

Towards a more comprehensive policy mix conceptualization for environmental technological change: a literature synthesis

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Addressing the climate change challenge requires, among others, a transition of the energy system. One important requirement for such a transition is the redirection and acceleration of technological change towards sustainability objectives. However, this environmental technological change, often characterized by its three major stages of invention, innovation and diffusion is faced with multiple market, system and institutional failures and thus requires multi-faceted policy interventions. Responding to this challenge, in recent years several scholars and practitioners in fields particularly relevant to eco-innovation have called for a policy mix which combines several policy instruments, including climate policy, environmental policy and innovation policy. However, existing policy mix studies often fall short of reflecting the complexity and dynamics of actual policy mixes, and they lack a common terminology. In this paper we take a first step towards a more comprehensive policy mix concept for environmental technological change based on a review of the bodies of literature on innovation studies, environmental economics and policy analysis. The concept we develop consists of the three building blocks elements, processes and dimensions and introduces a clear terminology, which is particularly important for the characteristics of such a policy mix, including the consistency of its elements and the coherence of its processes. We illustrate the concept using the example of the policy mix for fostering the transition of the German energy system to renewable power generation technologies. We argue that the proposed concept provides an interdisciplinary analytical framework for empirical studies analyzing the impact of the policy mix on environmental technological change. Finally, we derive policy implications and suggest avenues for future research.

Abstract teaser

Existing policy mix studies often do not sufficiently consider the complexity and dynamics of such policy mixes and lack a common terminology. Thus, based on the literature we develop a more comprehensive concept of the policy mix for environmental technological change, which can serve as analytical framework for empirical studies.