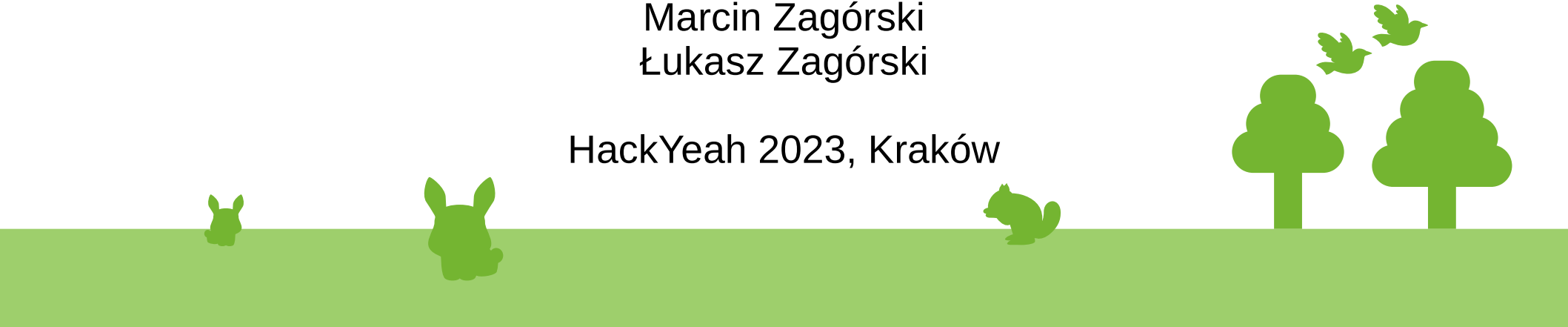
Euro Power Plant Simulator

Task: Paneuropa
(Educational ideas that help spread knowledge)

Partner: European Commission – Representation in Poland

Team:
MMŁ
Marcin Purzycki
Marcin Zagórski
Łukasz Zagórski

HackYeah 2023, Kraków



Euro Power Plant Simulator
the original idea

- an educational game in which the player takes on the role of an architect of an energy network throughout Europe
- it is possible to arrange various types of power plants and design connections between countries
- the network is to be built within a specific budget and in the shortest possible time - so as to meet the energy needs of the regions while optimizing costs, environmental pollution and incurring contractual penalties for failure to meet the needs

Euro Power Plant Simulator
MVP scope

- for the needs of a 24-hour project for a team of 3, the scope of work was limited to MVP in the form of an interactive simulation
- the simulation aims to spread knowledge about the impact of electricity production on environmental pollution, both locally and throughout Europe as a coherent area of our existence, for the condition of which each resident is individually responsible.
- provides the opportunity to design an energy network for the whole of Europe and compare the impact of the location and types of power plants on energy demand, construction costs and pollution levels in individual regions and whole Europe

Euro Power Plant Simulator
user input

- type of power plant: nuclear, coal, hydro, wind, solar
- the number of power plants of each type in the region

Euro Power Plant Simulator simulation output

- energy demand by regions and total
- meeting energy demand by regions and in total
- volume of electricity production by regions and total
- the impact of constructed power plants on environmental pollution by region and total
- cost of building a power plant network by region and total

Euro Power Plant Simulator simulation models

- energy demand, transfer of surplus production to neighboring regions
- degree of pollution depending on the type of power plant and its location
- construction cost depending on the type of power plant
- variable efficiency of individual types of power plants depending on the construction region (impact of environmental factors, availability of raw materials, availability of a sufficient number of qualified personnel in a given region)
- variable power plant efficiency depending on the number of power plants built and the size of the region

Euro Power Plant Simulator

Euro Power Plant Simulator

Map Filters

Demand Satisfaction

Map Legend

Highest

Lowest

Europe Stats

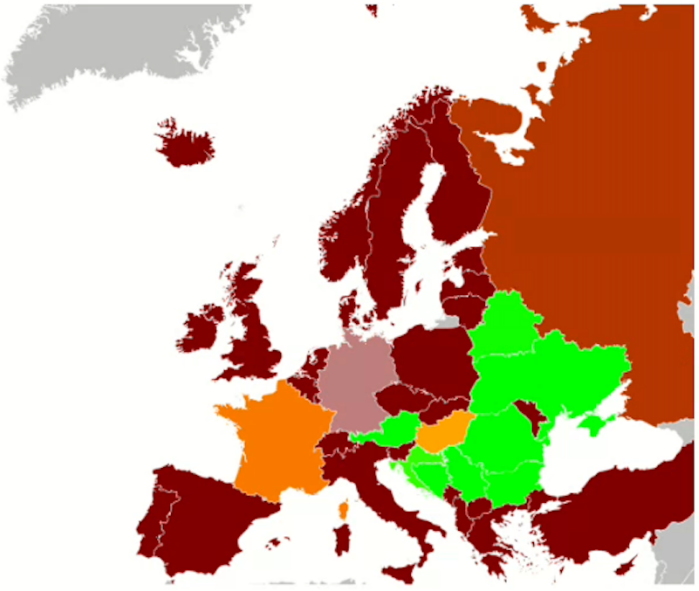
Energy Demand:
4735 tWh

Energy Production:
587.16 tWh

Pollution:
1.89

Overall Cost:
115.6 mln €

Remaining Funds:
884.4 mln €



Country Stats

Country Name:
Germany

Energy Demand:
600 tWh

Energy Production:
0 tWh

Pollution:
0

Overall Cost:
0 mln €

Country Operations

Nuclear Power Station:
Next power station: +43.4 tWh
Next power station: 16 mln €
0
- +

Wind Power Station:
Next power station: +8.4 tWh
Next power station: 1.5 mln €
0
- +

Water Power Station:
Next power station: +11 tWh
Next power station: 1.7 mln €
0
- +

Coal Power Station:
Next power station: +30.4 tWh
Next power station: 6.2 mln €
0
- +

Solar Power Station:
Next power station: +5.2 tWh
Next power station: 2.3 mln €
0
- +

Euro Power Plant Simulator tech stack and sources

- Java script
- P5js
- SVG
- Statistical journals
- Power plant projects and public procurement
- https://challengerocket.com/hackyeah-2023/works/euro-power-plant-simulator-fcbbbb
- https://github.com/csecluki/hackyeah2023