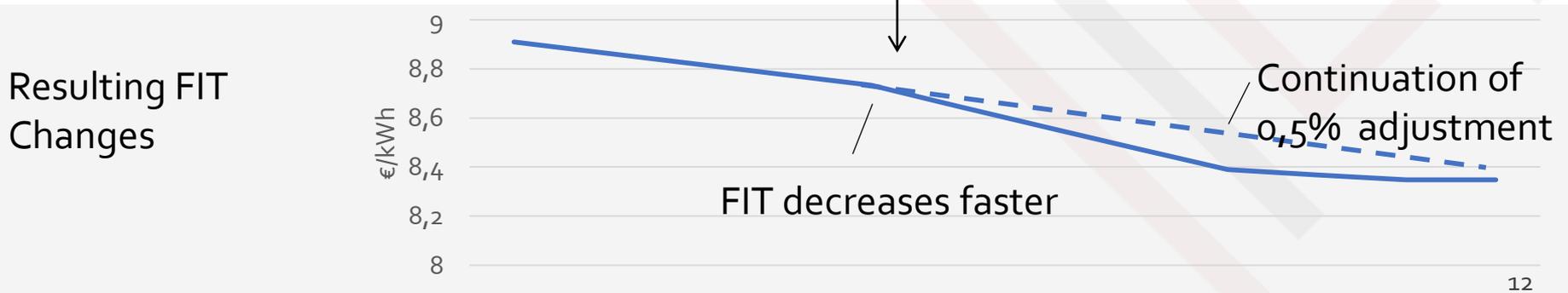
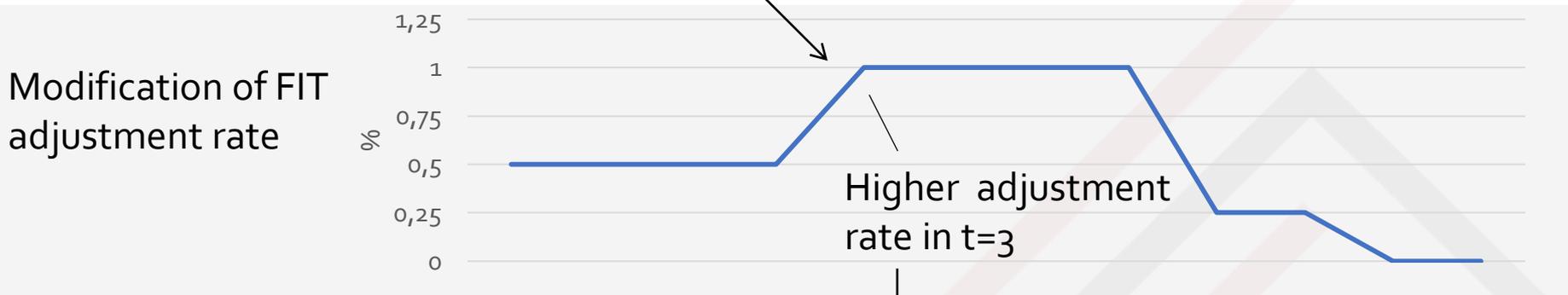
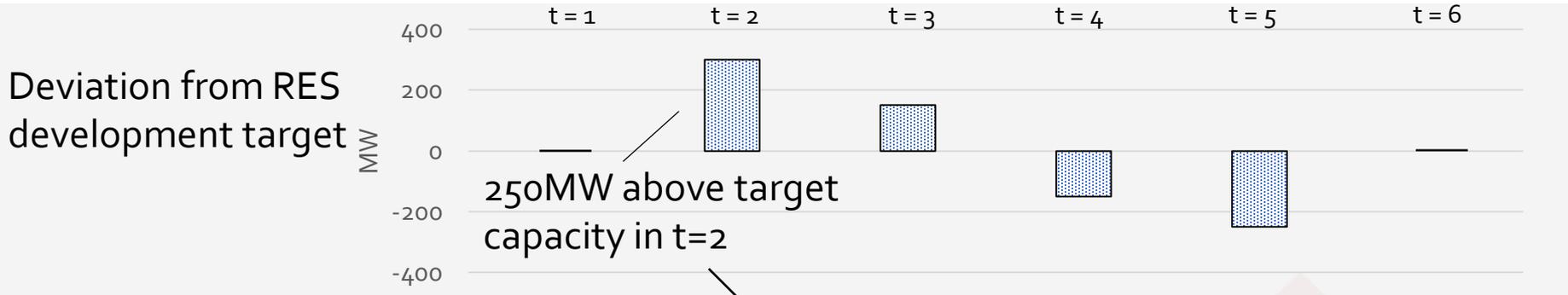
at target	→ 0.50%
<200 MW below target	→ 0.25%
>200 MW below target	→ 0.00%
...	

RES development **exceeds** target



at target	→ 0.50%
< 1000 MW above target	→ 1.0%
> 1000 MW above target	→ 1.4%
> 2000 MW above target	→ 1.8%
...	

FIT adjustment in Germany depends on actual RES deployment



Dynamic tariff adjustment might enable higher deployment at lower cost

Performance Indicator	Green Tariff	Responsive Tariff Adjustment Scheme (Germany)
Achieve deployment target	No target defined. As long as cost > tariff there will be NO deployment ●	Deployment will follow a predefined track; falling tariffs support early investments ●
Cost of the system	If cost fall below tariff, deployment will skyrocket – leading to potentially excessive cost ●	If deployment exceed expectations, tariffs will fall quickly, reducing risk of excessive costs for society ●
Adjustment	System can only be adjusted based on an amendment of primary law ●	System is automatically adjusted to meet deployment pathway ●
Investor confidence	Risk that system needs to be retroactively changed when deployment skyrockets ●	System is predictable for investors ●

Policy recommendation

- **Co-benefits** of small RES installations call for continuation of a reformed Green Tariff
- Define suitable **thresholds** to distinguish between small and large installations
- Set suitable **targets** for effective capacity development of small RES
- Install a cost-efficient **tariff adjustment** scheme



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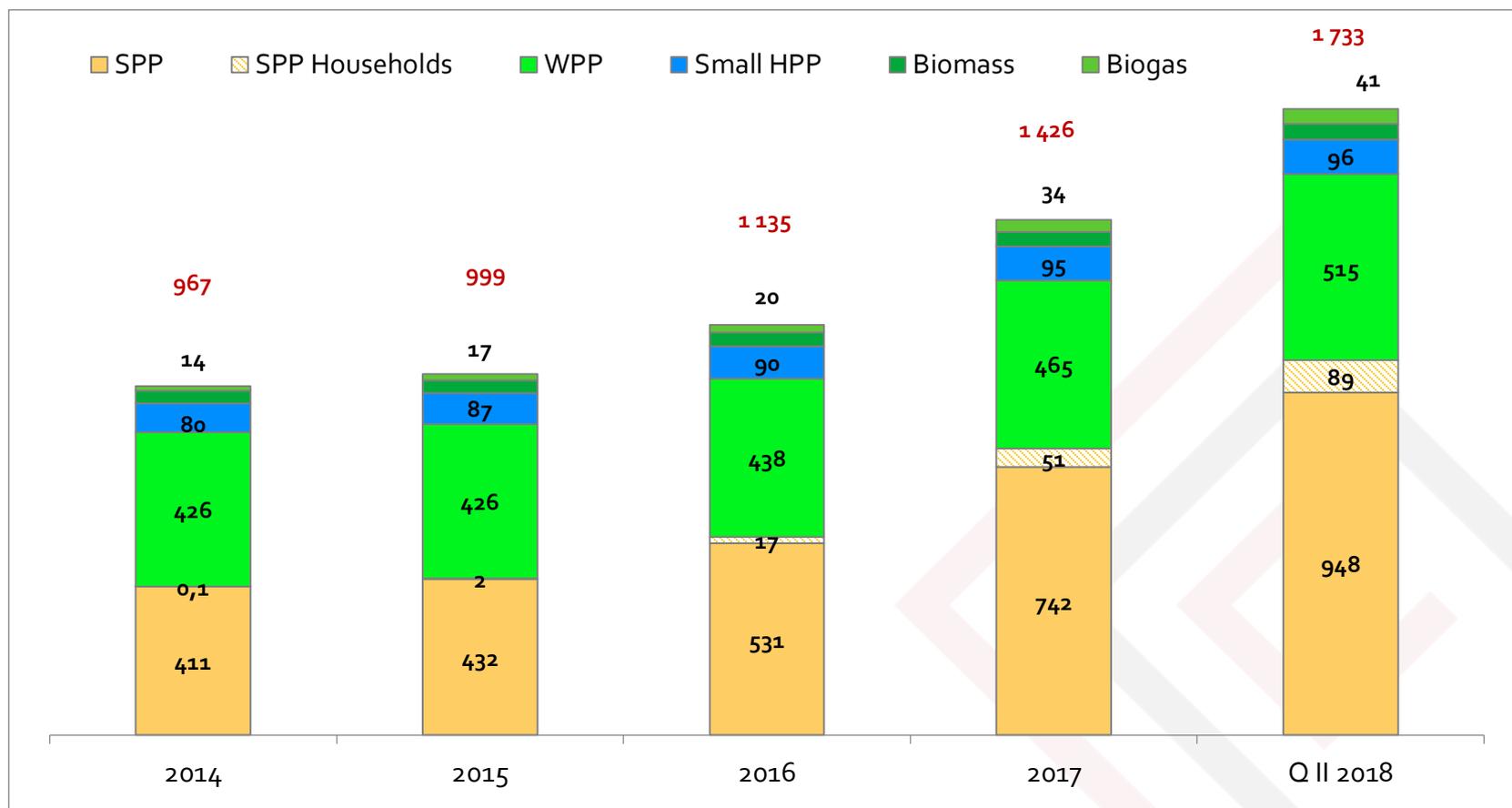
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Back up: Installed RES capacities in Ukraine



Source: SAEЕ (2018)