

To perform surveys with this method requires very little ground work, which makes it indispensable in uninhabited areas or on dangerous sites [2].

In conclusion, we can say that laser scanning is an extremely useful and promising technology that allows you to map spaces with high accuracy and monitor ground objects.

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### **WHY WE SHOULD STOP NUCLEAR POWER PLANTS**

As we know, nuclear energy is one of the most widespread forms of energy in Ukraine. In 2021, the production of energy by nuclear power plants increased by 3.9%, which is more than half of all energy in the country. Due to the production of a large amount of energy – it is cheaper than alternative forms of energy. Advantages of nuclear energy over other types of energy are high calorific value of nuclear fuel, as it is 2 million times more than oil and 3 million times more than coal, the best economic indicators. In addition, there is no need to use oxygen, which is burnt for energy needs 5 times more than is consumed by living beings. In addition, the

reserves of nuclear fuel are about 20 times greater than the reserves of fossil fuels of all kinds.

Type	2020	2021
Nuclear PP	51.2% ▼	55.1% ▲
Thermal PP	35.2% ▼	29.3% ▼
Hydroelectric PP	5.1% ▲	6.7% ▲
Solar PP / Wind PP / Biomass	7.3% ▲	8.0% ▲

**Table 1. Manufacturing energy in Ukraine in 2020-2021**

Although nuclear energy is available to Ukrainians, there are many reasons why we should abandon nuclear power plants, both in Ukraine and around the world.

First of all, it is environmental unfriendliness of such plants. Until now, mankind has no way to properly dispose of or preserve for a long time toxic waste, which remains radioactive for tens of thousands of years. Nowadays, most of the waste is in temporary above-ground storage facilities, but space is running out. Therefore, nuclear workers need to turn to other collection sites that are more expensive and potentially less safe.

In addition, there is an increased risk of accidents in such plants. Human mistakes and weather conditions can lead to errors and cause great danger to mankind. It is impossible not to mention the tragedy at Chornobyl. At least 30 people died in the first hours after the accident. According to figures published in 2005 by the World Health Organization, the Chornobyl accident could have caused a total of up to 4,000 deaths. In addition to the huge loss of life and the huge number of cancers throughout Europe, the accident at the Chornobyl nuclear power plant resulted in the

contamination of a huge area: about 5 million hectares of land were taken out of agricultural use, and the exclusion zone around the plant was 30 kilometres.

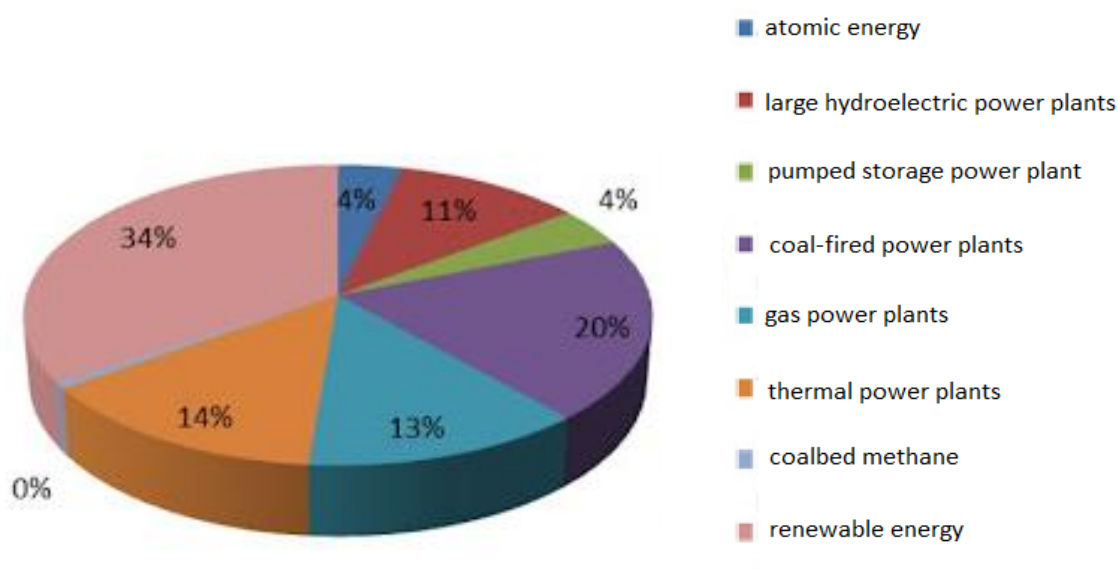
Also, there is the possibility of terrorist attacks. Nuclear power plants are vulnerable and terrorist attacks can cause great harm: powerful explosions and fires release radioactive waste into the environment and threaten local residents.

Another reason for abandoning nuclear power is the increased likelihood of developing cancer. This threatens not only those who have suffered from the release of radioactive substances, but also those who live near nuclear power plants, especially children, who have an increased risk of developing leukemia. And nuclear power plant workers who receive an increased dose of radiation through contact with it have an increased chance of dying of cancer.

Nuclear power is an opportunity for nuclear proliferation. As nuclear fuel becomes more and more available in the world, there is a high probability that the fuel will fall into the wrong hands. To prevent this, countries with high levels of corruption must be monitored to ensure that they do not set up nuclear programs, and other countries must not encourage the spread of nuclear energy.

Also, concerning the situation in Ukraine, it must be said that dependence on Russian nuclear fuel is no small reason to abandon nuclear power. The main proof of this is the words of Ukrainian Energy Minister Herman Galushchenko. In November 2021 he noted that half of the units of Ukrainian nuclear power plants run on fuel from Russian Federation.

The National Ecological Centre of Ukraine conducted a study and came to the conclusion that Ukraine can give up nuclear energy until 2030. And if this happens, then the largest amount of energy produced will come from renewable sources and will be 34%, while nuclear energy will drop to 4%



**Figure 1. Alternative scenario of Ukraine's energy balance in 2030  
presented by NECU**

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