



EES Call 2023-2024: Projects recommended for a research grant (by alphabetical order of main contact person)

Arnold Tobias (Interface Politikstudien Forschung Beratung AG): **MWEH: Mobility Transition, Low-income, Policy Measures, Behavior Change Intervention, Discrete Choice Experiment, Mobility Tracking**

Abstract: The project analyzes the mobility-related energy consumption of low-income households and develops co-beneficial measures that support the target group in reducing their mobility-related energy consumption. It examines the mobility-related norms, values, habits and needs of low-income people in order to develop sustainable energy policy measures tailored to them. Quantitative and qualitative methods are used. An online survey supplemented with mobility tracking serves as a basis for the development of measures. A cluster analysis shows different mobility types within the group of low-income people. The measures are qualitatively developed by means of interviews and workshops. In a second online survey, the acceptance of the measures is analyzed in a discrete choice experiment and differences by mobility type are examined. The project contributes to the development of sustainable energy policy measures in terms of energy justice and thus helps to achieve the goals of the Energy Strategy 2050.

Brosch Tobias (Université de Genève): **ENERGYPULSE: Understanding Consumer Behaviour in Rapidly Changing Energy Contexts**

Abstract: The transition towards a low-carbon energy system necessitates not only technological advancements, but also citizen involvement and commitment. This project aims to investigate the psychological factors that shape energy consumer preferences and behaviours in the context of escalating energy prices, supply risks, and heightened climate change awareness. A longitudinal citizen panel will be established to explore the relationships between cognitive and affective perceptions of energy prices, supply risks, and climate change, and to investigate how these dynamics shape energy-related consumer behaviour, lifestyles, and social norms over time. Moreover, in evidence-based communication interventions, tailored information will be provided to subsets of the panel members, creating large-scale informed citizen panels. The insights created here will allow policy makers to better understand public concerns and preferences in the energy domain, and to apply communication strategies to optimally empower citizens to implement informed choices and behaviours.

Darudi Ali (ZHAW): **STORSUPPORT: Utility-scale storage in Switzerland: Needs assessment and support instruments**

Abstract: This project focuses on market design instruments to support the uptake of utility-scale electricity storage in Switzerland to support the integration of solar and wind energy while maintaining system adequacy. We evaluate the need for additional storage capacities and determine on which time horizons utility-scale storage is needed by employing large-scale numerical modeling to assess both seasonal and diurnal storage requirements. Subsequently, the project addresses the design of support policies, akin to those applied in renewable generation, to derisk storage investments and reduce costs through innovative support contracts tailored for storage assets. Lastly, to efficiently allocate support contracts and ensure a high realization rate, we study auction design and the factors influencing non-realization, which has been a frequent problem with auctions in the past. Our work on auctions is applicable not only to storage but also to PV auctions, hydro reserve and strategic reserve power plants.





File: BFE-226-2/86

Houde Sébastien (Université de Lausanne): **FAIRRENTERS: Enabling a fair energy transition for low-income and vulnerable renters**

Abstract: the goal of this project is to investigate policies that can enable a fair and just energy transition in the Swiss rental housing sector, with a focus on low-income and vulnerable households. We focus on two specific challenges in the rental market. First, housing policies designed to protect renters, such as rent control, may have unintended consequences for property owners' incentives to invest in energy efficiency and climate resilient buildings. Second, the absence of mandatory information disclosure of energy efficiency and environmental amenities in the rental market may create unequal exposure and disadvantage low-income and vulnerable renters. This project investigates how rent control policies and energy policies interact, and whether the voluntary disclosure of information can protect low-income households from energy price and climate related risks. We use administrative data, experimental methods, and econometric modelling, to provide evidence-based policy recommendations and enable a fair energy transition for renters.

Moser Peter (FHGR): **Energy&Jobs: Adapting to Change: The Evolution of Swiss Labor Market and Educational Implications in the Era of Energy Transition and Digitalization**

Abstract: The ongoing energy transition and digitalization of energy systems are fundamentally reshaping the economy, impacting tasks and skills across professions. Notable changes include diversifying energy sources, de-centralized production, and optimizing consumption through smart metering. These shifts alter job requirements and quantities, necessitating workforce adaptation, especially in areas like electricity grids and building energy optimization. Through econometric analyses, expert workshops, and company surveys, the project aims to assesses these impacts on the Swiss labor market in the energy and construction sectors and to develop recommendations for vocational and further training. A collaborative approach, involving universities, applied sciences institutions, and vocational education representatives, ensures that research outcomes address industry challenges and facilitate concrete measures for workforce development in response to the energy transition.

Nuñez-Jimenez Alejandro (ETHZ): **HYPATH: Hydrogen Pathways: Domestic Policies and International Strategies for Switzerland's Energy Future**

Abstract: Hydrogen will be important in achieving secure energy systems with net-zero emissions by providing seasonal storage for the grid and enabling synthetic fuels for industry. However, domestic value chains and international markets need policy support to accelerate their development. This project investigates which hydrogen policies are needed in Switzerland through a domestic and an international lens. First, import and domestic value chains are compared through techno-economic modeling. Then, strategic options for Switzerland to join international hydrogen markets are evaluated. Finally, the skilled jobs required for developing hydrogen value chains are estimated. Throughout the project, uncertainty about future hydrogen needs and changing regulatory contexts is considered. Findings will show the framework conditions requirements and costs of different value chains; estimate policy impacts, skilled workforce requirements and potential job creation; and quantify economic and geopolitical implications of future hydrogen markets, contributing to the academic literature and informing policy decisions.



File: BFE-226-2/86

Palmié Maximilian (Universität St Gallen): **TRANSFORMGAS: Transforming the Swiss Gas Industry via Cluster-Based Decarbonization Strategies**

Abstract: Combining knowledge about the energy sector with business model expertise, the project consortium intends to develop ideal-typical decarbonization strategies for Swiss gas suppliers, business models for a decarbonized gas and heat market, and possible transformation pathways towards a decarbonized gas and heat market. These strategies, business models, and pathways shall be rooted in a comprehensive overview of the current and future Swiss gas and heat market and collaborative ideation processes. To these ends, the study synthesizes existing insights, enriches them by collecting primary data, and conducts ideation workshops with key stakeholders. Its results provide decision-makers at federal and municipal levels, public administration, and Swiss gas suppliers with empirical data and strategic guidelines for the development and implementation of decarbonization strategies, the adoption of appropriate business models, and the pursuit of promising decarbonization pathways.

Patel Martin (Université de Genève): **MOSES: Impact of Market Design Measures On the Swiss Electricity System**

Abstract: Given its interaction with the pan-European electricity markets, any new market design at the European level will impact the Swiss electricity system (and its producers and consumers). This study will analyse the impacts of currently discussed changes in the European electricity market design on the Swiss electricity system. Firstly, a state-of-the-art review of the measures being debated will be conducted, assessing their potential implications. Secondly, the study will sequentially model and optimise (i) the European system at the national level for different market design scenarios and (ii) the Swiss electricity system at a finer granularity. Finally, a set of recommendations will be developed for the Swiss electricity system based on the comprehensive analysis of results and impacts, encompassing investment signals, risks for consumers and producers, and the need for flexibility.

Sansavini Giovanni (ETHZ): **Reg4fuels: Maximizing the value of carbon-neutral fuels in integrated energy networks through regulations**

Abstract: This project investigates the role of carbon-neutral hydrogen and methane fuels in Switzerland's energy system transition to carbon neutrality by 2050. The research compares the existing Swiss and European regulatory landscapes and translates the findings into energy system modeling inputs. Using detailed energy system and grid models, it investigates the contribution of these fuels to replacing fossil fuels and providing temporal flexibility under various national and European transition pathways. Additionally, it assesses the impact of fuel supply chain evolution on electricity and energy supply security, as well as power grid resilience under extreme energy trade, climate, and weather scenarios. Finally, regulatory and policy recommendations are provided to maximize the value of carbon-neutral fuels.

Yilmaz Selin (Université de Lausanne): **EQUITAS: Swiss Energy eQUlity aTIAS: Closing the loop between theory, policy, and practice**

Abstract: The project aims to apply the conceptual framework of energy justice (recognition, distributional, procedural, restorative) to Swiss energy policies. To this end, we first propose equity metrics and indicators based on interdisciplinary methodologies: i) conceptualizing energy justice with desk research, expert interviews and co-creation workshops, and ii) leveraging existing datasets and conducting modelling analyses. We then develop an 'energy equity atlas' coupled with a GIS tool to



File: BFE-226-2/86

identify, analyse, and visualize the energy justice and equity implications of Swiss energy policies supported with tangible social and spatial indicators. This conceptual, systematic, and data-driven approach will provide objective knowledge regarding energy justice and therefore instrumental to those intermediaries who design clean energy policies, programmes, and pilots.