Executive summary

The full report is available on the ICC website.

Effective innovation

What drives or constrains its adoption, scaling and spread

Innovation policy often begins with proposed solutions rather than a diagnosis of the problem. More research funding, greater access to technology or stronger incentives may help, but none guarantees that innovations will be put to productive use and spread more widely. Effective policymaking requires a better understanding of how businesses innovate, the opportunities available to them, the constraints they encounter and where those constraints originate.

Innovation is a major driver of productivity growth and rising living standards. However, new ideas and technologies do not automatically generate economic and social value. Their benefits depend on whether businesses can develop or adopt them, put them to productive use, scale successful applications and diffuse them to other businesses, customers and markets. This report refers to that process as effective innovation.



The Sidley report, commissioned by the International Chamber of Commerce (ICC), the institutional representative of more than 45 million businesses in over 170 countries, develops a practical framework for understanding effective innovation and identifying the conditions that enable or constrain it.

Drawing on economic and management literature and six case studies, it examines how businesses progress through the innovation process and the roles played by their own resources, commercial relationships and the wider innovation ecosystem. The broader message is not that governments should intervene more, but that policy interventions should be targeted and focused on removing innovation barriers.

How businesses turn technology into value

Businesses are central to the innovation process, but they do not all participate in the same way. Some develop new products, processes or technologies themselves, while others adopt innovations developed elsewhere. In both cases, businesses must still put those innovations to productive use, scale successful applications and find ways to reach customers, other businesses and new markets.

Businesses do not move through this process in a vacuum. Their ability to do so depends not only on the capabilities, incentives and finance available within the firm, but also on the wider innovation ecosystem in which they operate. Universities, research institutions, suppliers, customers, investors, infrastructure and public institutions can provide knowledge, skills, technologies, finance and market access that businesses may not possess themselves.

Public policy can therefore play an enabling role by supporting shared capabilities, facilitating collaboration between businesses, research institutions and other actors, and helping bridge the gap between research and commercial application. Institutions and initiatives such as the Technical University of Denmark, Australia's Commonwealth

Scientific and Industrial Research Organisation, the European Institute of Innovation and Technology and Innovate UK illustrate different approaches to connecting research and business, including to support the development and commercialisation of technologies. How well businesses can draw on these external resources can therefore shape their progress through the innovation process.

Six case studies across sustainable plastics, artificial intelligence, biotechnology and green innovation illustrate how these requirements differ across businesses and the innovation process:

1. Polymateria demonstrates how access to specialist expertise, credible standards, intellectual property protection and compatibility with existing manufacturing processes can help a new technology reach customers and markets.
2. Google Research Africa illustrates how the productive adoption of AI depends on complementary local data, technical expertise and partnerships that enable businesses and institutions to use the technology effectively.
3. TokaBio highlights the role of public research institutions, appropriate researcher incentives and risk-tolerant finance in helping scientific discoveries progress towards commercialisation.
4. Bayer's relationship with BlueRock Therapeutics shows how established businesses can complement entrepreneurial research with financing, regulatory expertise and manufacturing capabilities.
5. Novonesis demonstrates the importance of assessing commercial demand alongside technical feasibility.
6. Vale Institute of Technology illustrates the difficulties of commercialising promising research where opportunities are too small to attract management attention or require costly testing and changes to existing production processes.

Together, these case studies show that the constraints businesses encounter are neither fixed nor uniform, but vary across businesses and activities in the innovation process. Many of these constraints are addressed through businesses' own investments, experimentation, partnerships and commercial relationships. Others depend on access to capabilities and resources in the wider innovation ecosystem. Understanding how businesses address these challenges, and where they require additional support, is therefore an important starting point for effective policy.

A practical framework for policymakers to diagnose innovation constraints

To help policymakers understand how businesses innovate and identify where policy may play a useful role, the report develops the Incentives, Capabilities and Financing (ICF) Framework. The framework examines innovation from the perspective of businesses, distinguishing five activities in the innovation process: development, adoption, absorption, scaling and diffusion. For each activity, businesses need sufficient incentives to proceed, the capabilities to do so and financing suited to the associated risks and time horizons.

The framework helps policymakers identify the enablers of innovation and where progress is being held back. It also helps determine whether the underlying constraints relate to incentives, capabilities or financing, and whether they originate within the firm, in the wider innovation ecosystem or in the connections between them.



What this means for policymakers

The framework, case studies and broader literature point to eight lessons for policymakers seeking to support effective innovation.



First, focus on productive use, not access alone. Making technologies available does not guarantee their productive use. The experience of earlier general-purpose technologies suggests that the same lesson applies to AI: access alone does not generate productivity gains. Businesses also need the capabilities to adopt, absorb, scale and diffuse innovations.



Second, support access to capabilities that businesses cannot efficiently provide themselves. Shared research infrastructure, specialist expertise and external partnerships can enable businesses to innovate without having to develop every necessary resource internally.



Third, enable micro-, small- and medium-sized enterprises to innovate and grow. Smaller businesses can make important contributions to innovation but may face particular constraints in accessing finance, expertise and infrastructure, especially in developing economies.



Fourth, help promising research reach the market. Scientific discoveries do not automatically lead to commercial applications. Appropriate incentives for researchers, effective commercialisation arrangements and stronger connections between research institutions and businesses can facilitate this transition.



Fifth, match finance to the risk and the time horizon of innovation. Financing needs differ across development, adoption, absorption, scaling and diffusion. Where private financial markets leave gaps that justify intervention, appropriately designed public finance can help address them.



Sixth, use regulation and standards to reduce uncertainty without prescribing particular technologies. Predictable rules, credible standards and early regulatory engagement can strengthen incentives to invest, collaborate, commercialise and diffuse innovations. Greater consistency and interoperability across regulatory frameworks can reduce compliance costs, making it easier for businesses to scale and deploy innovations across markets.



Seventh, protect intellectual property and trade secrets. Effective protection can strengthen innovation incentives, attract investment and facilitate licensing, partnerships and cross-border technology transfer.



Eighth, involve businesses in policy design. Cooperation between businesses, governments, research institutions and finance providers can help identify innovation constraints and design policies that address them.

The broader message is that good policy begins with understanding what is already enabling innovation, where progress is being held back, and why. Governments should only intervene where the market produces less innovation than is socially desirable, and not necessarily at every stage of innovation. Policy measures should address the source of the problem rather than begin with a preferred instrument.