

Towards a more efficient mix of energy-related environmental policies – The case of the German energy transition

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An energy transition towards sustainability is a complex issue – at the same time solution to several sustainability problems (climate change, oil spill, nuclear risks) while trigger of several new sustainability problems (space requirements of renewable energy sources (RES)). An efficient policy-mix would take this multitude of aspects into account. However, the academic debate is dominated by the idea of a stand-alone emissions trading scheme (ETS) to address climatic impacts of energy provision and doubts the necessity of additional RES support policies. Such a narrow perspective neglects the multi-faceted character of energy transitions. Taking the German case as an example, this paper sets out the requirements for an efficient mix of energy-related environmental policies.

Energy transition concepts might serve as a solution to several sustainability problems: Climate change is an important but not the only economically relevant motivation for the energy transition since several externalities derive from production, transport and use of fossil energy sources (e.g., oils spills, air pollution or radiation). Hence, an efficient energy policy mix needs to address all of these externalities.

Furthermore, policy advice should not rely on assumptions from an idealized textbook world, but account for the imperfect circumstances of real-world policy making, including self-interested decision-makers and vested interests. Thus, simplistic policy advice such as “emissions trading alone delivers optimal climate and energy policy” is misleading.

Yet energy transition processes also trigger a set of new sustainability problems because RES and RES-related infrastructure yield specific externalities. First, there are direct environmental impacts from RES and RES-related infrastructure (e.g., wind farms as hazard for birds). Second, there are indirect effects from the increased spatial impact of RES, such as the mounting pressure on ecosystems due to the relocation of agricultural production following increased land use by RES (e.g., biomass production).

Against this background, the paper analyzes the current interaction of ETS and support policies for RES in Germany. Specifically, the RES-support policies are interpreted as a

second-best way to internalize the multiple externalities from conventional energy production: since first-best policies are not available, second-best policies are justifiable from an economic point of view. In order to further increase the efficiency of the policy-mix, RES-support policies should explicitly address RES-related externalities. In particular, the spatial dimension of RES-deployment has been hitherto neglected. Yet, spatially explicit RES-policies are a precondition for efficiently trading off the diverse environmental impacts (“sustainability trade-offs”) from energy production, such as climate protection vs. nature protection.

In sum, the paper shows that an efficient mix of energy-related environmental policies has to mirror the complexity of the energy transition process. First, calls for mono-instrumental policy intervention neglect the multiple externalities from conventional energy generation. Second, transition policies should address direct and indirect environmental impacts from RES and RES-related infrastructure. Thus, German energy transition policies, which mainly rely on RES-support, should be adjusted for spatially explicit consideration of RES-related externalities.