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RESEARCH TOPIC

Urban and Regional Energy Systems

We plan sustainable energy transition for cities and regions

Urban and Regional Energy Systems

We focus on:

- Sustainable and “smart” energy transition for climate change mitigation
- Integration of the energy system into “complex” urban and regional systems
- Promotion of energy self-sufficiency as a driver for local and sustainable economic development
- Innovation of business models to support a fast and affordable energy transition
- Modelling of complex systems to define and compare scenarios and alternatives

Detailed Description

Planning and implementing a transition to a sustainable and “smart” energy system requires a deep understanding of a region and the supply and demand of existing energy. The planning process must consider potential energy savings, the exploitation of renewable sources, explore synergies with neighbouring regions and conclude with the identification of the most sustainable scenario for the local energy system. Eurac Research experts in urban and regional energy systems take a multidisciplinary approach to the integration of energy planning into the urban planning of a region to promote sustainable growth. Energy planning can help regions achieve national and international energy targets, which can also be a driver of economic development, promoting entrepreneurial activities and employment.

Thanks to our researchers’ multidisciplinary skills, public institutions and companies from the energy sector, experts and firms can create energy plans tailored to the characteristics of their regions.

Some of our latest achievements:

Our experts are coordinating large-scale international urban district renewal projects focussed on “smart cities” in numerous urban centres, including Bolzano-Bozen and Trento. In Bolzano, we are upgrading large social housing districts (over 30,000 m²) by extending and optimising the district heating network and creating a number of energy “smart points”. In Trento, we are supporting the implementation of measures for electric mobility, ICT systems and energy efficiency of buildings. Our researchers have also assisted public administrations in regions such as South Tyrol and Lower Austria by simulating optimal energy scenarios. Further expertise includes: energy planning support to consortia of municipalities and regions (for example in Trentino Alto Adige: Alta Val di Non, Rotaliana-Königsberg, Val Pusteria, Val Passiria etc.; Marche region, Valle d’Aosta, Veneto, Maritime Alps Park, Triclav Park in Slovenia, Vorarlberg in Austria, etc. ...); support for the development of plans for “smart” energy transition in 15 European cities; support to define policies and sectoral studies for EUSALP, the Italian Ministry of the Environment, Croatia, Montenegro, FYROM, Slovenia, Greece, Switzerland, Germany, Austria, France; development of sectoral studies for the energy transition in EU28.

The services we offer:

- Support for the development and implementation of smart energy plans for cities and regions in the sectors of built environment, mobility and regional energy development
- Selection of the most appropriate energy technologies for a specific regional context
- Preparation of feasibility studies for the technical, economic and social viability of an energy transition
- Analysis of the compatibility of energy transition instruments with the spatial characteristics of settlements: mapping of potentials and integration within planning instruments
- Support for the development and coordination of policies for energy transition on an urban, regional, national and international scale
- Preparation of models and simulations, creation of scenarios and comparison of alternatives for energy transition within complex systems (cities and regions)
- Support for energy transition through the use of big data and deep learning

