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Combining Cross-Impact Balances and Scenario Discovery to Design Adaptive Policy Pathways Supporting the Moral Acceptability of Energy Systems

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Our modelling work addresses recurrent societal oppositions against the deployment and operation of large-scale energy systems (Wolsink, 2000; Manders-Huijts et al., 2012). Using ethics as a starting point, we evaluate the moral acceptability of these systems (see Van de Poel, 2016, and Taebi, 2016). Hence, we study the extent to which large-scale energy systems are able to fulfill intersubjective ethical values, such as privacy, safety and environmental sustainability. As most large-scale energy systems are deployed for couples of decades, a wide range of deeply uncertain socio-economic scenarios may affect the fulfillment of ethical values over time. Adaptive policy pathways are hence needed for continuous support of the acceptability of these systems. Using scenario discovery (Kwakkel & Pruyt, 2013), uncertain factors strongly affecting levels of acceptability can be identified. Given the types of uncertainties encountered (long term socio-economic changes, heterogeneous actors, changing prioritization of values), the number of types of scenarios is large. To address this challenge, our objective is to isolate types of scenarios of interest that are more internally consistent. This is done using (linked) cross-impact balances (CIB) (Weimer-Jehle, 2006; Schweizer & Kurniawan, 2016), based on expert judgement about systematic interactions. Next to insights about identified adaptive policy pathways, results presented will also include findings about the combined use of scenario discovery and CIB.

Keywords: Energy Systems; Moral Acceptability; Cross-Impact Balances; Scenario Discovery

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