



The experts behind ESA²

Energy System Analysis Agency ESA²

Conceiving the energy world of tomorrow

The European Union's ambitious energy and climate objectives have raised many questions for decision makers in the energy sector. These include questions about possible strategies and policies for achieving a sustainable energy system, about how to manage the switch to low-carbon or carbon-free fuels, and about options for improving the efficiency of energy conversion, transport, distribution, and use. The European Energy System Analysis Agency, ESA² was formed to address exactly these questions. Combining experts from all over Europe, ESA² provides decision makers with comprehensive energy analysis through a range of tools, methodologies and services.

About KIC InnoEnergy

KIC InnoEnergy is a European company driving innovation, entrepreneurship and education in the sustainable energy field, by bringing together academics, business and research institutes. Our goal is to make a positive impact on sustainable energy in Europe by creating future game changers with a different mind-set, and bringing to life innovative products, services and successful companies. KIC InnoEnergy is one of the first Knowledge and Innovation Communities (KICs) created under the leadership of the EIT. We are a commercial company with 27 shareholders that include top ranking industries, research centres and universities - all of them key players in the energy field. More than 150 additional partners contribute to our activities, forming a first class network that is always open to new entrants, furthering our pursuit of excellence. We are profit oriented, but have a "not for dividend" financial strategy: we reinvest any profits generated in our activities.

Making an impact

If we take 100 as the cost of any good produced or consumed in Europe, 27% accounts for energy costs. Thus, just 1% reduction of this cost will represent €20B of savings, contributing to the sustainability and competitiveness of the European energy market.

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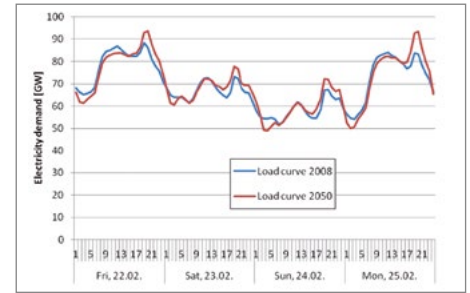
Success story. **ESA²**



Drawing from its expertise in energy economical contexts, ESA² brings together leading representatives from research, industry and politics



ESA² combines different models in one single database



An example of the data ESA² can provide: comparing the hourly load curves of the German electricity consumption in 2008 and 2050

Even the best model for analysis cannot provide the complete picture, so why not combine the strengths of several models to get a more comprehensive view? This is the idea behind ESA². We asked Robert Kunze, industrial engineer at the Institute for Industrial Production of Karlsruhe Institute of Technology and manager of the project, to tell us more about the services ESA² provides and how they help decision makers to shape the future energy system.

Tell us about the services the Energy System Analyses Agency provides?

ESA² is a consulting agency aimed at promoting sustainable energy production, distribution and consumption. We offer customised consulting services to support political and economic actors in the energy field. For example, we can help to calculate the effects of decisions in terms of costs and benefits in advance.

In addition to these customised services, our Sectoral Energy Reports focus on the energy profiles of specific industry sectors such as the iron and steel sector, the machine building industry for wind power or smart grids. The reports deliver a knowledge base that goes beyond the specific sector in focus, and considers the greater context of the challenges that industry is facing in Europe.

Why was ESA² created?

While policy determines the legal framework, the decision for investments in the energy sector lies with a wide variety of actors – energy suppliers, network operators, local authorities, industrial enterprises, businesses, and many more. However, decision makers in the energy sector often lack reliable information to assess the benefits and drawbacks in advance. ESA² was formed to gather comprehensive analyses to provide decision support for public and private clients in the energy field in environmental policy and investments.

Why is ESA² considered a unique solution?

We have a large aggregation of energy-related information available, covering for example market behaviour, price trends and investment opportunities. We analyse this information with a range of established mathematical software models that can be selected and combined to serve the specific demands of our customers. Typically, one single model cannot cover all aspects of an energy system or all the implications of specific policies. ESA², by combining multiple analysis models, therefore allows for new and more comprehensive methods.

We thus offer one-stop-shop solutions, bundling our partners' different

scientific methods for the technological and economic analysis of energy systems into one agency. Our customers benefit from this variety, which makes it possible to tailor a solution for their specific needs. As an independent, international consortium of renowned universities and research centres, ESA² is a trustworthy and neutral partner for decision-makers.

ESA² is one of KIC InnoEnergy's first projects. What is the role of KIC InnoEnergy in your project?

KIC InnoEnergy's offering for Innovation Projects has made it possible to bring twelve research institutes from four European countries together with a common idea and implement it. Integrating the various skills in energy and environmental topics, and combining many different model approaches was only possible through the frame and network brought to us by KIC InnoEnergy for the project. The Ministry of Science, Research and Arts (MWK) of the state of Baden-Württemberg as funders were also key to bringing this project to life.

What are your plans for the future?

ESA² has recently been incorporated as a company with domicile in Karlsruhe. The aim was never to create a temporary consortium representing several institutions, but to create one new company that takes advantage of the competences, data and models of the funding partners. At the moment, a first project for an industrial client is already in process and more are in preparation. ESA² aspires to become the leading European point of contact for energy system analysis for politics and economy on a European, national and regional level.

ESA² partners: University of Science and Technology (AGH), Krakow; Central Mining Institute (GIG), Katowice; European Institute for Energy Research (EIFER), Karlsruhe; Fraunhofer Institute for Systems and Innovation Research (FhG-ISI), Karlsruhe; Karlsruhe Institute of Technology (KIT); Dresden University of Technology (TUD); University of Stuttgart; Royal Institute of Technology (KTH), Stockholm; and VITO, Mol. The project management lies with Karlsruhe Institute of Technology (KIT). www.esa2.eu

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