

Executive summary

The *OECD Project on Demand-Side Innovation Policies* was launched in 2008 under the auspices of the Working Party on Innovation and Technology Policy (TIP) and the Committee on Industry, Innovation and Entrepreneurship (CIIE) as input to the *OECD Innovation Strategy*. This final report provides insights into the rationale and scope for public policies to foster demand for innovation and draws on country experience and case studies to illustrate the risks and opportunities for demand-side innovation policies.

Historically, OECD governments have tended to rely on macroeconomic policies (e.g. monetary and fiscal policy) and framework conditions (e.g. competition, tax or entrepreneurship policies) to support market demand and avoid distortion. Demand for innovation in this context emerged from the removal of barriers to firm entry, allowing potential entrepreneurs to enter the market with new or improved goods and services (based on innovation) and meet unmet or latent demand. As such, much of the role of government on the demand side of innovation has focused on “getting prices right” in order to foster markets for innovation.

In recent years, however, OECD countries from Finland to Australia and emerging economies such as China and Brazil have used more targeted demand-side innovation policies such as public procurement, regulation, standards, consumer policies and user-led innovation initiatives, as well as “lead market” initiatives, to address market and system failures in areas in which social needs are pressing.

This interest in demand-side innovation policy has emerged as part of a greater awareness of the importance of feed-back linkages between supply and demand in the innovation process. Demand-side innovation policies are part of an evolution from a linear model of innovation, usually focused on R&D, to a more broad-based approach that considers the full scope of the innovation cycle. This focus on the demand side also reflects a general perception that traditional supply-side policies – despite refinements in their design over recent decades – have not been able to bring innovation performance and productivity to desired levels.

Furthermore, current pressures on fiscal budgets in OECD countries have generated interest in using demand-side innovation policies to boost innovation performance while increasing the productivity of public spending, through innovation, in areas of strong societal demand, such as health, security, population ageing and the environment.

However, with few exceptions, experience in OECD member countries shows that the use of such policies remains limited to areas in which societal needs are not met by market mechanisms alone (*e.g.* health, environment) or in which private and public markets intersect (*e.g.* energy supply, transport). In these areas, OECD countries employ such policies with varying degrees of expertise and success to reduce market risk and fragmentation and “pull” innovation in ways that should avoid harming competition.

The evidence to date suggests that the likely success of demand-side innovation policies depends on a number of strategic factors. First, because government is one of several actors that influence demand, it is important to consider whether the action undertaken is efficient from a market (and budgetary) point of view and whether it improves social welfare. Thus, demand-side innovation policies should be targeted to clearly articulated policy objectives and their impacts should be carefully evaluated. In addition, complementarities between demand- and supply-side measures are essential. As innovation dynamics are sector-specific, the sectoral level may be the most promising for policy making. The scale of demand-side innovation policies should be carefully assessed as it is easier to match demand-side and supply-side policies in a certain sector than across the economy as a whole. The timing and duration of government intervention also need to be considered: different policy measures supporting the demand and/or the supply side are needed along the different phases of the innovation cycle.

Second, adopting demand-side innovation policies has several implications for the public sector. The combination of policy measures (sectoral, supply- or demand-oriented) to support demand for innovation makes good governance and policy co-ordination within the public sector essential. The systemic nature of demand-side innovation policies also implies that alignment needs to be achieved not only across levels of government, but also with industry and other influential stakeholders. It is therefore necessary to establish shared visions and roadmaps between the public sector and firms to implement demand-side policy instruments successfully. A demand-side innovation policy gives a more pivotal role to public administrations (*e.g.* through procurement, regulation, and setting and certifying standards). This requires investments in skills and competencies in public administration, as well as organisational and cultural change. It also raises the question of how the public sector can be encouraged to participate in this innovative effort (*e.g.* promotion of innovation-friendly public procurement).

Public procurement is at the centre of recent demand-side innovation policy initiatives. Because of their large purchasing power governments can pull demand for innovation and can also create a signalling effect as lead user and influencing the diffusion of innovations more broadly. However, using public procurement as a policy instrument to promote innovation is challenging. The traditional focus on value for money as well as the problem of fragmentation of public demand (often between different levels of government) can limit the potential scale effects of innovative procurement. Furthermore, many agencies or local governments with responsibilities for public procurement operate separately from line ministries or government agencies with a remit to foster innovation. This dispersion and the lack of data on this issue make it very difficult to assess the proportion of procurement dedicated to innovative products or services. In addition, public procurement can distort competition by excluding foreign firms from domestic markets.

The use of regulation to foster innovation has so far not been among regulators' key objectives. The setting of regulations to encourage the emergence of new technologies is delicate as it can have far-reaching economic consequences. The effects and the timing of regulations are also difficult to determine *ex ante*. Regardless of the impetus for regulation (*i.e.* competition, environment, consumer protection, etc.), effectively achieving innovation will require alignment of the goals of implementing agencies. It will also involve co-ordination between the regulators and the different stakeholders.

As regards standards, the public sector's role is mainly one of facilitator or co-ordinator. Standardisation can be financially supported by governments in order to facilitate market entry or facilitate the diffusion of innovations in the case of market failure. However standardisation is not always easy to use as a policy instrument. The setting of standards is mainly the responsibility of industry bodies and non-for profit technical organisations and procedures can be slow and bureaucratic and may be influenced by large players. This also raises the issue of timing: if standardisation occurs too early, it may shut out better technologies; if it occurs too late, the costs of transition to the new standard may prevent diffusion. Another limit on the role of governments in standards-setting is that standards are set openly at the international level for many technologies. Therefore, efforts to impose national standards through public procurement, for example, are risky and costly owing to technology lock-in and the difficulty of determining the dominant standard *ex ante* given rapid technological change and global market dynamics.

Prices are important both for the creation and for the diffusion of innovations. Governments can facilitate the diffusion of innovations to the markets through competition policy, regulations or standards. As consumers and users become catalysts for innovation by creating demand and facilitating the diffusion of innovation, consumer policy is of growing importance. Consumer policy and consumer education play a role in promoting innovation in innovative markets and can help ensure that confident consumers make informed choices. Consumer policy is thus an important policy instrument which can be used to counter inertia and scepticism about new goods and services and help improve the flow of information between users and developers.

The case studies covered in this project reveal considerable interest in demand-side innovation policies in a number of OECD countries (Table 0.1 provides an overview of the case studies with main programme features and lessons learnt). They also show that demand-side innovation policy measures, with the exception of procurement by small and medium-sized enterprises (SMEs), are often still at a pilot stage. The lack of evaluation still makes evidence-based policy making in this area difficult. Therefore, better data and adequate evaluation metrics and methodologies are important to identify successful demand-side measures and to scale them up to larger scale initiatives.

The general principles and recommendations for demand-side innovation policies stemming from this policy report and from the evidence provided by the case studies are the following:

- Government should assess the rationale and opportunity for policy intervention. Demand-side measures can represent costs for firms, but can also provide new business opportunities.
- Policies to foster demand for innovation need to consider market and sectoral issues. Some demand-side measures are appropriate to stimulate the uptake of innovations, while others will act on their diffusion.
- Scale, timing and duration of policies to foster demand need to be determined carefully and address the risks of protectionism, large player dominance and technological lock-in.
- Demand-side innovation policies need to be matched and combined with adequate supply-side policies and measures. This will require mechanisms to enhance government co-ordination and stakeholder involvement.

- There exists significant potential to boost demand for innovation by increasing the innovation capacity of the public sector to meet societal and even global challenges.
- Adequate incentives and regulatory frameworks can help foster innovative public procurement in line with good governance, transparency and accountability.
- Mobilising public administrations in favour of innovation – through supply-side or demand-side measures – requires establishing strong incentives, administrative reform and upgrading competencies of human resources.
- Consumer policy and education ought to be emphasised as a means of enhancing user involvement in the creation and diffusion of innovation.

Summary of the case studies

	Programme features	Insight gained/lessons learned
Australia Green Car Innovation Fund	<ul style="list-style-type: none"> ▪ Support for R&D and commercialisation for green passenger motor vehicles. 	<ul style="list-style-type: none"> ▪ To foster innovation broadly, the Green Car Investment Fund is technology-neutral (<i>i.e.</i> all types of technology relating to the programme's objectives are eligible for funding). ▪ Co-funding of grants is an efficient way to have a joint vision and support technology development in an industry tackling global challenges.
Australia Victoria State Government Smart SMEs Market Validation Programme (MVP)	<ul style="list-style-type: none"> ▪ Pre-commercial procurement of R&D (SBIR-type programme) to drive technology development and commercialisation in SMEs. 	<ul style="list-style-type: none"> ▪ MVP adopted the main components of the US SBIR programme, but differs in providing incentives for public-sector participation through funding. ▪ As a pilot programme, evaluation will be critical for its continuing operation.
Australia Climate Ready	<ul style="list-style-type: none"> ▪ Support for SMEs to develop green technologies through R&D and/or proof of concept, and/or early stage commercialisation. 	<ul style="list-style-type: none"> ▪ A hybrid policy design, which associates both prize award and funding can be an efficient way to favour innovation in the area of climate change.
Australia Creative Commons	<ul style="list-style-type: none"> ▪ Support for open and free access to public sector information. 	<ul style="list-style-type: none"> ▪ Better access to public sector information is expected to contribute to innovation and creativity.

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Belgium Flanders Action Plan on Public Procurement of Innovation	<ul style="list-style-type: none"> Pre-commercial procurement of R&D. Government buys innovation from companies and knowledge institutes in various areas. 	<ul style="list-style-type: none"> An Action Plan on Procurement of Innovation, which adopts horizontally integrated approaches, can help government to identify public demand and define purchasing needs, thereby enhancing the public commitment to procure innovative solutions from the private sector. Innovation platforms can contribute to the involvement of stakeholders and exchange of information between the demand and supply side through the process of decision making, market consultation and technical dialogue. The procedures for pre-commercial R&D should take into account legal obligations linked to contracts and be kept open and transparent in order to be non-discriminatory.
Denmark Danish Programme for User-Driven Innovation	<ul style="list-style-type: none"> Grant funding to help companies become more user-driven and develop user-driven innovations. 	<ul style="list-style-type: none"> To uncover user needs takes time and is not automatically followed by innovation. Involvement of top management and co-operation across different sectors and business areas are the main challenges.
Finland Funding for procurement of innovation in the public sector	<ul style="list-style-type: none"> Central or local government can apply for funding for the procurement of innovative products or services. 	<ul style="list-style-type: none"> The funding instrument is seen as an effective tool to find new innovative solutions by providing incentives; it can help to emphasise life-cycle value instead of short-term initial investment cost. The promotion of innovation through public procurement raises challenges which cannot be tackled solely by funding instruments (e.g. lack of long-term planning, insufficient resources, risk-adverse culture, etc.). Challenges in the funding of innovative procurement include: raising interest in the funding instrument at local level, owing to the difficulty to meet funding criteria; developing efficient market dialogue with the private sector.
France Facilitating access to public procurement for innovative SMEs	<ul style="list-style-type: none"> Preferential treatment for innovative SMEs, 15% of small technology contracts reserved for innovative SMEs over a three-year period. 	<ul style="list-style-type: none"> Meetings between Ministry of Economy and public purchaser help to identify challenges that procurers sometimes faces. Safeguarding competition rules is a major challenge in giving preference to SMEs procurement. The measure contributes to convergence of innovation policies and procurement strategies and leads to greater attention to SMEs and innovation.

	Programme features	Insight gained/lessons learned
Italy Green Energy Innovation Funds	<ul style="list-style-type: none"> ▪ New policies to meet needs of SMEs and social needs and to stimulate innovation, savings and job creation. 	<ul style="list-style-type: none"> ▪ Innovation policy goals can be realised by linking demand-led learning (which leads directly to decision making and resource allocation) and the demand-side issues relating to SMEs and social needs. ▪ Innovation supporting the demand side through knowledge learning is an effective and efficient tool to improve the economy and become a main actor in meeting global challenges such as climate change, renewable energy, health care and employment.
Japan Measures for a Problem-Solving Country; promotion of international standardisation	<ul style="list-style-type: none"> ▪ New growth strategies of Japan focus on green innovation and life innovation 	<ul style="list-style-type: none"> ▪ Innovation strategies should be broad-based and STI policies should be linked to economic, foreign and social policies. ▪ Demand-side innovation policies can address global and social challenges such as climate change and ageing populations. ▪ In a tight public fiscal situation, government can consider utilisation of demand-side instruments such as regulation and standardisation, which do not rely on financial resources, to promote innovation.
Korea Strategic Procurement Policy for Innovation	<ul style="list-style-type: none"> ▪ The New Technology Purchasing Assurance Scheme: Public agencies give preference to the procurement of goods and services from SMEs, which receive a new technology guarantee from the government (price and purchasing assurance). ▪ Procurement-conditioned SME R&D programme: Government finances the technological development of SMEs, and public institutions purchase the products for a certain period. 	<ul style="list-style-type: none"> ▪ A binding system (as compared to non-binding recommendations) can be effective in promoting the procurement of SME innovation. ▪ Adopting a performance insurance system and a buyer immunity clause in SME procurement can help to mitigate risk aversion as it reduces the burden of responsibility of procurer. ▪ The lack of quality verification and difficulty for the repair and maintenance of a purchased product are identified as the main barriers for procuring products from SMEs. A Performance Certification System and Performance Insurance System can be a solution. ▪ Procuring innovations from SMEs requires a combination of various policy instruments to enhance linkages (e.g. pre-commercial R&D programme linked with procurement, public-private partnerships, venture capital funds).
Spain GTC for Public Procurement in Spain's Innovation Strategy	<ul style="list-style-type: none"> ▪ Procurement of the world's largest single-aperture optical telescope, as a way to promote innovation 	<ul style="list-style-type: none"> ▪ Large scientific facilities can help promote international partnerships and regional development. ▪ Government can use public procurement of large scientific facilities as a way to promote innovation by enhancing supplier capabilities and commercialisation of technologies through spin-off creation.

	Programme features	Insight gained/lessons learned
United Kingdom Biometrics standardisation	<ul style="list-style-type: none"> Government support for standards development in the area of biometrics 	<ul style="list-style-type: none"> Standardisation is a way to transmit and diffuse knowledge, but access of SMEs to the standardisation process is an issue. Standardisation can play a significant role in creating and developing emerging technologies. Even though standards development is a market-led activity, there is a role for government in supporting the standardisation process by co-ordinating and making a case for standardisation in government.
European Union Public procurement networks under the Lead Market Initiative	<ul style="list-style-type: none"> Network of public procurers launched under the Lead Market Initiative to set up common learning platforms and consolidate expertise. 	<ul style="list-style-type: none"> In European countries, there are few, if any, organisations with knowledge about innovation procurement. There is strong interest in a common learning platform for public procurers and closer co-operation at transnational level. This knowledge exchange can trigger actions from governments to favour the purchase of innovative products and services.