

JOANNEUM  
RESEARCH  
LIFE



***LIFE***

Institute for  
Climate, Energy and Society



Foto: ESA

THE INNOVATION COMPANY

# JOANNEUM RESEARCH Forschungsgesellschaft mbH

JOANNEUM RESEARCH develops solutions and technologies for business, industry and public authorities over a wide range of sectors and conducts applied cutting-edge research on an international level.

The company makes a significant contribution towards safeguarding the economic success of the region and assumes a key role in the transfer of technology and expertise into the economy.



Corporate Film

## Our 3 Thematic Areas



**Information and Production Technologies**



**Human Technologies and Medicine**



**Society and Sustainability**



## Owners

**80,75 %**

State of Styria

**14,25 %**

BABEG Carinthian Agency for Investment  
Promotion and Public Shareholding

**5 %**

Wirtschaftsagentur Burgenland  
GmbH

## Certifications

### ISO 9001

Requirements for quality management systems

### ISO 14001

Environmental management systems

### ISO 13485

Medical devices – Quality management systems –  
Requirements for regulatory purposes

### ISO 14644

Cleanrooms and associated controlled environments

### ISO 17025

Accredited test laboratory ROBOTICS Evaluation Lab

### GLP

Good Laboratory Practice

## Numbers – Data – Facts

around **500** employees (from over 25 nations)

**7** research units

**6** locations

around **50** million Euro of research services per year



CLIMATE.  
ENERGY.  
SOCIETY.

»LIFE answers the core questions arising from climate change and its consequences for business, politics and society and drives the urgently required innovation forwards.«

Dr Franz Prettenthaler, M.Litt  
*Director*

# LIFE

## Institute for Climate, Energy and Society

The global change in climate with all its numerous impacts in many areas of life will keep us busy in the coming years. The resulting challenges, the **strengthening of resilience against climatic and weather-related risks** together with the transformation towards a **climate-neutral society** are all in the focus of LIFE's research activities.

The institute offers an excellent total system understanding from economic, ecological, technological and social perspectives. This has enabled LIFE to establish itself as an internationally renowned research partner and contact for matters regarding the complex interactions between climate, energy and society. LIFE is particularly appreciated for its quantitative modelling competence and for its practical approach to solutions.

## Challenges and Solutions

Our research activities into the complex interactions between the fields of climate, energy and society address the following questions:

- What are the urgent steps required for the transformation to climate neutrality?
- Which opportunities should we not miss?
- Which of them are the most economically viable?
- And how can we mitigate the risks and minimize the damage?

All of these research questions are closely related and require similar methodological approaches. This is our contribution towards converting the challenges resulting from climate change into opportunities and solutions.



# Focus



## Weather and Climate Risk Management

- Risk Identification
- Impact Quantification
- Climate Solutions & Climate Services



## Future Energy Systems and Lifestyles

- Energy Systems Assessment
- Best Technology Choice
- Lifestyle Transformation Tools



## International Climate Policy and Economics

- Macroeconomic Analysis
- Policy Evaluation
- Policy Design



## Urban Living Lab

- Agent-Based Mobility Modelling
- Real-Time Data Integration
- Supporting Traffic Planning

# Our Portfolio

Based on the wide spectrum of methodological competence and expertise in the subject areas relevant to the application, the experts can offer clients a diverse portfolio of services in the form of:

- Studies, Analyses, Reports,
- (Eco) Balances,
- Surveys, Evaluations,
- Management, Cooperation and Execution of National and International Research Projects,
- Economic Analyses,
- Consulting and Accompanying Research
- Lifecycle Analyses (LCA),

We offer stakeholders from the public and private sectors access to the knowledge and expertise of the entire research team via our **Preferential Business Partnerships**.



Preferential Business Partnership



Foto: iStock: Krzysztof Nahlik

## Weather and Climate Risk Management

The research group “Weather and Climate Risk Management” supports the public and private sector in managing the risks resulting from weather variability and climate change and where possible to convert them into opportunities. We ensure the consistent analysis and modelling of geographically located, quantitative, economic and meteorological data and generate decision-supporting tools. The derived recommendations for action create added value for our clients in the fields of:

- **Risk Identification:** Weather and climate induced risks can be quantified using risk ratings such as Weather Value at Risk (VaR). Interdependencies are identified and cost-efficient risk management systems constructed.
- **Impact Quantification:** Building upon spatially highly resolved impact analysis, economic activities can be evaluated in the long-term with regard to their resilience against climate change and weather variability.
- **Climate Solutions und Climate Services:** Our WEDDA® (Weather Driven Demand Analysis) toolbox delivers solutions for companies, energy providers and tourist bureaus to support decision-making in their business and planning activities, as well as adapting to climatic changes. This includes weather and climate independent turnover forecasts, evaluation of investment plans taking the climate into consideration and highly accurate forecasts of the feed-in performance of renewable energy. [www.wedda.at](http://www.wedda.at)



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to WEDDA

# Future Energy Systems and Lifestyles

The research group carrying the same name analyses and evaluates energy systems and services over the lifecycle (LCA) regarding their effect on the environment, economy and society. We also develop innovative value chains from raw materials to products and services in the field of eco-mobility with renewable fuels, energy storage, bio-refineries for the integrated material and energetic use of biomass, geothermal energy and energy efficiency in companies, buildings and cities. Furthermore, we develop implementation plans for future energy systems, particularly for city infrastructure development. In doing so, low emission lifestyles, indicators for societal sustainability and the analysis of environmental behaviour and resource conflict play a central role.

We are also able to analyse and classify energy and climate relevant lifestyles and the consumer behaviour

of social and customer groups. In this way, we offer our clients a tried and proven concept that enables us to accompany them on their path towards climate neutrality.

Our core competencies include:

- Lifestyle Research and Climate Change
- Climate-neutral Manufacturing, Energy and Mobility
- Environmental and Social Impacts in the Lifecycle

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# International Climate Policy and Economics

The research group “International Climate Policy and Economics” is renowned both nationally and internationally in the field of energy and climate policy evaluation and the corresponding method design. The group has strong connections to international research networks and develops the most up-to-date climate policy strategies for business and policymakers using qualitative and quantitative economic instruments. The continued development of these analytical tools beyond state-of-the-art and our competences in the following fields enables us to offer added value for our clients.

Our core competencies are:

■ **Macroeconomic Impact Analyses:** We calculate the economic impact of climatic and environmental instruments on regions, business sectors and stakeholders. We also investigate the overall economic impacts of climate change itself and the impact of a range of adaptation and transformation options.

■ **Energy Communities:** We are involved on a national and international level in the analysis and design of a new legal and regulatory framework for decentralized energy systems. In this context, we also provide support with economic feasibility analyses and targeted stakeholder involvement with the development of business models (e.g. participatory models).

■ **Private Action for Climate Protection:** Alongside business related and political options, there is considerable scope for action in the targeted engagement of citizens. We analyse psychological motives for private adaptation to natural dangers, for low emission consumer behaviour and for the adoption of energy-efficient technologies. We provide support for the implementation of measure to increase awareness, citizen participation and grant programmes in regional and national climate policies.



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# Competence Group Urban Living Lab

Urban, suburban and rural spaces are experiencing transformation processes that significantly affect the thematic field of mobility. The competence group “Urban Living Lab” is the first Austrian research group to specialize on agent-based traffic modelling. The focus hereby is to be able to represent current transformation processes in mobility under consideration of traffic-related, sociodemographic and spatial aspects, and social trends in a traffic model. In parallel to this, we are developing a real-time traffic module that will be able to forecast the demand for the personal transport, traffic burden in the transport network and the resulting daily emissions levels.

Our agent-based traffic model “LIFE Mobility Model – Carinthia” is used as a virtual space for experimentation. It can also be used as the basis for research cooperation.

Our core competencies include:

- Customer-specific implementation of agent-based traffic models (based on MATSim) and the integration of new private transport media (e.g. taxi drones) and traffic systems (e.g. automated mobility services)
- Development of mobility-centric tools for the creation, emission monitoring and evaluation of future and currently implemented traffic and environmental measures
- Traffic evaluation and variant surveys of traffic and environmental measures in an overarching view



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# LIFE Innovation

## Urban Life

The path to a climate-neutral future leads via a profound economic, technological and social transformation that will also affect our personal lifestyle. Ultimately, this results in the materialisation of the associated requirements in space, in our concrete lifestyle, in cities and regions, since a sustainable lifestyle needs a sustainable space that enables and promotes it. Together with Franz Prettenthaler from LIFE, Sanela Pansinger, city planner, urban researcher and architect ([www.adasca.org](http://www.adasca.org)) has developed the concept of “Design Sustainability” as a supplementary fourth column alongside the already known three aspects of sustainability.



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This approach breaks a design down into concrete, design-related indicators that enables the reliable evaluation of the future suitability of spatial organisation and thus provides planning and implementation confidence for real-estate policymakers, administrators, individual retailers, owners and investors in order to generate a long-term and timeless added value that conserves resources and energy, is climate-friendly and, ultimately, is economically efficient. Our research activities in the area of Urban life use this concept as a solid basis for high-quality, people-oriented planning. Examples of projects inspired by this are:

- **smartairea.eu**  
(Airport-City as a driver for urban and regional development)
- **smartWOLF**  
(Process to upgrade the city centre of Wolfsberg)
- **rooftopfarming.at**  
(Best practice examples for the sustainable use of rooftop gardens)



## **lifestylecheck.at**

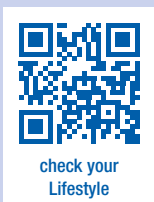
The Lifestyle Check enables interested parties to analyse the influence of their personal lifestyle on the greenhouse gas emissions they cause. The comparison with the average emissions of Austrian citizens shows whether the individual is better than the average and thus on the right path (i.e. causes fewer emissions) to make a personal contribution to the Parisian climate goals. The basis is formed by a representative sample of the Austrian population resulting from a survey conducted in 2018 within the scope of an EU project involving 31 countries and more than 18,000 people.

### ■ Lifestyle Check for Businesses

The results of tailored and anonymised surveys are used to generate the greenhouse gas balance of the workforce. This enables each employee to reflect upon their personal climate-relevant behaviour and also management to identify emission reducing measures up to "climate neutrality" within and outside the company, for example employee work movement patterns.

- **The Paris Lifestyle Navigator** provides answers to questions regarding how the target groups react to climate-friendly offers (products and services), what consumer patterns they display, and what business opportunities result from them.
- **The Climate Lifestyle Monitor** enables clients in the public sector to acquire climate-relevant behaviour and activities over all aspects of life from the target groups in a region or country.

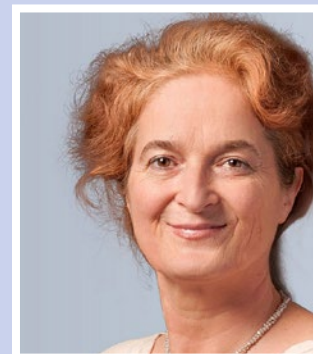
**We also offer a Lifestyle Check for companies**



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