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Energy futures as societal futures: Co-evolutionary scenarios linking futures of society and decarbonized energy systems in Switzerland 2050

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There is consensus that the global energy system will have to change substantially in the next decades to reach carbon neutrality. However, there are many visions of future energy systems and possible pathways leading to the corresponding futures. Sciences build scenarios describing possible low-carbon energy futures based primarily on techno-economic models, partially reducing uncertainty for informed policies. However, social scientists have argued that these models miss the social dimension in illustrating the energy transition, especially calling for understanding actors and opportunity spaces. And yet, other scholars go beyond looking at social dimensions within energy futures and try to capture the broader societal environment in back-casting or storytelling scenarios. This paper offers a new approach in capturing the future energy system as part of a co-evolutionary societal system. Complementing the methodological toolbox, we use Formative Scenario Analysis to develop four types of scenarios for the energy system within Switzerland in 2050. We demonstrate that scenarios achieving the political goals set by the Paris Agreement include substantial changes in all socio-political dimensions considered in the analysis. In terms of policy making, this indicates that the future low-carbon energy system can only be achieved by addressing many different fields in the societal sphere.

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