

Jonas Schnidrig

I'm now part of IPESE and CIRAIG



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As a dedicated Researcher & lecturer at EPFL & HES-So Valais Wallis, I am deeply engaged in energy system modeling and urban and national system optimization. My academic journey began in the capital of Valais, Switzerland, and has been driven by a passion for cultural diversity and a steadfast commitment to addressing the energy transition, a definitive challenge of the 21st century.

My academic foundation is rooted in machine engineering, with a specialization in energy and technologies at EPFL. My Master's thesis, which won the Zanelli Award, delved into evaluating scenarios for green mobility across European energy systems, reflecting my dedication to sustainable development. I further honed my skills in sustainable optimization and environmental impact evaluation during a research stint at Polytechnique de Montréal - CIRAIG in Canada.

My research

My Research on Sustainable Energy Futures : Emphasizing Infrastructure Adaptation, Prosumer Integration, and Decentralization

In my research, I delve into the transition toward renewable energy sources, focusing on the adaptation of energy systems, the integration of decentralized energy models, and the pivotal role of prosumers. This investigation, grounded in the context of Switzerland, sheds light on both the challenges and opportunities presented by renewable energy for existing infrastructures and societal norms.

I introduce a novel approach within the EnergyScope modeling framework to evaluate the impact of renewable energy integration on infrastructure. The findings underscore the necessity for substantial local distribution grid reinforcement to facilitate optimal renewable integration. This aspect challenges the traditional focus on transmission grid enhancements, advocating for a strategy that leverages hydro dam and methane storage to its maximum potential, thereby proposing a solution to balance renewable intermittencies.

A significant portion of my research is dedicated to exploring the benefits of decentralization. The analysis shows that decentralized energy systems could significantly lower system costs and increase self-consumption rates. This comparison with centralized models highlights the potential for hybrid energy planning models to enhance resilience and efficiency in the energy landscape.

Furthermore, my work examines the complex interplay between various actors in the energy system's decentralization, offering new perspectives on optimizing energy systems for sustainability and equity. By analyzing the dynamics between energy service providers and prosumers, my research presents a nuanced understanding of the economic and environmental trade-offs involved in energy system planning.

In essence, my research contributes to the discourse on energy system transitions by providing comprehensive methodologies for infrastructure adaptation, decentralization, actor engagement, and sustainability concerns. It

outlines a framework for assessing the synergies and trade-offs between environmental and economic objectives, advocating for a balanced and nuanced approach to renewables-based energy system modeling and planning.

Collaborating with industry and government bodies, I am actively involved in developing strategies that support decision-making and the implementation of sustainable energy solutions. My involvement in projects like EnergyScope Governance and Blue City exemplifies my ability to coordinate international consortia and create impactful research and development strategies.

Graphical abstract



FIGURE 1 – My Graphical Abstract

My posts

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