

Publication

Sensitivity of energy system investments to policy regulation changes: too many, too fast?

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Author(s) Bondarev, Anton; Weigt, Hannes

Author(s) at UniBasel [Bondarev, Anton](#) ; [Weigt, Hannes](#) ;

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In this paper we argue, that the interaction of energy policy regulations in the European electricity sector may be described by the slow-fast class of dynamical systems. Such systems may exhibit drastic changes in their dynamics known as bifurcations; one important being the so called blue sky catastrophe. Once reaching such a state, the slow system becomes unresponsive to the changes in the fast system. For the energy-policy nexus this translates into the energy system becoming unresponsive to policy interventions leading to a freeze in the system dynamics. Application of this result allows us to argue that caution is needed when updating economic policies to achieve a faster transition towards a low carbon energy supply structure. To avoid this risk the policy design should be aimed at long term incentive structures with less frequent but more consistent interventions.

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