Evaluation of technical and economic potential of reducing carbon dioxide emissions by improving energy efficiency

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Emissions of major greenhouse gas in industry and other sectors are easy to measure and regulate as CO_2 emissions are directly proportional to the amount of energy used.

Activities aimed at lowering CO_2 emissions include improvement of efficiency of energy transformations processes, increased use of renewable energy sources, CO_2 sequestration and energy efficiency.

The improvement in energy efficiency and rational use of resources is important as reduction of energy demand directly leads to savings of fossil fuels burnt thus emissions. However, these activities are not as easy to identify and evaluate as other ones, since they refer to various production processes and relatively complex relations.

PhD Thesis

Work will focus on the bottom - up analysis and computer modelling of technical and economic energy efficiency potential in Poland. It aims at designing methods to identify and evaluate measures implemented for energy efficiency improvements as well as to develop modelling system, which will be used for monitoring overall impact of all applied measures, together with energy efficiency potential.

Despite quite long history of energy efficiency efforts, also targeted projects implemented in Poland, the country still have potential in energy efficiency improvements. The thesis will contribute to the better understanding of underlying technical and economic processes, as well evaluate incentives for the energy efficiency promotion.

ESA² : Energy System Analysis Agency

Project Duration: 2010-2014

Participant legal name	CC	Organisation type	Contact person
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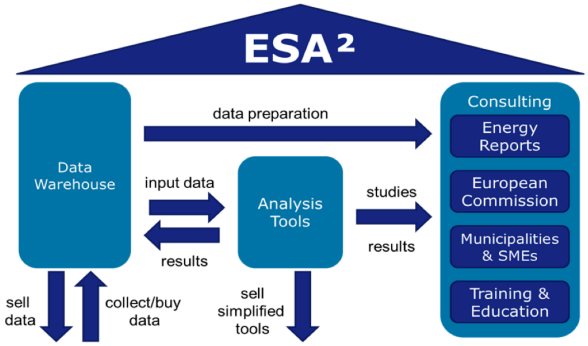
ESA² Mission

- The increasing complexity of worldwide energy systems requires an integrated analytical approach
- Addressing the emerging challenges of objective to provide sustainable development



1 **Data Warehouse** : a data pool will be built-up which enables to carry out energy systems analysis and consultations on a high professional standard. On the one hand the data warehouse will provide data for ESA²-projects in areas of energy system analysis, for energy and environmental reports and for training and education programs - on the other hand a data selling service for external clients will be provided.

2 **Analysis Tools** : contains the development of highly sophisticated new energy and environmental system models for specific analytical applications by combination of existing models and tools of the project partners. The results of these analyses will be integrated in the data Warehouse and can be initial data for reports or the information base for consulting services. A second field of activity will be the development and selling of user-friendly and simplified software for energy system analysis.

3 **Consulting** : comprises different services in the form of reports, training /education programs and clients advice (e.g. for municipalities, SMEs etc.) related to issues of energy and environment.