

## Policy objectives for green innovation

Potential market and systemic failures suggest that, on its own, the market may not develop green technologies in a timely way and deploy them sufficiently. The OECD Green Growth Strategy shows that a business-as-usual innovation policy is ultimately unsustainable, involving risks that can impose costs and hamper future economic growth and development (OECD, 2011a). A new policy agenda for turning green innovation into a new source of growth is therefore needed. Successful innovation policies will have to address the performance of the system as a whole through a range of policies and customised approaches.

### **Figure 1. Water stress, total freshwater abstraction, % of total internal resources**

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### **Getting the prices right**

For most countries, instruments that directly affect price signals are a necessary, though not always sufficient, condition for greener growth. The main strength of marketbased environmental policies is that, if properly designed, implemented and enforced, they implicitly or explicitly make environmental inputs more expensive so that they internalise environmental externalities (e.g. pollution). Such price signals enhance firms' and consumers' incentives to adapt and develop green innovations. Pricing mechanisms enhance efficiency and flexibility in allocating resources as they provide incentives to choose the best way to meet the policy goal (OECD, 2011a).

However, while market-based instruments, such as carbon pricing or cap and trade systems, may induce innovation that will lead to green technologies, better pricing of environmental externalities will not be sufficient to deliver green innovation. In order to have a significant impact on technological innovation and diffusion, it will be necessary to pursue additional policies to strengthen green innovation.

### **The case for broader-based support for green technology innovation and diffusion**

The presence of market and environmental externalities suggests that both environmental and science and technology (S&T) policies are needed (Popp et al., 2009, Newell, 2010). However, there are fundamental differences between these policy areas: environmental policies aim at tackling environmental damage caused by past industrial activities, while innovation policies are generally forward-looking and aim to increase productivity (Kivimaa, 2008). Moreover, the policy mix for innovation can be improved through instruments to stimulate the adoption and diffusion of green innovation (e.g. demand-side innovation policies), whereas environmental policies stimulate innovation as a side effect (Jaffe et al., 2005). To the extent that adoption and diffusion are limited by more than market failures, environmental policy measures that increase incentives to adopt green technologies or put a price on environmental externalities are necessary, but insufficient. In addition, policies focused directly on enabling and influencing the demand side can reduce the risk inherent in R&D investments through the creation of potential markets.

Policies that focus on one element of the system or one sector are unlikely to enhance overall performance, as different green technologies face different barriers. In particular, the radical and systemic innovations often targeted by policy makers require broad-based modifications on the supply and demand side and in institutional/organisational settings. Shifting towards a more systemic or horizontal approach is far from straightforward, but holds the promise of greater coherence and better performance. At a minimum, effective long-run green innovation policies require both supply- and demand-side innovation policies which aim both at the overall rate of

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innovation and at its direction,  
i.e. the environment.

## References

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