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Finding niches in green innovation policy

Technological innovation can potentially play a key role in today's environmental policy. However, the environmental innovations needed often are not market driven. Green innovation policy is needed to stimulate the development and implementation of sustainable innovations. The question is how green policy can systematically match needs across different innovations and sectors, so that operational efficiency and effectiveness are by design optimal. An important issue here is the alignment of green policy with other innovation related policies. Innovation is a process with many inter-linked activities in diverse sectors with implicit weak links. Often policy supports a single link and the innovation chain meet several bottlenecks in other weak links. An efficient and effective policy addresses as many barriers as possible so that the entire the chain is strengthened.

This paper presents a model that enables a systematic approach to assess the degree of integration of national policies by looking at the match (or mismatch) of diverse policy instruments from different institutions. The model takes into account five innovation policy dimensions: First we look at the *type of innovation* promoted. This is done from the perspective of sustainable innovation differentiating between system innovations, industrial ecology, singular innovations, end-of-pipe technologies and process/product adjustments. Second we explore the current state and future of the *innovation trajectory*. A comparison is made along the life cycle of the innovations promoted. Third we determine the *generic barriers* that an innovation must overcome in order to diffuse, looking at economic, institutional, organizational and technological barriers. Fourth, the *technological characteristics* at the micro-and meso-levels are defined and compared. Last we define a the *type of actors involved* in the development and promotion of innovations and the diverse rationales amongst them (e.g., research institutes, companies, governments, NGO's and intermediary organizations). The matching if these five dimensions is fundamental for the implementation of systematic innovation policies across diverse sectors. Eight innovation policy instruments from several institutions where analyzed, regarding their support for three relevant Dutch policy papers. The results show lack of integration of policies, contradictions and fragmented deployment of instruments. In addition the analysis indicates that some barriers to the innovations promoted are hardly addressed while others are over dimensioned, thus leading to a non-optimal policy effort and waste of governmental funds. Despite that the method has been applied in the Dutch context the approach to better co-ordinate diverse policy instruments towards sustainable innovation can be applied in diverse countries and institutional settings.