

The main goal is to identify and analyze the conditions relating to the conduct of regional energy policy, with particular emphasis on unconventional energy sources occurring in a given area.

The methodological goal is to build a mathematical model of the regional energy system, related to the region's development strategy in specific time periods (years), and to generate development scenarios taking into account sustainable development criteria, i.e. economic, ecological and social.

The aim of the work is to propose to regional authorities the desired direction of energy policy development in the analyzed periods and to offer a model for creating energy policy in other local government units: counties and communes.

### Research hypothesis

**It is advisable and possible to build a regional system of obtaining energy from alternative sources, meeting the principles of sustainable development, increasing energy security and increasing energy efficiency and full use of renewable energy sources.**

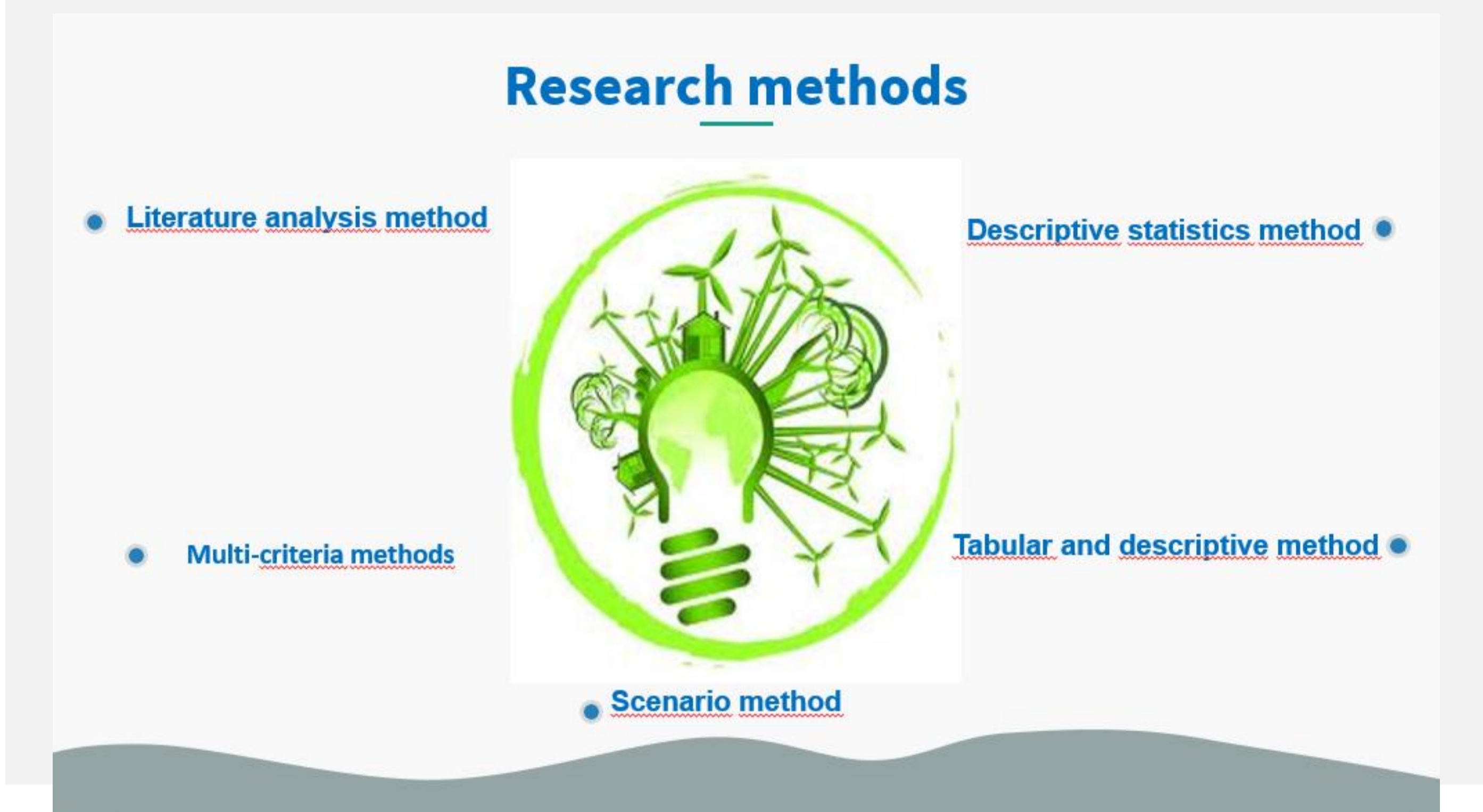
### The research also formulated three specific hypotheses.

The first one concerns the lack of interest in building regional energy systems, both on the part of the central energy sector and regional and local authorities, caused by the variability of EU and national regulations, which do not support the development of prosumer and renewable energy.

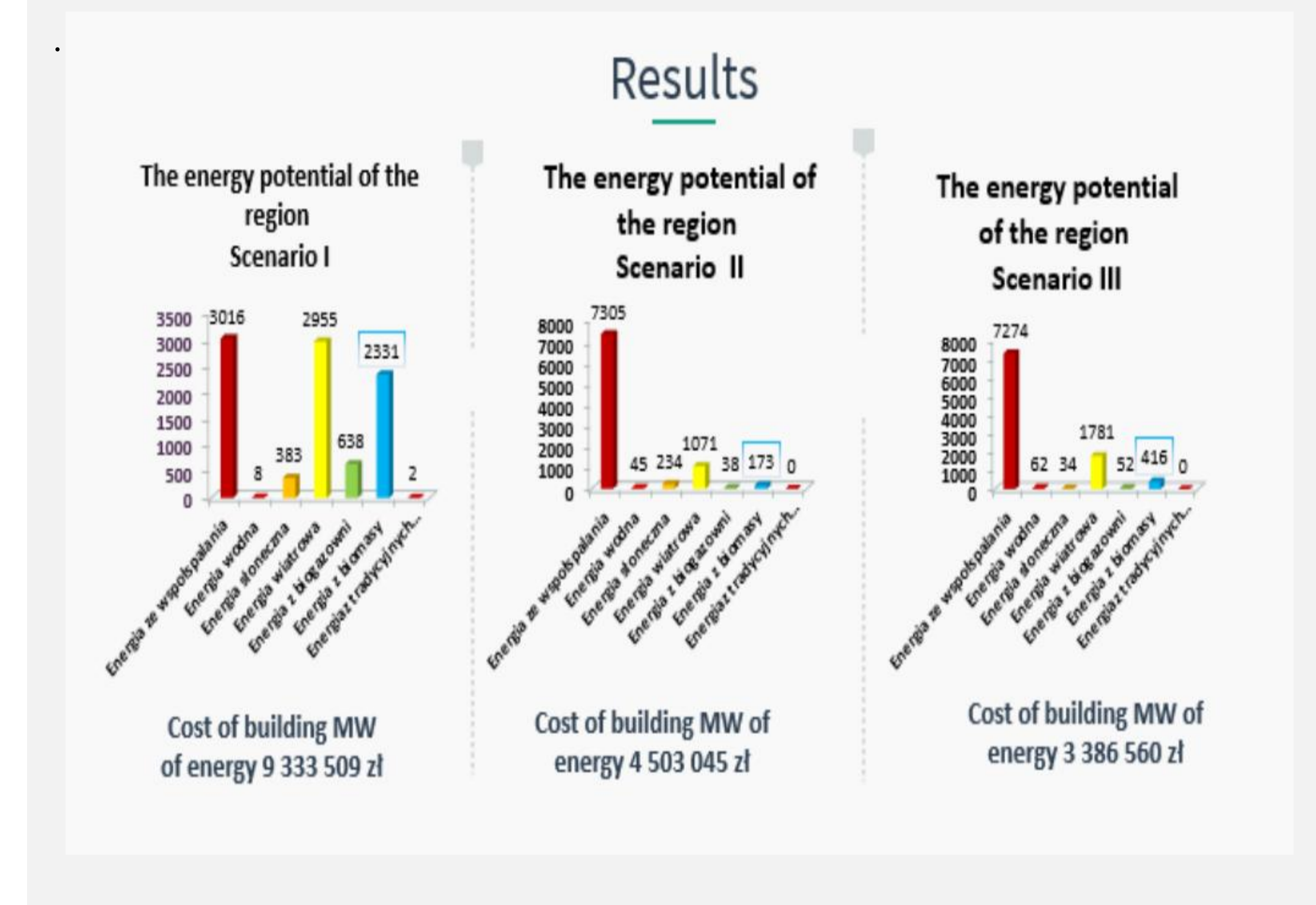
The second concerns the lack of appropriate infrastructure for the development of renewable energy

The third one concerns the high risk and uncertainty of investments in renewable energy in the current legal and economic conditions

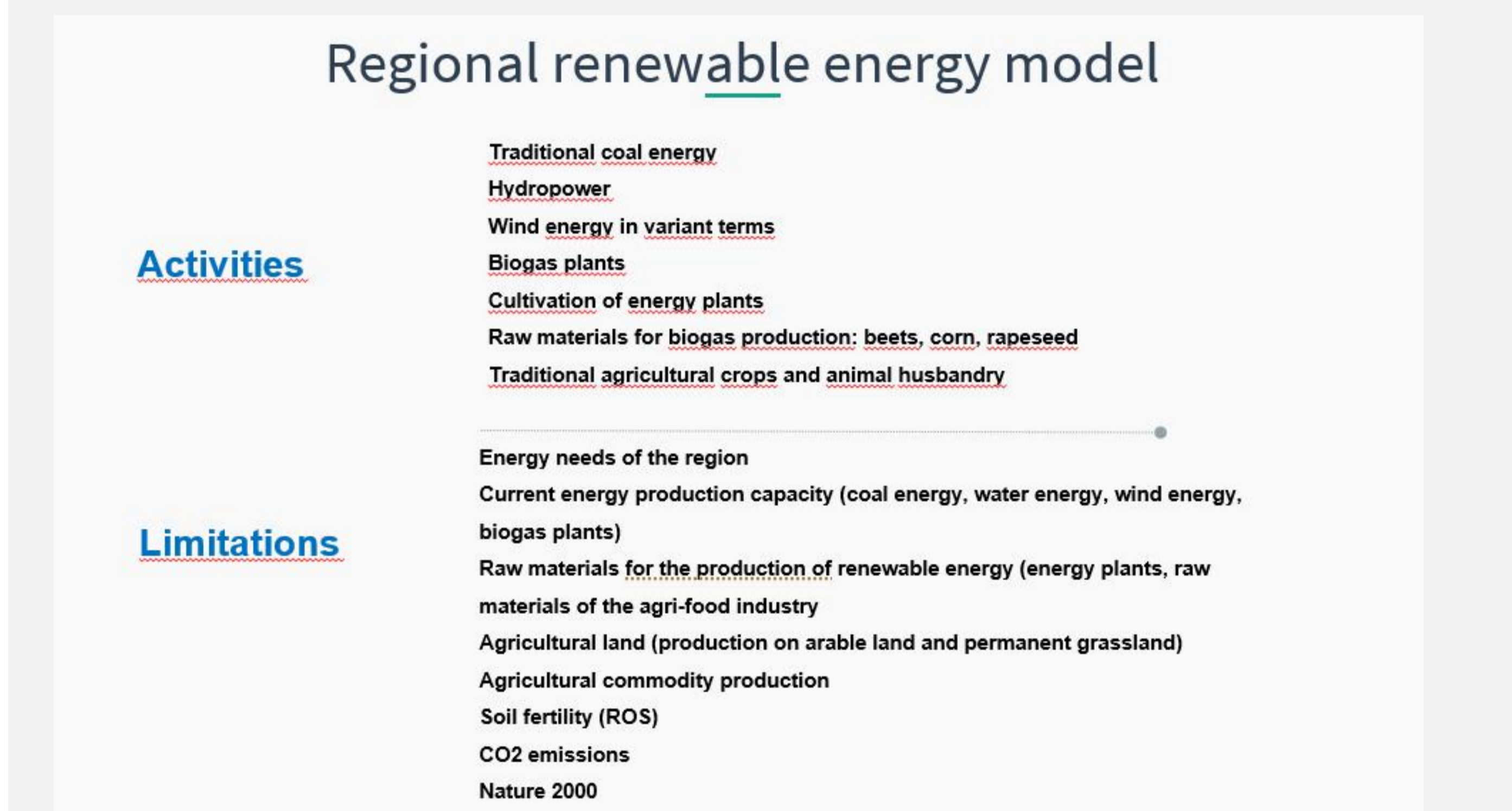
### Methodology



### Results



### Results



### Regional renewable energy model

#### Objective functions

- Minimizing energy production costs
- Maximizing the level of production of alternative energy sources
- Minimizing the adverse impact of the production of primary energy sources on the natural environment (soil fertility)
- Minimizing greenhouse gas emissions in the region
- Minimization of investment costs
- Maximizing production in the region
- Maximizing employment/increasing income from renewable energy

### Conclusions from the conducted research

Own research on the energy mix of the West Pomeranian region indicates that it takes little account of the specificity of the region, where the main energy supplier is coal-fired energy. The only positive example is the development of wind energy. The biomass power plant built in Szczecin uses local energy resources from wasteland and permanent herbaceous areas to a small extent. It should be emphasized that a large part of biomass comes from import.

The current state energy policy does not support the creation of autonomous regional energy systems, where the main decision-maker on the volume and structure of energy produced would be the local government, not energy companies and the Energy Regulatory Office.

The constructed mathematical model and its validation confirm that it can be a tool for simulating the region's energy policy. Economic calculations indicate that the current energy mix in the region, where coal energy constitutes the dominant part, is correct.

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