THE ENERGY OF THE FUTURE

- **The aims of the project:** to analize the energy system of Ukraine.
- to single out the most propriate sources of renewable energy for Ukraine, considering its geographical position and climate changes.
- to represent the local examples of using different sources of renewable green energy
- **The head teachers:** Tetyana Lustenko

  Olena Oviechkina
- **The speakers:** Oleksandra Popova

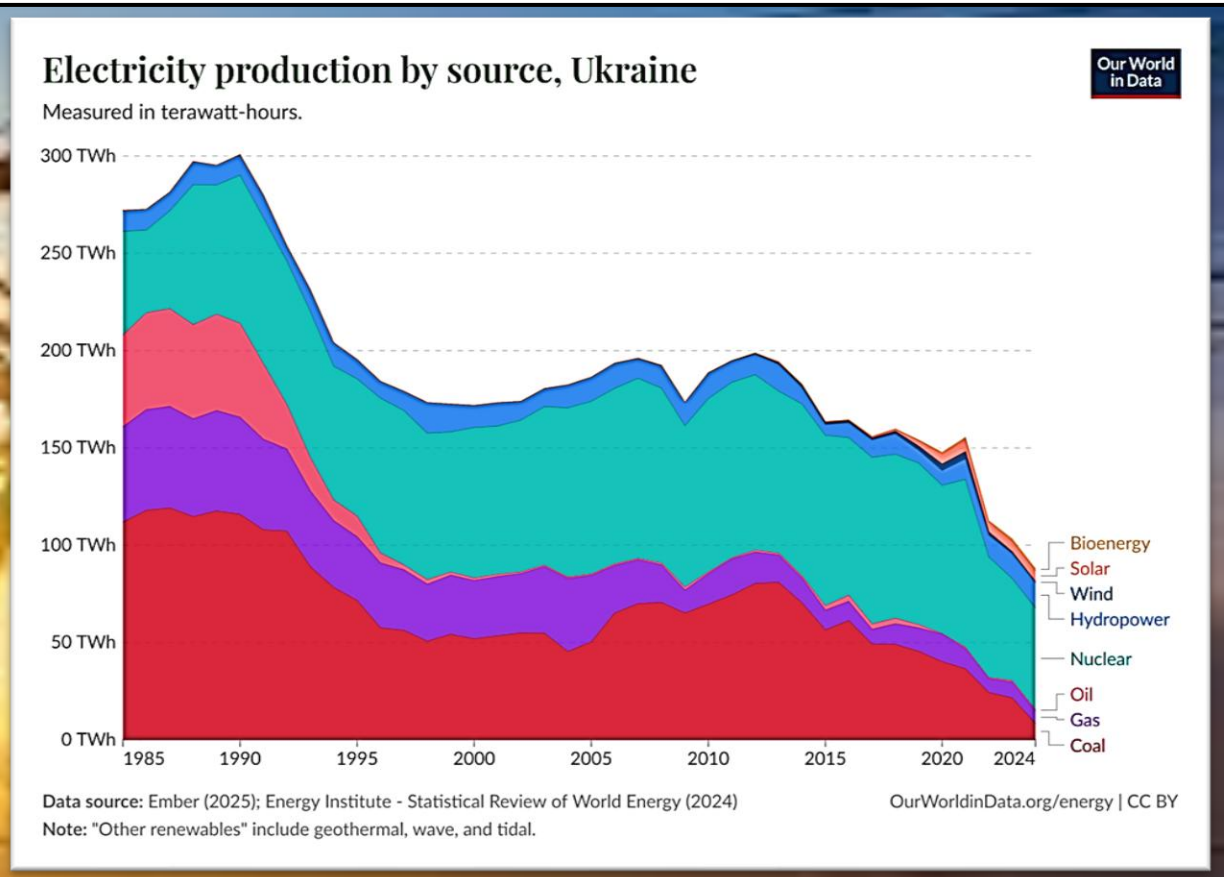
  Ulyana Shalapchuk

THE ENERGY SYSTEM OF UKRAINE

Electricity is an important part of energy in Ukraine. Most electricity generation is nuclear, and the system is inflexible. Some electricity infrastructure was destroyed in the Russain -Ukrainian War but wind farms, solar power and batteries are thought to be resilient because they are distributed.

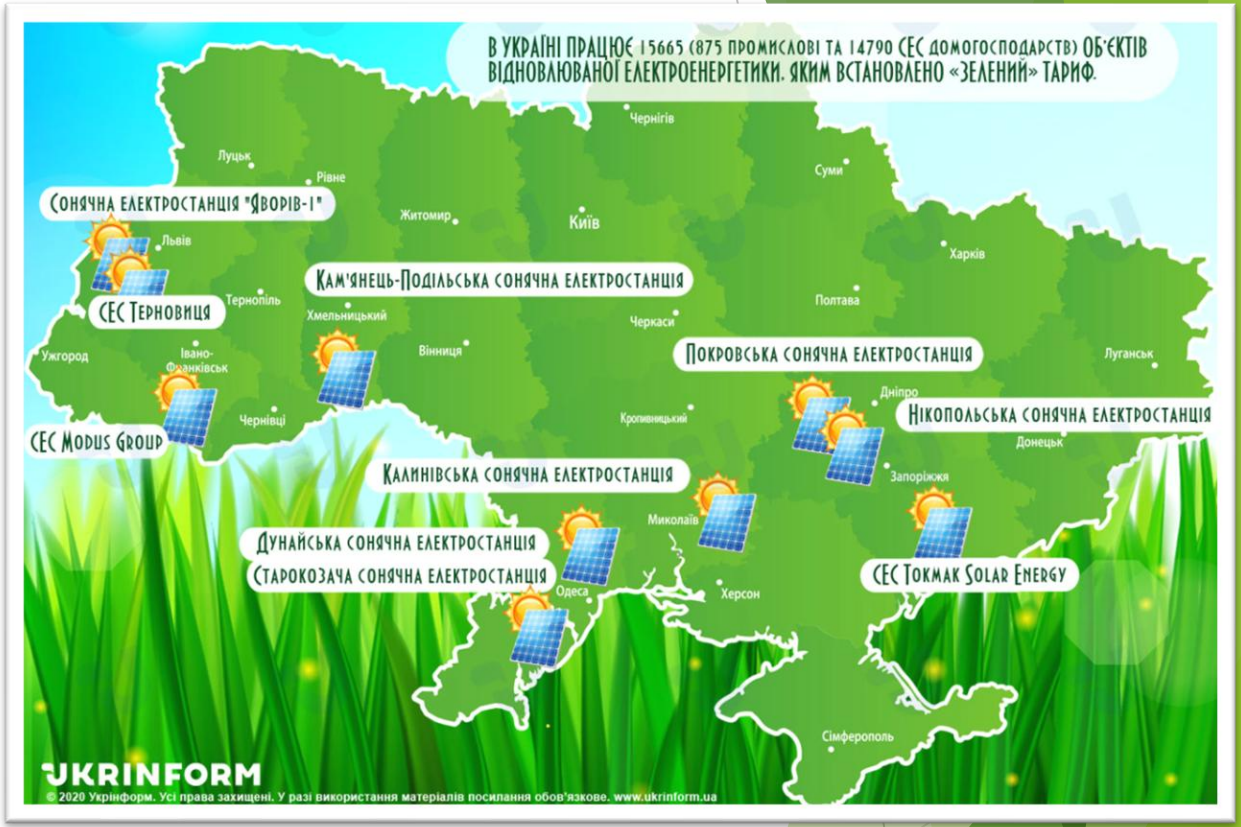
From 2016 to 2021, renewable energy actively developed thanks to the stimulating 'green tariff,' as a result of which in 2021, renewable energy power stations produced 8% of all electricity in Ukraine.

The structure of electricity production in Ukraine



The Most Powerful Solar Energy Plants in Ukraine

- Yavoriv SEP
- Kamianets-Podilsk SEP
- Ternovytsia SEP
- Modus Group SEP
- Tokmak SEP
- Pokrovska SEP
- Nikopolska SEP
- Kalynivska SEP
- Dunajska SEP
- Starokozacha SEP



The undisputed leader among alternative energy sources in Ukraine is solar power. Second place, with a significant gap, is held by wind turbines, followed by biomass and biogas. The least popular are small hydropower plants.

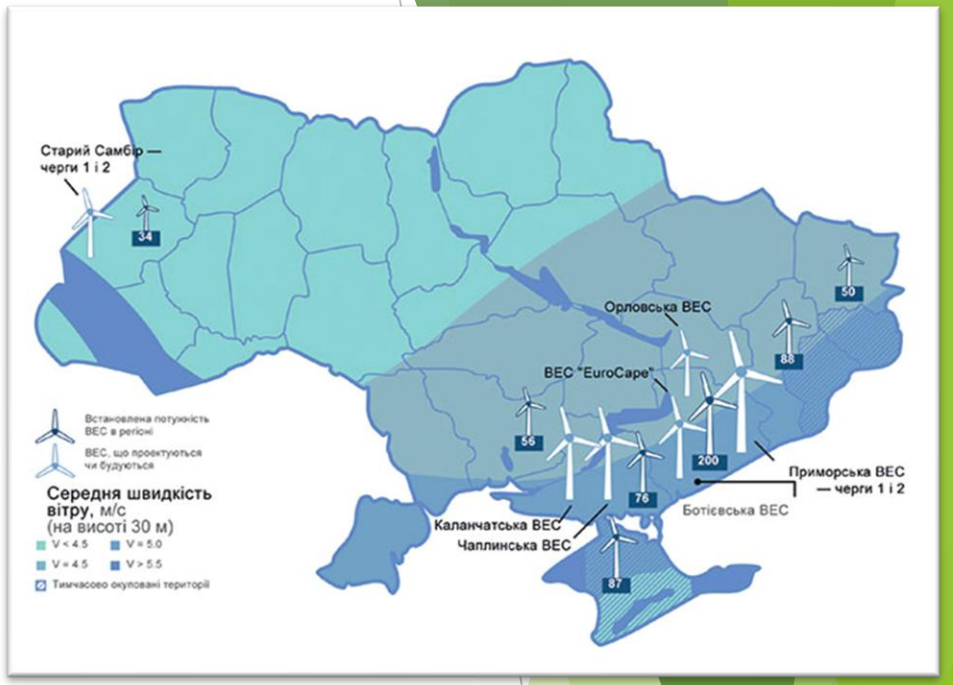
Wind Power Energy Plants in Ukraine

Ukraine has a rather high climatic potential of wind power, which provides productive work not only of autonomous power units, but also of powerful wind power plants.

The coasts of the Black and Azov Seas, the mountainous regions of the Crimean peninsula (especially the north-eastern coast) and the Carpathians, Odesa, Kherson, Zaporizhia, Donetsk, Luhansk and Mykolaiv regions are the most suitable for the construction of wind power plants.

But, unfortunately, most of these territories are occupied by russian invaders.

By the end of 2017, 505 MW of wind power plants had been launched in Ukraine, with 138 MW remaining in the occupied territory of Donetsk and Luhansk regions, and another 87.8 MW left in occupied Crimea, part of Kherson and Zaporizhia



At the end of 2021 there was 1.7 gigawatts (GW) capacity of electricity in Ukraine was wind power. In 2024 the IEA suggested installing 11 GW more by 2030.

Wind Energy Plants of Ukraine

Prymorska WEP

Botievsk WEP

Staryj Sambir-1

Staryj Sambir-2

Dmytrivska WEP

Beregova WEP

Tuzlivska WEP

LOSSES IN THE ENERGY SYSTEM DURING THE WAR

Overall, Ukraine has lost 27 medium and large power plants. Russia occupied 17 of them during the last 4 years, and 10 back in 2014–2015.

Currently, the Zaporizhzhia Nuclear Power Plant and Zaporizhzhia Thermal Power Plant, Vuhlehirsk and Luhansk Thermal Power Plants, Prymorska and Botievka Wind Farms, and eight local heat producers, such as Kherson and Sievierodonetsk Combined Heat and Power Plants, are on occupied territory.

At least 12 thermal power plants and combined heat and power plants have been damaged.

LOCAL EXAMPLES OF EMPLEMENTING GREEN ENERGY

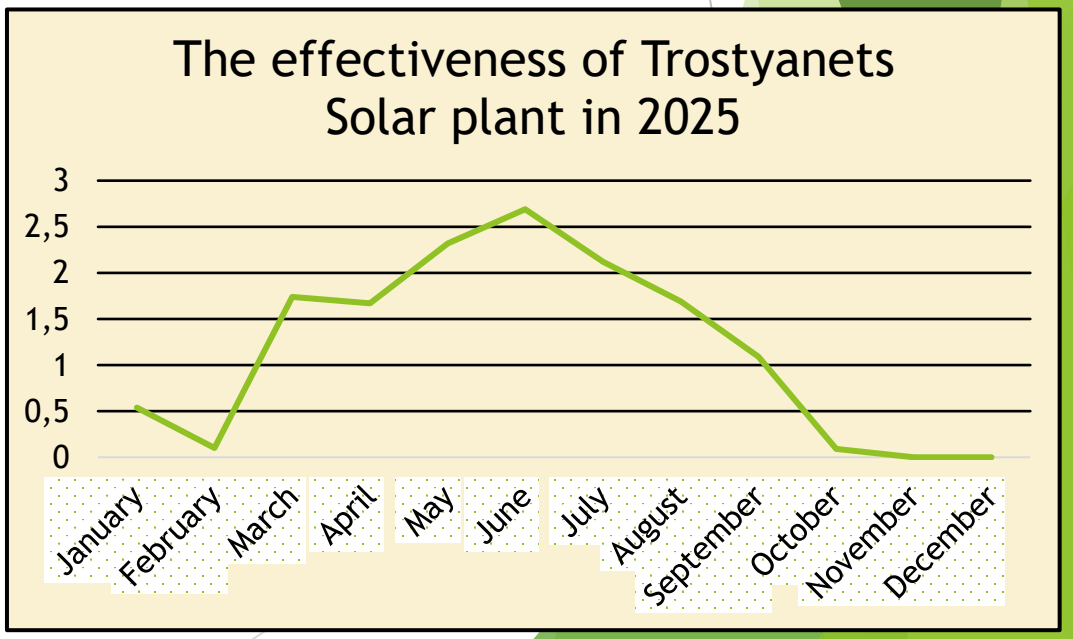
From the ruins to the energetic independence

- Nowadays, Ukraine is maintaining a course towards the environmentally clean renewable energy independence. As an example, this is our native town Trostyanets. In cooperation with foreign partners, especially German ones, Trostyanets is implementing alternative green energy technologies.

Trostyanents Solar Energy Plant

A solar power plant in Trostyanets, Sumy Region, was built in 2021 with money from German investors. It began operating only in 2023, after Russian forces started continuously striking Ukraine's energy system. The plant is designed to produce 5 megawatts of electricity.

However, it has its pros and cons, as the plant only operates efficiently in sunny, warm weather; during the winter period of time, especially when there is snow, it produces almost no electricity. Our team analyzed the effectiveness of the solar power plant over the year. All measurements were taken on the 15th of each month at 7:30 a.m.



Green energy sources in Trostyanets community

Thanks to the cooperation of the Trostyanets Town Council with the international partner DUG. Montabaur, modern solar stations with a capacity of 40 kW have been installed in the local preschool institutions 'Kazka' and 'Romashka'.

Thanks to the cooperation of the Trostyanets Town Council with the international partner GIZ and the German company SENS, modern solar stations with a capacity of 12.5 kW have been installed in the communal preschool education facilities “Kalinka” and on the buildings of the Educational Department, Lyceum No. 3 and Lyceum No. 2.

ENERGY EFFICIENCY OF THE TROSTYANETS HOSPITAL

SOLAR PANELS ON THE BUILDING OF THE CHILDREN'S HOSPITAL DEPARTMENT – 45 kW

SOLAR PANELS ON THE HOSPITAL'S STATIONARY BUILDING – 75 kW

The electricity economy is 66.3 MW or 696.1 thousand hryvnyas

THE HOUSE OF FUTURE

March 2022

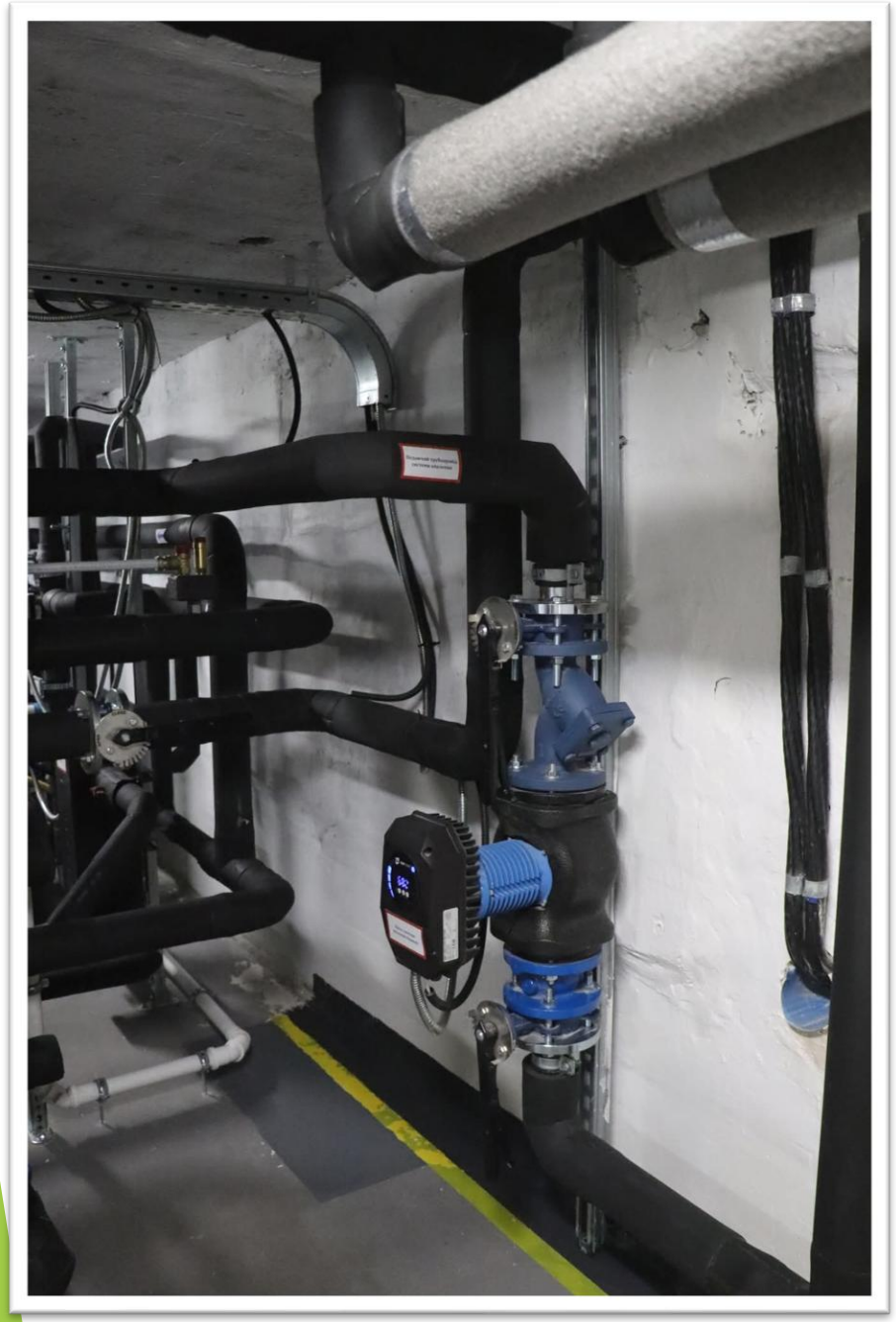
November 2025

The Project you need to know about!

For the first time in Ukraine, a five-story building has been restored, where heat pumps became the sole source of heating and hot water supply. The residential building was damaged in 2022 during the russian occupation.

This unique project was implemented in collaboration with the Trostyanets Town Council and the green energy cooperative Green Planet Energy, as well as Greenpeace Germany @greenpeace.de

Heat pumps, geothermal energy, and renewable sources should be a priority instead of fossil gas, at least in reconstruction projects involving the EU 🙏



The new heating system contains five heat storage tanks with a capacity of about 2,000 liters each, as well as a high-efficiency heat exchanger for hot water. The total investment in the heating system amounted to 218,000 euros.

Trostyanets has consciously chosen the way of reconstruction that makes the community stronger, energy-independent, and safer for its people. This building proves that even during the war, Ukraine is capable of implementing advanced technologies and creating decent living conditions.

Also, solar panels were installed on the roof of this house

The implementation of the pilot project was funded by clients of the German energy cooperative Green Planet Energy and the Greenpeace Environmental Fund. From the very beginning, the project was also supported by experts from Consulting IC Ukraine and CES Clean Energy Solutions, who contributed to the formation of a sustainable urban development strategy.

RENEWABLE ENERGY SOURCES

Currently, there are over 35,400 families in Ukraine that have switched to electricity from renewable solar energy. The total capacity of such solar power plants is 933 MW. Investments in household solar stations (PV systems) amount to about 730 million euros. Each year, the number of families interested in and investing in "green" energy is growing. The obvious advantages include the ability to be less dependent on energy and to save on the family budget for electricity bills.

Conclusions

Today, Ukraine is experiencing the most difficult moments in its history, which are having a devastating impact on the country's energy capacity, but we are not standing still and are confidently moving towards energy independence by implementing a green energy policy in cooperation with our European partners. Trostyanets is a particularly vivid example of it!

THANK YOU FOR THE ATTENTION!