Policy instruments for green innovation

What are the criteria for designing policy instruments for green innovation?

An essential set of criteria against which innovation policies aimed at improving environmental performance should be measured includes (Johnstone, Hascic and Kalamova, 2010):

- **Stringency** – how ambitious is the policy target?
- **Predictability** – what effect does the policy have on investor uncertainty?
- **Flexibility** – whether potential innovators are free to identify the best way to meet the objective?
- **Incidence** – does the policy target the environmental objective as closely as possible?
- **Depth** – that is, do incentives exist to innovate through a range of potentially ascending objectives?

The ideal policy instrument will be one which is sufficiently stringent to encourage an optimal level of innovation; stable enough to give investors adequate planning horizons for risky investments; flexible enough to encourage novel solutions; and closely targeted on the policy goal, so as to avoid misallocation of effort and provide incentives for continuous change.

A high-quality system of policy evaluation should ultimately inform the choice of policy mix. Effective evaluation of policies and programmes to stimulate R&D and innovation has become increasingly important for policymakers. This increased emphasis on evaluation is driven by constraints on discretionary public spending, a greater focus on accountability and transparency in policy, and the desire to minimise distortions arising from government actions while maximising their benefits. Some of the policies discussed above, such as R&D tax credits, have a relatively rich evaluation record, whereas others, such as some of the demand-side policies, remain under-evaluated.

A strong focus on additionality of policies can also help ensure that policies are as efficient as possible, which is important in the current climate of fiscal constraint. Several studies suggest that certain options to improve environmental performance are available at little cost; policy should move quickly to implement such solutions, e.g. in improving energy efficiency in households, governments and firms. Typically, there are barriers that prevent these options from being implemented, such as information barriers. However, government policy can help to overcome these, often at relatively low costs. Moreover, as discussed above, new business models are emerging that may help overcome some of the perceived market failures in the market for energy efficiency and green solutions.

Supply-side innovation policies for green innovation

Supply-side innovation policies play an important role in orienting innovation efforts to help address green growth challenges. Current policy approaches to address market and systemic failures for green innovation generally focus on the supply side; they seek to generate new knowledge or innovations, either by making it less expensive for firms to undertake the relevant research or by performing the research in public institutions. Supply-side policies for innovation include public funding (direct and indirect) to public and business R&D, public support to venture capital funding, creation of research infrastructure, investment in higher education and human resources.

Figure 1. GBAORD, environment, million constant USD PPPs

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Demand-side innovation policies for green innovation

Many OECD countries increasingly recognise that traditional supply-side innovation policies – despite their importance – cannot on their own improve innovation performance and productivity. Demand-pull theories suggest that the ability to produce innovations is often widespread and flexible but requires market opportunity (i.e. demand). Innovative solutions to meet the green growth challenge are hampered not only by technological barriers but also by the lack of supporting market conditions. This is very much an issue for achieving economics of scale.

The range of policies that affect the demand side vary widely and take many forms. It can be argued that demand-side innovation policies should encompass the whole national innovation system, from direct measures such as green public procurement policy to indirect measures such as pricing policies (OECD, 2010; OECD 2011). Policies that affect demand for innovation include income policies that affect consumers' purchasing power, market regulations and market mechanisms. Carbon pricing, taxes and subsidies such as feed-in tariffs can induce demand for renewable energies; consumer policy can incite changes in behaviour (e.g. municipal recycling rules). Regulation can spur demand for green innovation, although the impact of regulation varies across sectors, industries and technologies. Standards also affect demand for innovation, especially in industries characterised by economies of scope. Networks can facilitate the creation of a critical mass of users to enable technologies to penetrate the market. At the micro level targeted demand-side policies would include green public procurement which can help foster market demand for green products and services.

References

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Links
[1] http://dx.doi.org/10.1787/9789264119925-en
[2] http://dx.doi.org/10.1787/sti_outlook-2012-5-en