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Mission-oriented industrial strategy

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Abstract

A new approach to industrial strategy is necessary to tackle today's grand challenges. Economic growth has a rate and a direction – policymakers must consider both to ensure that investments are directed at an inclusive and sustainable future. The grand challenges reflected in the Sustainable Development Goals (SDGs) can serve as a guiding principle for defining growth's overall direction. As these challenges are cross-sectoral by nature, a new policy toolkit must be based on a market-shaping approach across multiple industries. Public organizations need to develop frameworks and tools for governments to become more proactive in taking on the multifaceted, long-term issues societies face today. Policy frameworks must be intentionally sustainable, public value-oriented and innovation-led; coordinated as a holistic package; and implemented collaboratively across government agencies and the private and third sectors. Steering the direction of growth is impossible with a policy framework that treats policy as a tool for simply fixing market failures.

Key Messages

1.
Well-defined goals such as the SDGs should be embedded in new industrial strategies and serve as guiding principles for the market.

2.
A culture of experimentation and risk-taking in public agencies should be encouraged to effectively build and implement mission-oriented industrial strategies.

3.
Mission-oriented industrial strategies should be ambitious, foster public involvement and attract cross-sectoral investment while remaining focused on concrete, measurable targets.

Industrial policy's comeback

Industrial policy is experiencing a renaissance. Provoked by multiple crises—financial, climate and health—countries worldwide are seeking to strengthen their economic resilience and to shore up their competitive advantages. The conflict in Ukraine and its impact on supply chains as well as the cost of living, has made this objective even more critical. The European Union (EU), for example, is investing over EUR 2 trillion in economic recovery and transformation while U.S. President Joe Biden has set aside over USD 2 trillion for a "modern American industrial strategy". The United States and the EU are not alone. An increasing number of countries across the globe agrees that governments need to strategically use industrial policy to address today's grand challenges.

Industrial policy is experiencing a renaissance. Provoked by multiple crises—financial, climate and health—countries worldwide are seeking to strengthen their economic resilience and to shore up their competitive advantages.

This new generation of industrial strategies is based on the notion that policymakers must take both the rate and direction of growth into consideration.[1] Steering the direction of growth is impossible with a policy framework that treats policy simply as a tool for fixing market failures. The grand challenges reflected in the SDGs can serve as a guiding principle to define growth's overall direction. These challenges are cross-sectoral by nature. Hence, we cannot apply a "traditional" vertical approach to them. The resurgent industrial strategy calls for a new toolkit,[2] one that is based on market shaping and market co-creating across multiple sectors (see Table 1).

TABLE 1. MARKET FIXING VS MARKET SHAPING POLICY FRAMEWORKS

	Market fixing	Market shaping/mission-oriented
Justification for the role of government	Market of coordination failures: • Public goods • Negative externalities • Imperfect competition/information	All markets and institutions are co-created by public, private and third sectors. Role of government is to ensure markets support public purpose
Business case appraisal	*Ex-ante* CBA–allocative efficiency assuming static general relationships, prices, etc.	Focused on systemic change to achieve mission–dynamic efficiency (including innovation, spillover effects and systemic change)
Underlying assumptions	Possible to estimate reliable future value using dicounting/monetisation of externalities/risk assessment; system is characterised by equilibrium behaviour	Future is uncertain because of potential for novelty and non-marginal change; system is characterised by complex behaviour
Evaluation	Focus on whether specific policy solves market failure and whether government failure avoided (Pareto-efficient)	Ongoing and reflexive evaluation of whwther system is moving in direction of mission via achievement if intermediate milestones. Focus on portfolio of policies and interventions, and their interaction
Approach to risk	Highly risk averse; optimism bias assumed	Failure is accepted and encouraged as a learning device

Source: Mazzucato, M., Kattel, R. and Ryan-Collins, J. (2020). "Challenge-driven innovation policy: towards a new policy toolkit".

Based on well-defined goals—or more specifically, 'missions'—aimed at solving critical societal challenges, policymakers can steer the *direction* of growth by coordinating policies across different sectors and by nurturing new industrial landscapes, which the private sector can develop further.[3] This 'mission-oriented' approach is not about 'top down' planning by an overbearing state; it is about providing direction for growth, guiding business expectations about future growth areas, and catalysing activity. i.e. self-discovery by firms[4], which would otherwise not happen.[5] It is not about levelling the playing field, but about tilting it towards the desired societal goals, such as the SDGs.[6]

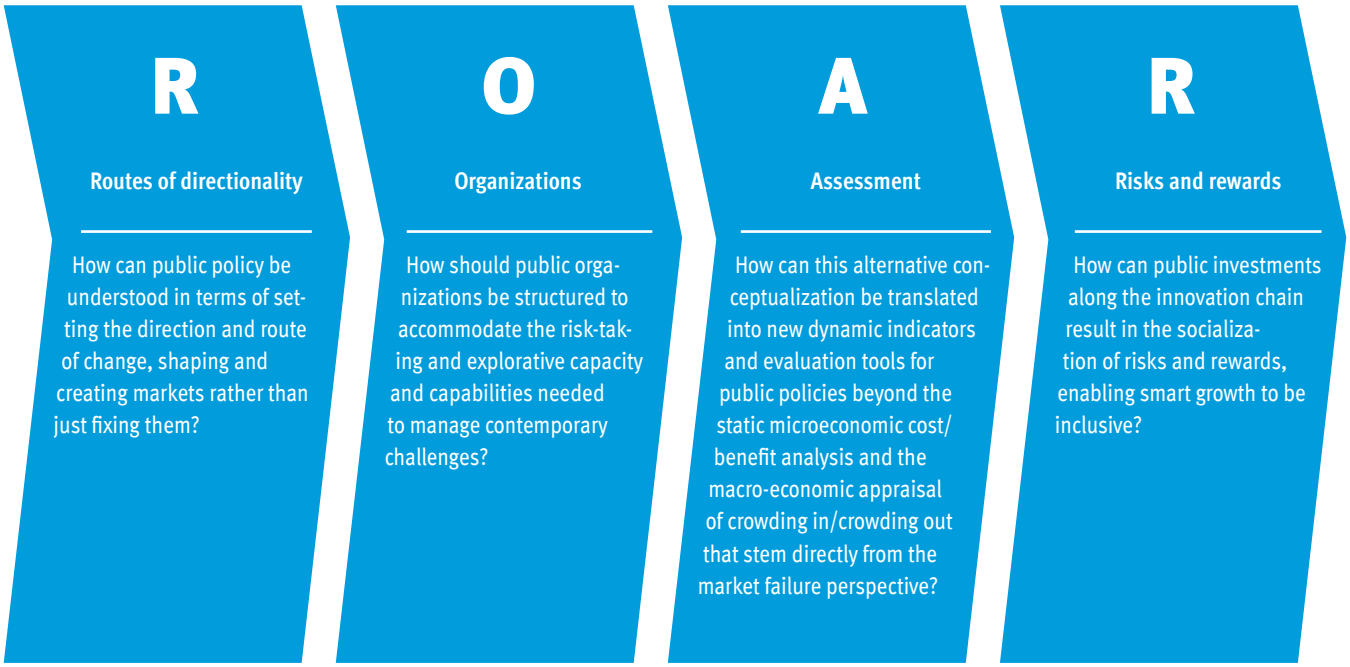
Effective industrial strategy cannot be conjured up overnight; it requires both long-term capacities (e.g. building consensus around missions; developing civil service skills; investing in resilient production systems, etc.) as well as dynamic capabilities (e.g. rethinking public policy design, implementation and evaluation in times of change) to respond to crises and to proactively shape markets (e.g. building public-private 'deals' across industries; developing new investment institutions; redirecting procurement spending and regulations towards missions, etc.).[7]

Mission-oriented policy toolkit: the ROAR framework

One key to success of past market shaping policies, e.g. the mission-oriented policies of the Moon-shot era, has been to set a clear direction for a problem that needs to be solved (going to the moon and back in one generation), requiring cross-sectoral investments and multiple bottom-up solutions, of which some will inevitably fail.[8] Too much top-down can stifle innovation, while too much bottom-up can make it dispersive with little impact. A crucial difference between the classical 'Moon-shot' type mission-oriented policies of the Cold War era and modern-day missions is that the latter focus on socio-technological challenges, such as decarbonizing food systems.

The policies to address grand challenges should be broad enough to engage the public, enable concrete missions, attract cross-sectoral investment, yet remain focused enough to involve industry and achieve measurable success. By setting the direction for a solution, missions do not specify how to achieve success; instead, they stimulate the development of a range of different solutions to achieve the objective while guiding entrepreneurial self-discovery.[9]

A policy framework for market-shaping activities to achieve specific missions should provide answers to the following questions (**ROAR**)[10]:



While these questions may seem broad, their potential interlinkages and internal coherence can help build a *market shaping* policy framework and practical toolkit. Generally speaking, the ROAR framework implies that missions should:

- Be bold and address societal value.
- Specify concrete targets: you know when you will get there.
- Be based on research and innovation: technological readiness over a limited time frame.
- Be cross-sectoral, cross-actor and cross-disciplinary.
- Involve multiple competing solutions and bottom-up experimentation.

How to design and implement mission-oriented industrial policies: the case of solar energy as an enabling factor for innovation-based development in Chile

Mission design requires not only a rethinking of policy logic but also of implementation logic. Current industrial and innovation policies, for instance, are designed and implemented in a waterfall style: new policies often take years to pass through consultation and decision-making processes and are then rolled out in a waterfall moment. Such an approach artificially separates policy design, institutional learning and implementation from each other. Missions, on the other hand, focus on continuous experimentation to bring forward multiple solutions and to foster continuous learning from implementation. We illustrate that missions require the transformation of both policies and organizations in the design and implementation of such policies by looking at the example of Chile's strategy for the solar energy sector, which was set up by CORFO (the Chilean Economic Development Agency) in 2016.[11] In its 2025 roadmap, the Agency aims to promote innovation, develop technologies and skills, and reduce carbon emissions (Figure 1).

Its quantifiable goals are to:

- Establish 100 Chilean companies in the solar industry value chain.
- Level the cost of energy produced with photovoltaic technologies at USD 25/MWh.
- Reduce emissions from energy production to 4.5 million tonnes of CO_2 equ./year.

Projects implemented under this initiative included the development of technologies to produce energy from high solar irradiation areas (Atacama Desert), new storage and distribution solutions for solar energy, a solar oven for copper production and solar technologies for mobility.

The Chilean solar energy programme employed multiple types of instruments, including an open innovation platform to facilitate the emergence of bottom-up solutions, the creation of technical standards tailored to desert conditions, and the establishment of a new technology institute to facilitate collaboration for clean technology development.

Notwithstanding the ambitious nature of Chile's mining industry programme, the reduction in the expected budget during the first year of implementation implied a plunge in the project portfolio's size and had a negative impact on the programme's research and innovation potential. This lesson highlights the importance of patient, long-term committed finance at an appropriate level right from the beginning of a mission-oriented initiative.[12]

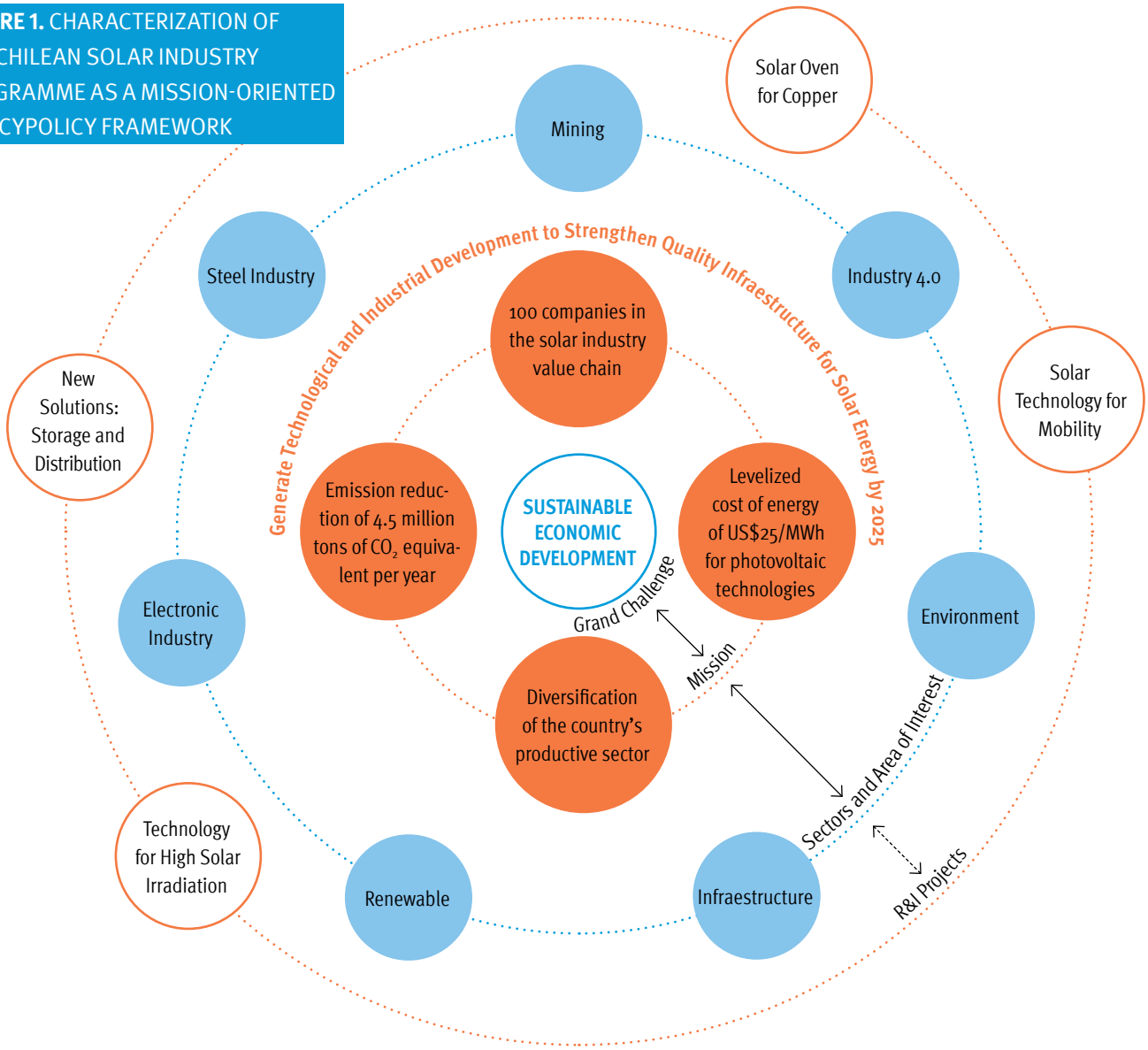
Mobilizing multiple industries and stakeholders is a key feature of mission-oriented policies.[13] This is the case even for policies that seemingly focus on individual industries as the Chilean solar and mining industries, for example. Meeting the ambitions set out in missions requires coordination of efforts in diverse areas of the economy. Thus, two new instruments were designed to facilitate coordination between different actors and sectors: (i) an open platform to facilitate co-creation and information sharing, and (ii) a clean technology institute to foster cross-disciplinary research for solar and pilot centres for technology transfer in mining.

The use of the open platform allowed for a bottom-up participatory process which in the case of solar resulted in the development of a shared vision. Platforms lead to increased trust between public and private stakeholders and help identify technical and economic challenges that warrant public support. The bottom-up participatory process behind building a shared future vision for mining was essential for involving the private sector in the initiatives. Common strategies and priorities were defined through this process. The existence of a shared development vision for the future of mining is one of the most successful results of this experiment.

Missions, on the other hand, focus on continuous experimentation to bring forward multiple solutions and to foster continuous learning from implementation.

Another recurring structure for coordination is the establishment of multi-stakeholder committees. In the Chilean solar case, CORFO, the Ministry of Economy and the Ministry of Energy created a public-private entity, the Executive Committee, which consists of the solar and energy sectors' main stakeholders. The Committee's purpose was to better capture stakeholder demands in the solar sector and determine missions and technological opportunities. It included representatives from the science, technology and innovation, energy and public ecosystems. The Committee identified the main challenges the solar sector faced and the technological opportunities to be exploited given the Atacama Desert's specific characteristics. Ultimately, such committees contribute to creating the technical and administrative capacity so the state can implement mission-oriented policies.

FIGURE 1. CHARACTERIZATION OF THE CHILEAN SOLAR INDUSTRY PROGRAMME AS A MISSION-ORIENTED POLICYPOLICY FRAMEWORK



Source: Authors' elaboration based on Saporito, N., Moreira, J., Penna, C., and Radaelli, V. (2021). Upgrading Institutional Capacities in Innovation Policy in Chile: Choices, Design, and Assessments.

Transforming public agencies

Future industrial strategies need to be mission-oriented and aim at addressing the grand challenges reflected in the SDGs. This means that the social contract between the public and private sectors needs to be re-designed so investment is inclusive and sustainable.[14] The benefits of co-created innovation must be shared as widely as possible.

To effectively address grand challenges, governments need to develop long-term solutions; however, some aspects of these challenges require agile and dynamic responses.[15] This paradoxical situation implies that public organizations need to develop frameworks and tools for governments to become more proactive in taking on the multifaceted, long-term issues societies face. Economic policy agencies deal with this dilemma in a particularly disorienting way: they are tasked to fund or lead highly risky or even uncertain innovation endeavours while being evaluated and measured by the public and politicians based on frameworks that punish risk-taking.

Future industrial strategies thus require public agencies that are both dynamic and resilient.[16] These agencies need more citizen engagement in the design and delivery of public services. By incorporating new analytical frameworks, methods and analytical tools, such as strategic design, complexity economics, foresight and policy labs, these agencies can focus on continuous engagement and learning.

Endnotes

1 Mazzucato M. (2016). "From Market Fixing to Market-Creating: A new framework for innovation policy".
2 Mazzucato, M., Kattel, R. and Ryan-Collins, J. (2020). "Challenge-driven innovation policy: towards a new policy toolkit".
3 Mazzucato, M. & Penna, C. C. (2016). "Beyond market failures: The market creating and shaping roles of state investment banks. Journal of Economic Policy Reform".
4 Hausman, R., and Rodrik, D. (2003). "Economic development as self-discovery".
5 Mazzucato, M., and C. Perez. (2015). "Innovation as Growth Policy: The Challenge for Europe".
6 Mazzucato, M and Dibb, G. (2019). "Missions: A beginner's guide".
7 Kattel, R. and Mazzucato, M. (2018). "Mission-oriented innovation policy and dynamic capabilities in the public sector".
8 Mazzucato, M. (2021). "Mission Economy. A moonshot guide to changing capitalism".
9 Foray, D. (2018). "Smart specialisation strategies as a case of mission oriented policy – a case study on the emergence of new policy practices".
10 See footnote 1.
11 This section is based on Mazzucato, M. & Penna, C. C. (2020). "The Age of Missions: Addressing Societal Challenges Through Mission-Oriented Innovation Policies in Latin America and the Caribbean".
12 Kattel, R. and Mazzucato, M. (2018) and Macfarlane, L., and Mazzucato, M. (2018). "State Investment Banks and Patient Finance: An International Comparison".
13 Mazzucato, M. (2018). "Missions: Mission-Oriented Research & Innovation in the European Union".
14 Mazzucato, M. (2022). "Rethinking the Social Contract between the State and Business: A new approach to industrial strategies with conditionalities".
15 Kattel, R., Drechsler, W., Karo, E. (2022). "How to make an entrepreneurial state. Why innovation needs bureaucracy".
16 Kattel, R. (2022). "Dynamic capabilities of the public sector: towards a new synthesis".

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