

# THE WORLD

## WAYS OF SUSTAINABLE DEVELOPMENT

### Recycling



Waste recycling is an activity that involves the management of waste in order to ensure its reuse in the national economy and the production of raw materials, energy, products and materials. Recycling can prevent the disposal of potentially useful materials and reduce the consumption of primary raw materials, thereby reducing energy consumption, air pollution (from incineration), water and soil pollution.

The term recycling is used to refer to the process of returning waste to the processes of technogenesis. In other words, recycling is a process, and recycling is an activity consisting of industries and many different processes. In this sense, recycling is one of the elements of waste disposal, which in turn is part of waste recycling. Waste recycling is carried out by reusing the waste for the same purpose, for example, glass bottles after their appropriate safe treatment and labeling. Sorting is the selection of components from the mixed (not sorted) already formed as a result of waste collection. The vast majority of sorting lines in the world are manual. But there are also automated ones.

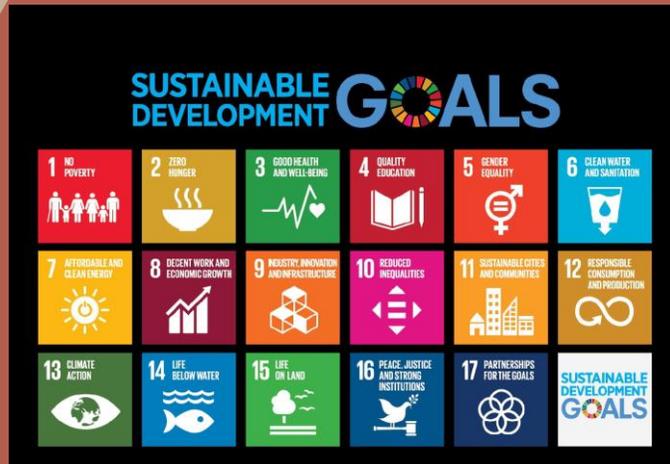


## About the forest

The forest is an important part of our life. Thanks to the forest, we breathe and live. Therefore, the preservation of the forest is our primary task.

Why should we save the forest?

Without the forest, our life will turn into a nightmare. Annually, 1 hectare of pine forest absorbs 14.4 tons of carbon dioxide and emits 10.9 tons of oxygen. Thus, it purifies our air! Therefore, protecting the forest is the first priority.



The shaft turns a generator which converts the kinetic energy into electrical energy



The wind passes over the blades and makes them turn (kinetic energy)



The blades turn a shaft within the nacelle (the box at the top of the turbine)

The electricity is then exported to the local electricity grid network



A transformer converts the electricity to the right voltage for the local network, typically 11,000V – 33,000V



## Our Mission to Protect the World's Forests



## Wind power

Wind power is an energy industry that specializes in using the kinetic energy of wind flow. Wind energy refers to renewable energy sources and is derived from the energy of the sun.

### HISTORY OF WIND ENERGY USE

Windmills were used to grind grain in Persia as early as 200 BC. Mills of this type were common in the Islamic world and were brought to Europe by the Crusaders in the 13th century. Windmills that produce electricity were invented in the 19th century in Denmark.

Its main advantages are:

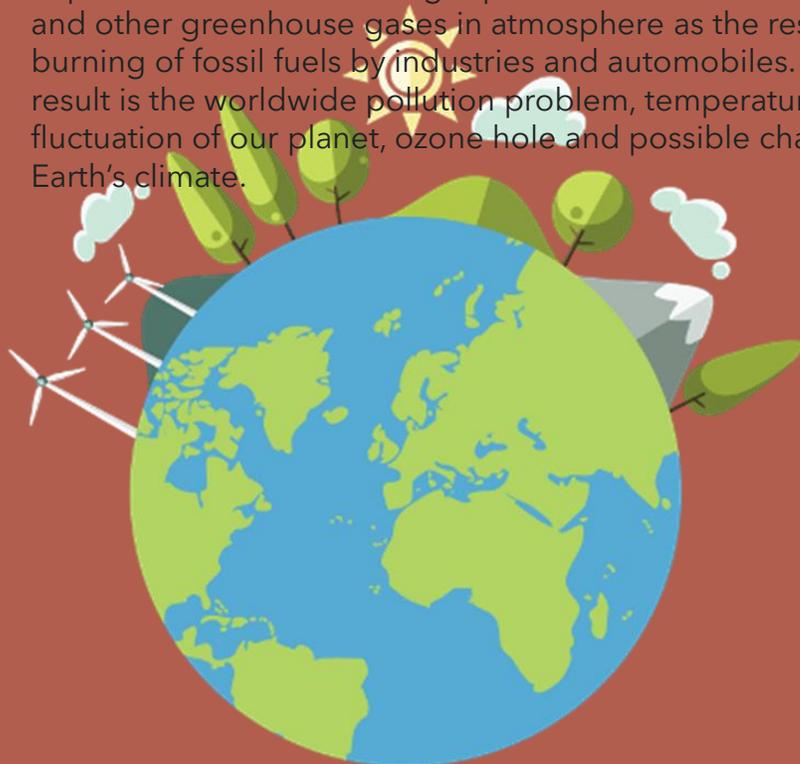
1. No pollution of the environment-the production of energy from wind does not lead to emissions of harmful substances into the atmosphere or the formation of waste.
2. The use of a renewable, inexhaustible source of energy, saving on fuel, on the process of its extraction and transportation.
3. The area in the immediate vicinity can be fully used for agricultural purposes.
4. Stable costs per unit of energy received, as well as an increase in economic competitiveness compared to traditional energy sources.
5. Minimal losses in the transmission of energy - a wind power plant can be built both directly at the consumer, and in remote locations, which in the case of traditional energy require special connections to the network.
6. Easy maintenance, fast installation, low maintenance and operation costs.

# Technologies of sustainable development

## Ecology problem

Everything that surrounds or affects an organism during its lifetime is collectively referred to as its environment. It comprises both living (biotic) and nonliving (abiotic) components. Human civilisation and globalisation are the dominant culprits of constant change in the global environment in present scenario. Various processes that can be said to contribute to the global environmental problems include pollution, global warming, ozone depletion, acid rain, depletion of natural resources, overpopulation, waste disposal, deforestation and loss of biodiversity

Almost all these processes are the result of the use of natural resources in unsustainable manner. These processes have highly negative impact on our environment. One of the major impacts is the release of large quantities of carbon dioxide and other greenhouse gases in atmosphere as the result of burning of fossil fuels by industries and automobiles. The result is the worldwide pollution problem, temperature fluctuation of our planet, ozone hole and possible change in Earth's climate.



## Car pollution

Cars are one of the main sources of urban air pollution. Over large cities, the atmosphere contains 10 times more aerosols and 25 times more gases. At the same time, 60-70% of pollution is accounted for by car exhaust. Motor vehicles in urban environments operate in a suboptimal mode due to the need to constantly change the speed and direction of movement. Most of the toxic substances are formed during idle operation of the engine, from this point of view, traffic jams are the most dangerous for the environment. Car exhaust contains various greenhouse gases such as carbon monoxide and nitrogen oxide. These gases have the ability to block the sun's rays that are reflected off the Earth's surface. This solar energy enters the Earth's atmosphere and causes fluctuations in temperature. This is one of the main factors of global warming.

## Tesla Motors

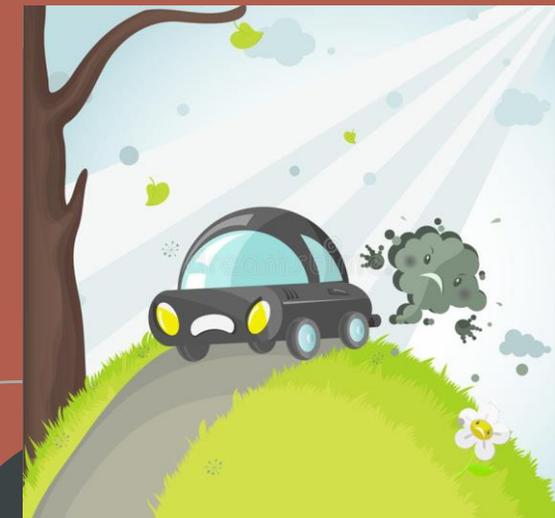
Tesla Motors made a great contribution to the development of electric cars. Over the past few years, the leader of the company, Elon Musk, has done everything for the mass promotion and commercialization of electric cars. In June 2014, Elon Musk also announced that Tesla's technology patents can now be used by any company developing the production of its own electric vehicles. According to the entrepreneur, unfortunately, the reality is that while sales of electric cars make up no more than one percent of all sales of the automotive industry, and this can only be changed by the massive dissemination of currently available production technologies in this

## Electric cars

Today, the main solution to this problem is electric cars. In recent years, due to the continuous rise in oil prices, electric vehicles have gained popularity.

The advantage of electric vehicles of electric cars

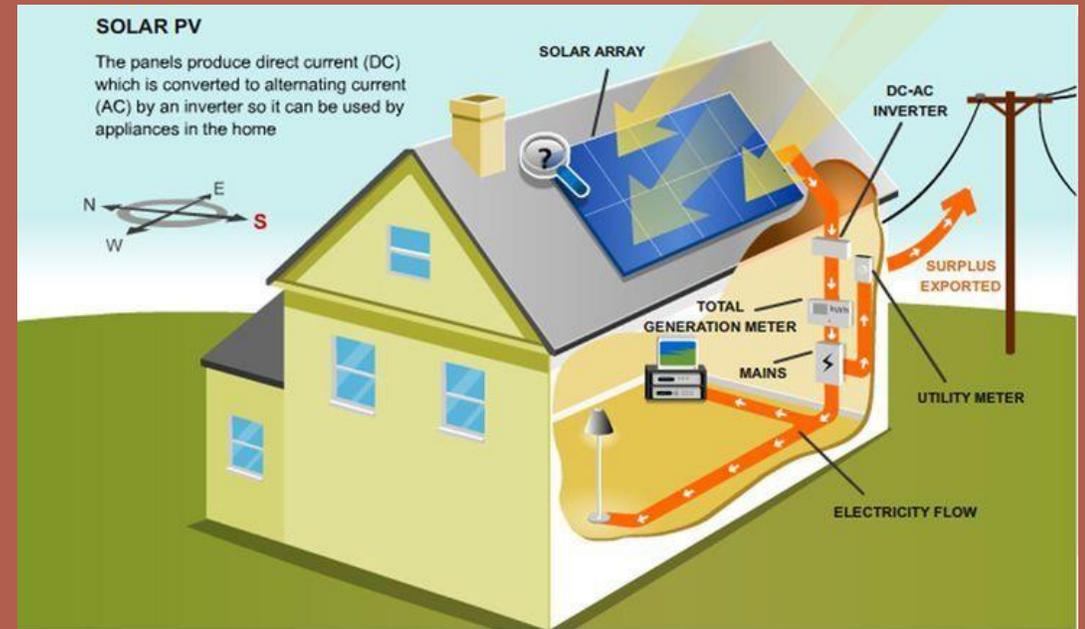
- 1) Comparative reliability and durability of the engine during long-term operation;
- 2) Secondly, such vehicles are simply ideal from an environmental point of view. They do not pollute the environment with hazardous exhaust gases, and the production of "fuel" for them does not require the devastation of natural oil reserves.
- 3) Less noise is generated;
- 4) High efficiency factor compared to conventional car engines



## Solar energy

Solar energy is an alternative source of energy which has become popular recently. You might have heard about solar batteries and seen them, too, because there are many people in Europe who set solar batteries up on the roofs of their country houses. However, this is not the only way to utilize solar energy.

Transportation is another field in which solar energy is actively used nowadays. Planes, cars, railways, buses and even roads themselves are powered by the energy taken from the sun. A new way of powering transport is good not only because this kind of energy is renewable, but also because it helps many nations to reduce carbon footprint. Solar powered charges may seem a myth to you but they are real already. You can have your own portable solar battery and charge many devices from smartphones to tablets. Some companies produce devices that are already powered by solar energy. For example, you can buy a mini-freezer or an air conditioner which work without electricity. Solar lighting and heating are also a thing. Solar lighting is popular in country houses where people set them up in the gardens and yards. They are easy to set up and have no cables. You just place the lights somewhere outside and wait until it is dark to see them work. As for solar heating, it is also very efficient and may save up you some money usually spent on electricity bills.



The World, студенческая газета кафедры МК и МТ ГГУ им Ф. Скорины, № 7 (май), 2021. Редколлегия: студентка группы БИ-11а Астрякова В.; корректор В.Ю. Соболевич