Energy Community Secretariat

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CROSS-BORDER SUSTAINABLE RENEWABLES ACCELERATION AREAS (RAAS) IN UKRAINE (PHASE II)

CONSIDERATION OF RENEWABLE ENERGY POTENTIAL AND INFRASTRUCTURE READINESS FOR PRACTICAL RAA DEPLOYMENT IN UKRAINE

Valentyn Didyk, RES expert



Агенція геопросторових рішень АГЕОРА

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PRIORITY AREAS AS DEFINED BY RED III

1. Artificial and built surfaces (rooftops and facades of buildings)
2. Transport infrastructure and their direct surroundings
3. Parking areas
4. Farms
5. Waste sites
6. Industrial sites
7. Mines and Quarries
8. Artificial inland water bodies, lakes or reservoirs
9. Urban waste water treatment sites
10. Degraded land not usable for agriculture

RE technologies:

- ❑ Solar
- ❑ Wind

RES POTENTIAL. UNIVERSAL CRITERIA FOR ALL ZONES

Criteria for solar technology:

- Global horizontal irradiation (GHI) - not less than 1,100 kWh/m2 per year, kWp.
- Terrain orientation – south, south-east and south-west.

Criteria for wind technology

- Average annual wind speed at a height of 100 m, m/s, should be not less than 5.0 m/s.



RES POTENTIAL. SPECIFIC CRITERIA FOR SOLAR TECHNOLOGY

- **Total technically usable area: r**oofs and facades of buildings: flat roof - by 8.5m2/kW; pitched roof - by 7.0m2/kW; façade: by - 16.0m2/kW. Other zones: 8,5 m2 /kW.
- **Module type**: single-sided solar panels with a power output of 500–800 W.
- **Mounting type**: fixed (non-tracking) systems.
- **Tilt**: optimal fixed angles throughout the year 32-37 degree.
- **Capacity of BESS/PCS**: 1–3 kWh per 1 kW of power.



RES POTENTIAL. SPECIFIC CRITERIA FOR WIND TECHNOLOGY

- **Total area suitable for single wind installation**: direct area : 0.3 ± 0.1 ha/MW for permanent impact; 0.7 ± 0.6 ha/MW for temporary impact.
- **Equivalent area for a wind farm**, taking into account aerodynamic effects: 0.11 km² per MW.
- **Availability and location** of international, national, regional roads , territorial, regional and district roads: on a distance at no more than 5 km.
- **The detailed criteria** that could be applied for selection of a potential wind site: topographic, geodesic and orographic data; geology (geomorphology and hydrogeology, soil conditions); seismic risk, groundwater, soil resistivity, and load-bearing capacity.
- **Additional criteria** : roads - at a distance of less than 60 m; railways - at a distance of less than 500 m; airports - at a distance of less than 10 km.



CRITERIA ON INFRASTRUCTURE READINESS

- **Availability of a grid connection point:**
  a) availability, location of cable and overhead power lines: 35 kV and 110 kV at a distance of no more than 30 km and of not less than 20 meters;
  b) availability of grid connection at 6 kV and 10 kV points on a distance of no more than 5 km.
  c) availability of substations at a distance of no more than 30 km;
- **Possibility of laying cables or overhead power lines** from a site to nearest lines/substations.
- **Availability to install BESS/PCS.** The capacity is 1-3 kWh per 1 kW of power. The amount of land needed per 1 megawatt-hour of lithium-ion battery storage is approximately 93 m2.
- **Additional recommended criterion**: ensure that the installed capacity matches the consumption volume and profile, as well as the existing and potential load of the nodes.



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THANK YOU FOR YOUR ATTENTION !

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Energy Community Secretariat
Am Hof 4, Level 5, 1010 Vienna, Austria