

Energy

A compass to guide through the myriad of sustainable energy transition options across the global North-South divide

Verena Helen van Zyl-Bulitta ^a, Christian Ritzelb^c, William Staffordd^e, James Gien Wong^f

^a Institute for Advanced Sustainability Studies (IASS) Potsdam, Research Group Digitalisation and Sustainability, Potsdam, Germany

^b University of Fribourg, international institute of management in technology, Fribourg, Switzerland

^c Federal Department of Economic Affairs, Education and Research, Agroscope, Research Group Socioeconomics, Ettenhausen, Switzerland

^d Council for Scientific and Industrial Research (CSIR), Stellenbosch, South Africa

^e Department Industrial Engineering, Stellenbosch University, Stellenbosch, South Africa

^f Co-founder of Stop Reset Go (SRG), Cape Town, South Africa

<https://www.sciencedirect.com/science/article/pii/S0360544219309934>

Abstract

The global energy transition is characterised by a myriad of technology options, organisational forms and infrastructural scales across levels of operation. Energy transitions are generally considered to foster sustainable development. However, technologies deemed sustainable in some dimensions can cause environmental or social problems in other dimensions or scales. In addition, freedom and self-determination are desirable features often associated with cooperative bottom-up initiatives. However, these initiatives may not always result in appropriate processes and strategies that span ecological and socio-technical dimensions. Direct participation or better representation of stakeholders ingrained in cooperative structures do not necessarily coalesce social and environmental benefits. We distinguish between different types of participation options across economic, technical and social levels; in line with the concepts of energy citizenship and sovereignty. We also differentiate technical infrastructure dimensions from those that are more political, economic or socially determined. The main purpose of our justice-oriented assessment approach is to make explicit unintended and undesirable effects of transition processes visible, and to capture the impacts of infrastructural and organisational dimensions of energy systems. The assessment of case studies qualitatively along several dimensions (infrastructural, organisational, impact) revealed which externalities result from prosumer-based electricity systems, conventional energy utilities and other organisational systems.