



DIERET - Distance Internet Education on Renewable Energy Technology

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About the Course

- The course "Distance Internet Education on Renewable Energy Technology - DIERET" was developed by the International network for sustainable energy INFORSE-Europe.
- The translation of the course from English was prepared by the Renewable Energy Agency for students and specialists who wish to deepen their knowledge in the field of modern renewable energy technologies.
- The first group of students from Ukraine was trained in November 2003.
- As part of the SELNEE project, the course was revised and translated into Ukrainian.
- A modern interface has been developed that allows you to independently work with information on any platform.

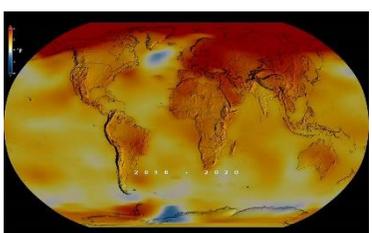
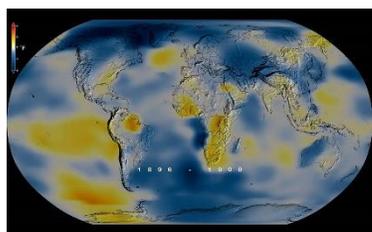
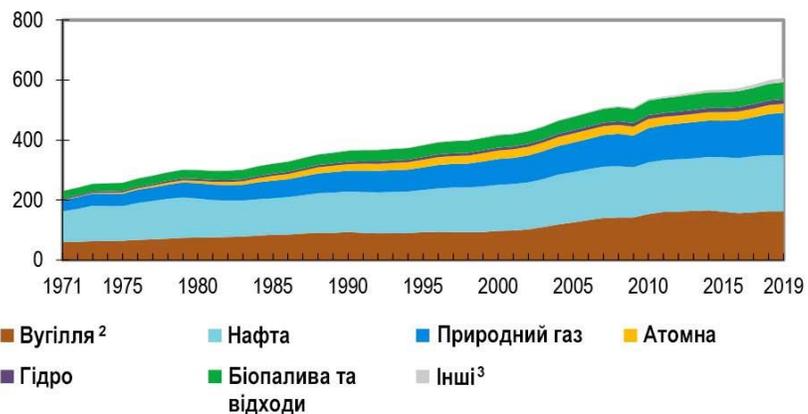
Structure of the DIERET course



- ❖ Why Do We Need Renewables?
- ❖ Solar Energy
- ❖ Biomass for Energy
- ❖ Wind Energy
- ❖ Hydro Power
- ❖ Geothermal Energy
- ❖ Alternative Fuels for Transport
- ❖ Renewable Gases
- ❖ Organising and Policies for Renewable Energy

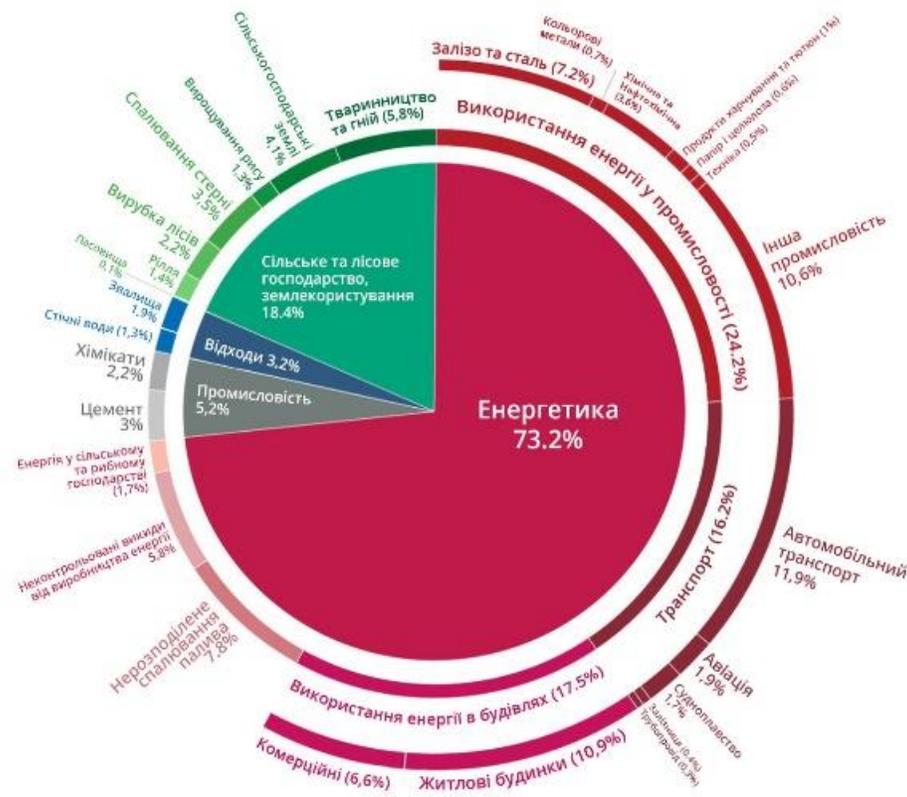


Why Do We Need Renewables?



Світові викиди парникових газів за секторами

Станом на 2016 рік - світові викиди парникових газів склали 49,4 мільярди тон CO₂ екв.

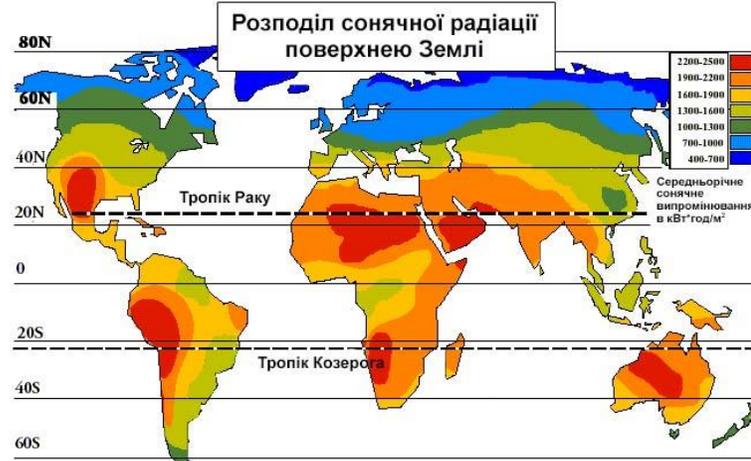
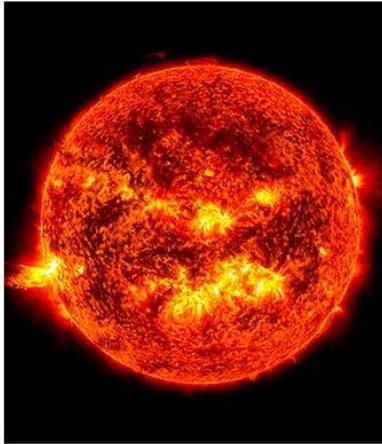
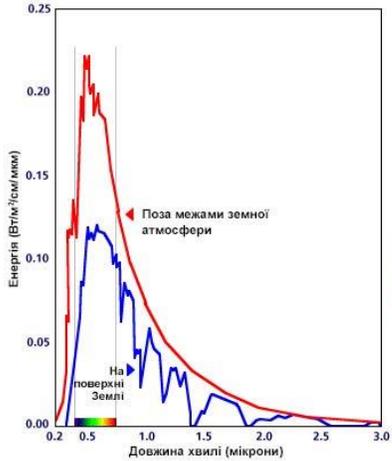


OurWorldinData.org – Research and data to make progress against the world's largest problems.
Source: Climate Watch, the World Resources Institute (2020). Licensed under CC-BY by the author Hannah Ritchie (2020).

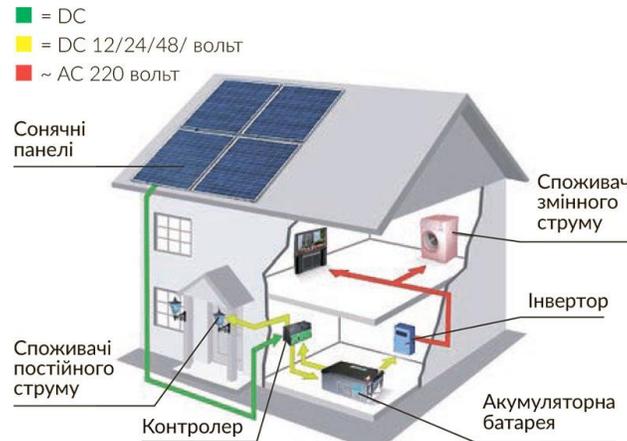
- ❖ Energy today
- ❖ Fuel reserves
- ❖ Environmental problems
- ❖ Social problems
- ❖ Renewable Energy Sources
- ❖ Hidden costs



Solar Energy

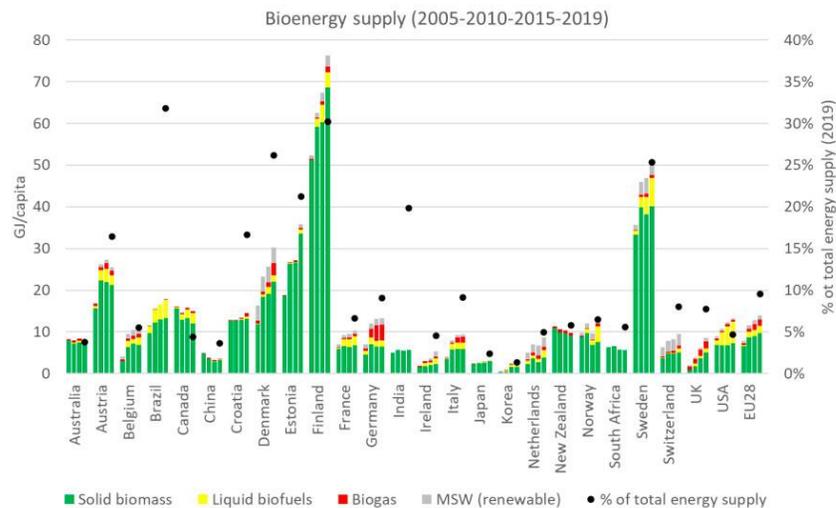


- ❖ Solar radiation
- ❖ Passive energy use
- ❖ Solar collectors
- ❖ Solar cookers
- ❖ Water Distillation
- ❖ Thermal power
- ❖ Photovoltaics
- ❖ Guidelines

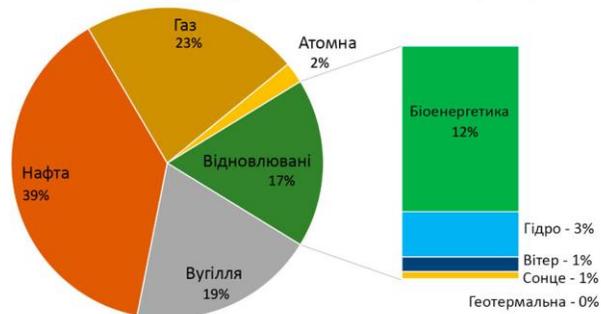




Biomass for Energy



Валове кінцеве енергоспоживання на континентах, 2019 р.



- ❖ Energy from biomass
- ❖ Basic data
- ❖ Biofuels
- ❖ Processes
- ❖ Technologies
- ❖ Low cost biogas
- ❖ Production of electricity from biomass
- ❖ Guidelines for evaluating the potential of biomass use



Biomass Energy



Firewood combustion



Wood pellets combustion



Energy willow chips combustion



Straw bales combustion



Sunflower husk combustion



CHP on energy willow chips

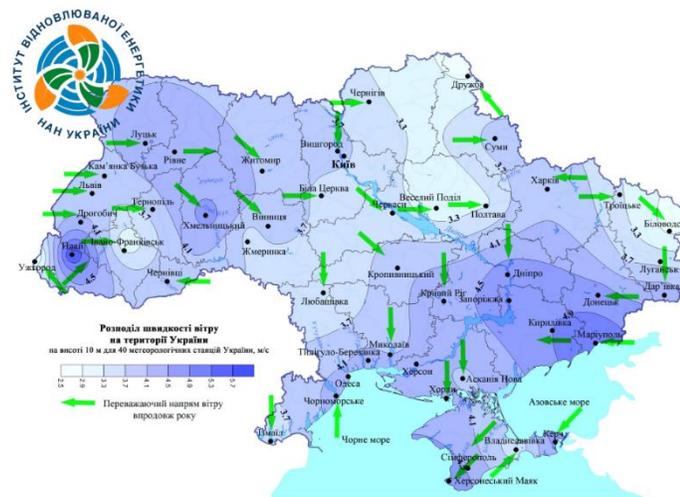
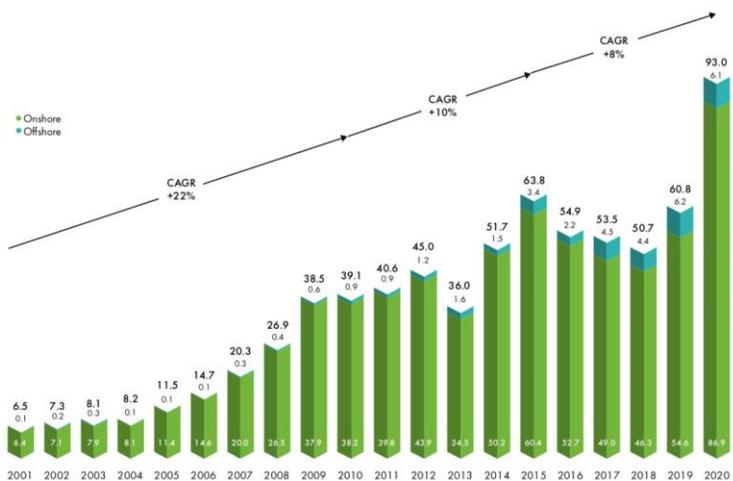
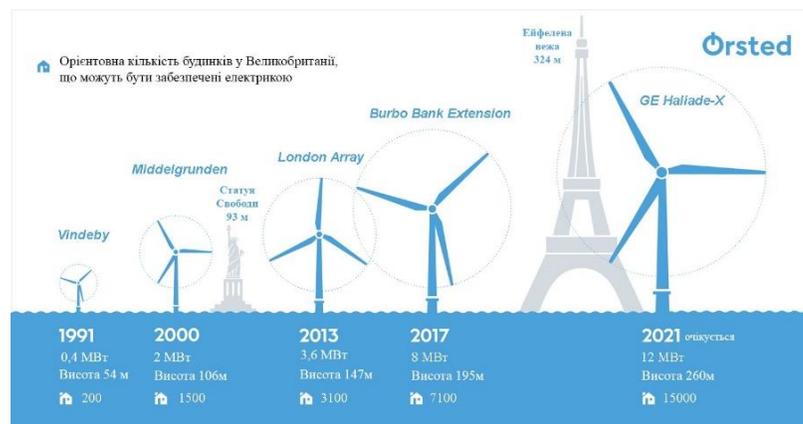
Combustion of
straw pellets



Combustion of
briquettes in
low-power
boilers



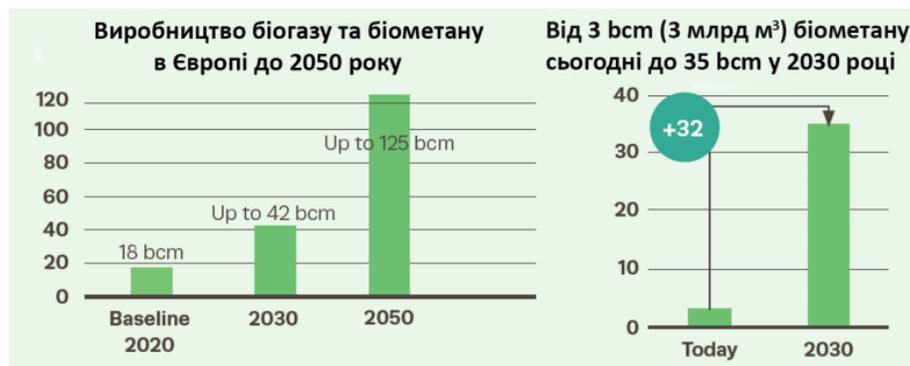
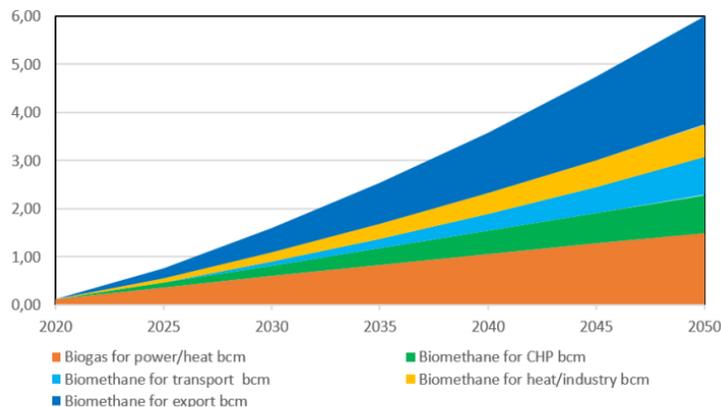
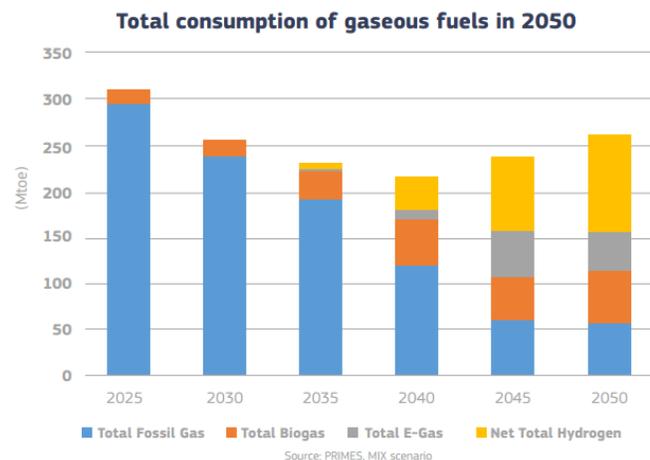
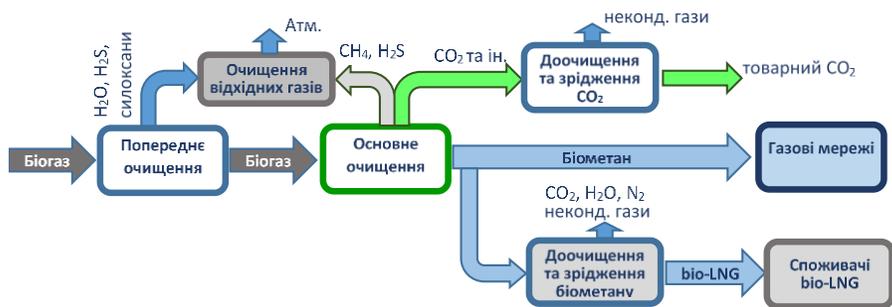
Wind Energy



- ❖ History
- ❖ Wind energy
- ❖ Technologies
- ❖ Types of wind turbines
- ❖ Large wind turbines
- ❖ Offshore wind turbines or sea-based wind turbines
- ❖ Small wind turbines and the use of wind turbines
- ❖ The impact of wind energy on ecology
- ❖ Recommendations for the use of wind energy



Renewable Gases



- ❖ What are renewable gases?
- ❖ Features of use, pros and cons, restrictions on the use of renewable gases
- ❖ Plans for the development of the production of renewable gases
- ❖ Prospects for the development of the production of renewable gases in Ukraine

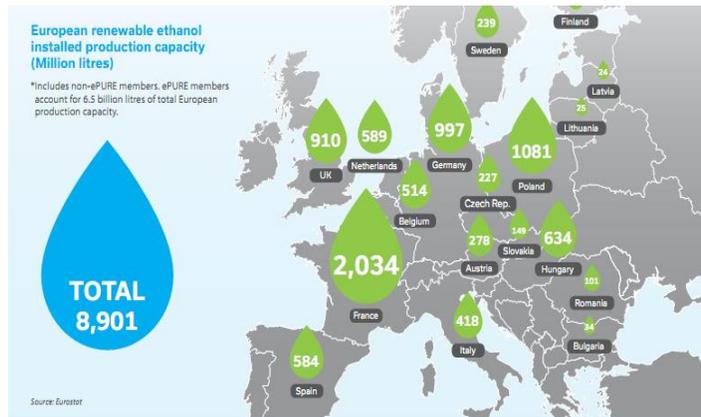
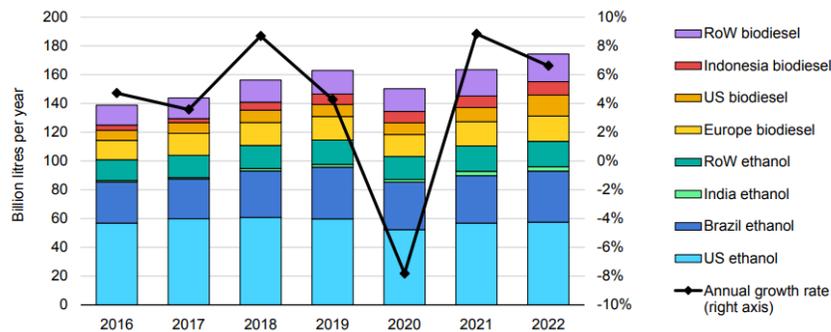
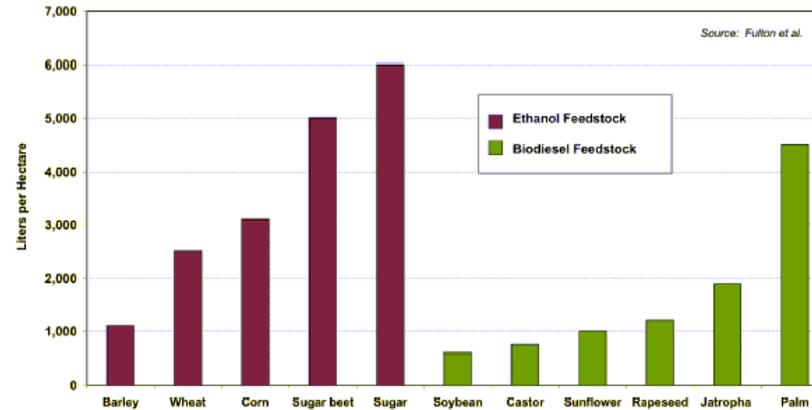
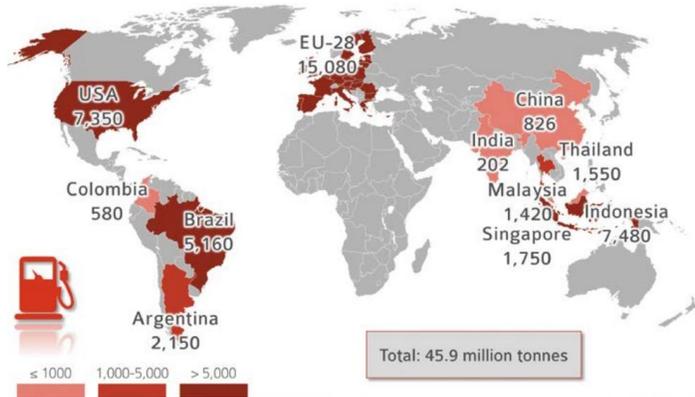


Alternative Fuels for Transport

EU-28 accounts for about one third of global biodiesel production

Biodiesel production in key countries, in 2019, in 1,000 tonnes

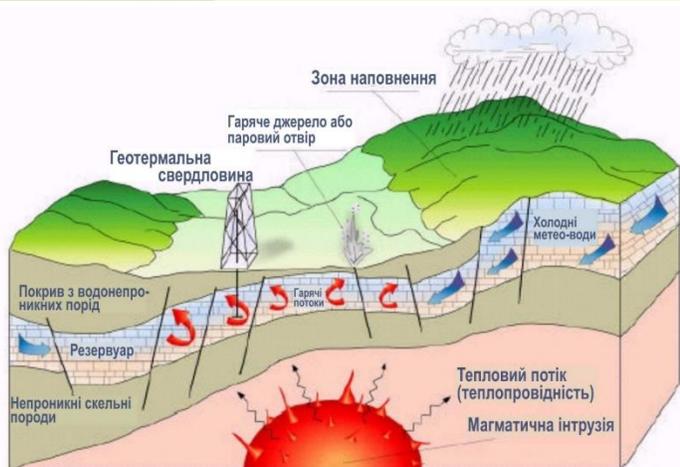
© AMI 2021 | Source: FAS, Oil World



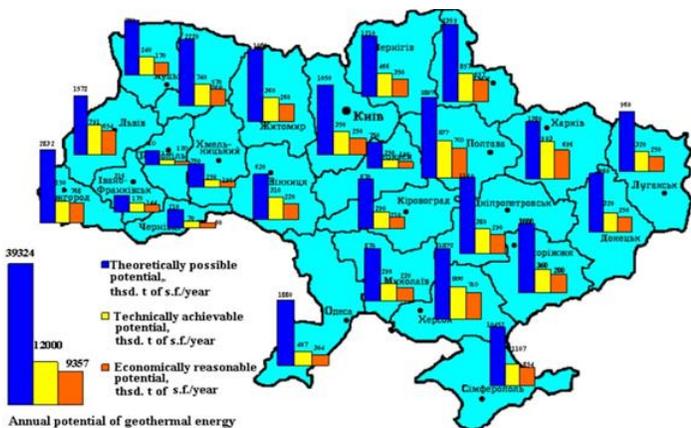
- ❖ Biodiesel
- ❖ Bioethanol
- ❖ Biogas/ Biomethan



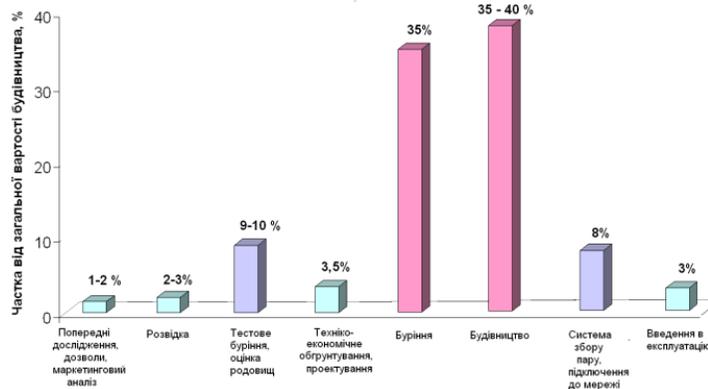
Geothermal Energy



СПОСОБИ ВИКОРИСТАННЯ ГЕОТЕРМАЛЬНОЇ ЕНЕРГІЇ (2020 Р.)



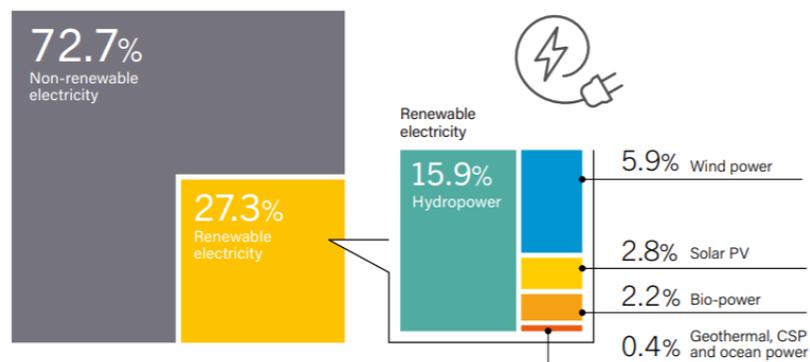
ЧАСТКА РІЗНИХ ЕТАПІВ ВІД ЗАГАЛЬНОЇ ВАРТОСТІ БУДІВНИЦТВА ГЕОТЕРМАЛЬНОЇ ЕЛЕКТРОСТАНЦІЇ ПОТУЖНІСТЮ 50 МВт



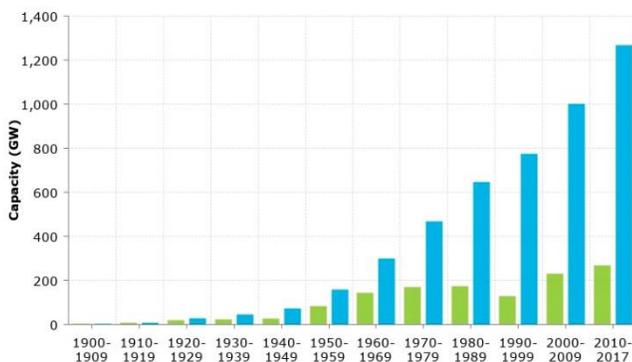
- ❖ The nature of geothermal resources
- ❖ History
- ❖ Current state
- ❖ Geothermal systems
- ❖ Agriculture application
- ❖ Industrial application
- ❖ Geothermal electricity
- ❖ The future of geothermal energy
- ❖ Heat pumps
- ❖ Geothermal energy in Ukraine



Hydro Power



Hydropower installed capacity growth since 1900



- ❖ Water cycle
- ❖ History
- ❖ Hydroelectric power plants (HPP)
- ❖ Problems of hydropower
- ❖ Technologies
- ❖ Types of hydroelectric power stations
- ❖ Large hydropower
- ❖ Small hydroelectric power stations
- ❖ Energy of the oceans



Organising and Policies for Renewable Energy

- ❖ The work of activists
- ❖ Organization of local exhibitions and events
- ❖ Publications
- ❖ Presentations of facilities that use RES
- ❖ Audit of buildings
- ❖ Education
- ❖ Consultancy
- ❖ Consumer cooperatives
- ❖ National RES Associations
- ❖ Participants of "independent construction"
- ❖ National meetings
- ❖ Policies for RES development
- ❖ Economic background
- ❖ Technologies

Acquired knowledge test



Thank you for attention!

Oleksandra Tryboi,
Civic Organization “Renewable Energy Agency”, Ukraine

Distance Internet
Education on
Renewable Energy
Technology
(DIERET)

<https://dieret.rea.org.ua/uk/>

