


Mission-Oriented Industrial Policy

Ludovico Alcorta, *UNU-MERIT and Visiting Faculty, ISID*

#24-03
May 2024

ISID Policy Briefs

This policy brief builds on a policy roundtable on “Avoiding Government Failure: Mission-oriented Industrial Policy Making for Successful Structural Transformation” based on research work by **Prof Ludovico Alcorta**, UNU/MERIT, and Visiting Faculty, ISID on September 30, 2022. The presentation was followed by a rich discussion initiated by **Mr Ajay Shankar**, Former Industry Secretary, Government of India, and Visiting Faculty, ISID; **Prof R Nagaraj**, Centre for Development Studies, Trivandrum; and **Dr Clovis Freire Jr**, United Nations Conference on Trade and Development (UNCTAD), Geneva. The policy roundtable was moderated by **Prof Nagesh Kumar**, Director, ISID. The YouTube link of the policy roundtable is available here. 

In policymaking, mission-orientation involves establishing testing tasks that guide government decisions, activities, and actions towards specific outcomes. These tasks are designed to provide clear direction and purpose, addressing fundamental societal issues. They should be inspirational and ambitious, yet attainable, fostering cross-disciplinary, cross-sectoral, and cross-actor collaboration and innovation. Mission-oriented tasks necessitate multiple bottom-up solutions and must have clear, focused, measurable, and time-bound objectives.¹ Mission-orientation policymaking has traditionally been linked with technology policy, especially in leveraging cutting-edge science and technology for ground-breaking achievements like the first human landing on the moon.² However, early discussions on the role of missions in policymaking highlighted their applicability to urgent environmental challenges, and more recently, the COVID-19 pandemic.³

While the ‘old’ policy challenges were often technical and limited in scope, the ‘new’ societal challenges, such as those posed by the COVID-19 pandemic, are more intricate, involving various domains of human activity. Despite this complexity, mission-oriented

policies continue to play a vital role in achieving desired objectives. Mission-oriented policies can address challenges across environmental, demographic, economic, or social dimensions, either individually or in combination, as seen in the pursuit of the Sustainable Development Goals (SDGs).

Mission-orientation is a versatile approach applicable to any policy field. It serves as a policy tool for tackling multidimensional and complex societal transformations that demand intense coordination and systemic solutions. Given that transformational challenges are dynamic and continually evolving, a mission-oriented approach offers the flexibility to adapt to non-linear developments through continuous exploration, learning, and knowledge accumulation.

Missions must be distinguished from objectives as missions are broader in scope, while objectives are more specific, measurable, and come with tighter time-bound goals. Objectives play a crucial role in breaking down missions into manageable steps. Consequently, missions provide a sense of security and endurance, offering stability and consistency to policy over time. While significant results may manifest

in the medium run, full transformations are inherently long-term processes.

Mission-oriented Industrial Policy

Manufacturing stands out as particularly amenable to a mission-oriented policy. The delineations of sectors, sub-sectors, and their associated value chains creates boundaries within which activities, technologies, and actors operate. The manufacturing industry, characterized by unique production processes, equipment, automation, and a distinct workforce, sets itself apart from other sectors.

What makes manufacturing exceptional are its economic properties, shared by only a few other activities. Historically, it has been a significant force in driving transformation and still holds the potential to reshape future society fundamentally. Manufacturing offers extensive opportunities for capital accumulation and intensification, surpassing many other sectors. It enables the exploitation of economies of scale through large-scale production and technical indivisibilities, fostering greater learning opportunities. This learning, encompassing both embodied and disembodied technological progress and innovation, is especially pronounced in the production of capital goods.

The manufacturing sector maintains robust backward and forward linkages, fostering knowledge spillovers. Additionally, products originating from manufacturing exhibit a high-income elasticity of demand. These factors collectively highlight the pivotal role manufacturing can play in societal development and its potential for driving substantial transformations.

This implies that addressing many global societal challenges can commence with manufacturing and industrial transformation, serving as the foundation for solutions. Industrial strategies become a valuable tool to formulate one or a set of missions designed to tackle significant societal challenges—a ‘big transformational push.’ While rooted in manufacturing activities, these missions can extend beyond sector boundaries, fostering collaboration and interaction across specializations, actors, and organizations, both within manufacturing and across sectors.

Manufacturing stands out as particularly amenable to a mission-oriented policy.

Missions can take various forms, such as addressing a climate challenge, for example, introducing a locally manufactured universally accessible and emission-free urban transport system by 2050. Alternatively, missions could focus on satisfying the needs of a population, such as building a manufacturing base to meet local demands for health and well-being. They can also revolve around the creation of new productive activities, like establishing complete and fully integrated value chains producing high-tech goods and services.

Mission-oriented industrial policies are the specific regulations, incentives, programmes, financing mechanisms, and demand instruments crafted to achieve these missions. Similar to missions, industrial policies require the collaboration of various disciplines, actors, and sectors. They should provide multiple solutions and possess clear objectives and timelines, ensuring a strategic and effective approach to achieving transformative goals.

Mission-oriented industrial policy exhibits several characteristics. It is complex since it involves profound transformations of economies and societies, introducing significant uncertainties, choices, and trade-offs. Additional complexity arises from multiple levels of interaction, involvement of various disciplines, and participation of both public and private actors. The alignment of content and process dimensions, along with supply and demand aspects, further contributes to its intricate nature.

The policy is systemic due to its arrangement of organizations, institutions, and linkages. Interdependence of actions and the necessity for synergistic collaboration, as well as the involvement of various starting points and interrelated causations, highlight again its systemic nature. Additionally, the policy is cumulative, with results building on or subtracting from past achievements, and future industrial capabilities relying on current

knowledge. While leapfrogging is possible, it invariably demands a fresh approach to previous breakthroughs.

Mission-oriented industrial policy is adaptive, requiring rapid responses to environmental changes and emerging evidence. Continuous learning from experience is a key component of this adaptability. Given that significant results may only become apparent in ten to twenty years, depending on the nature of challenges faced, and recognizing that transformation is a prolonged process, the policy is fundamentally long-term in its outlook.

A Typology of Industrial Missions

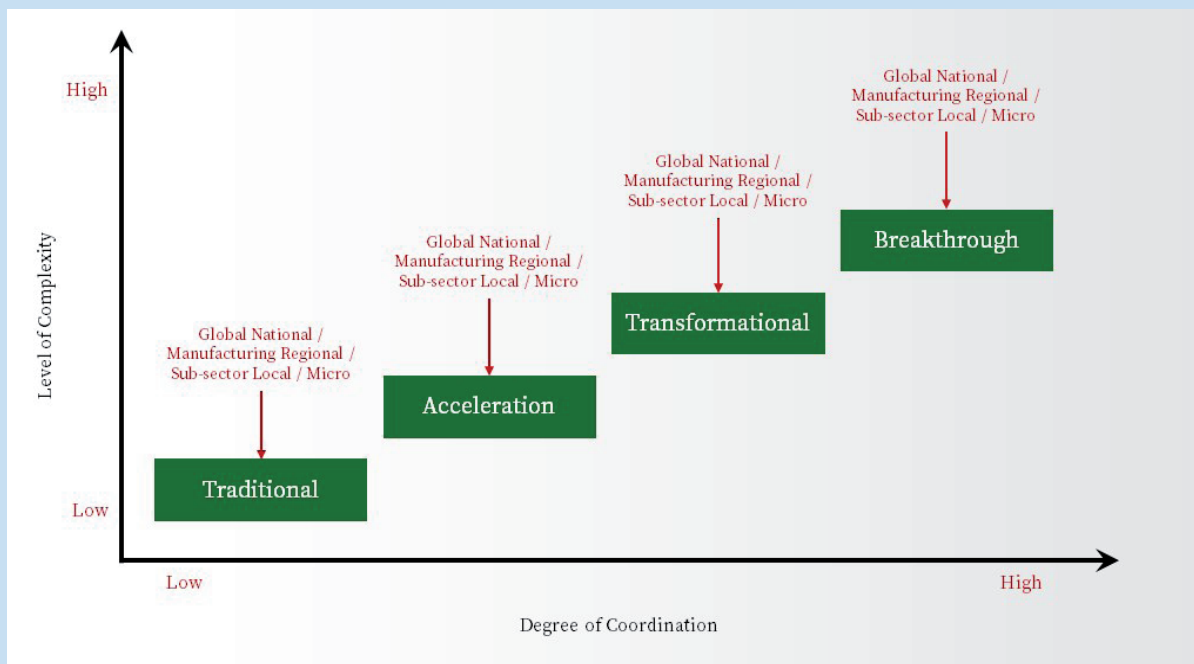
A typology of potential industrial missions is presented in the Figure 1⁴ based on two criteria: (i) the level of challenge, and (ii) the degree of coordination.

The level of challenge pertains to missions addressing a single challenge, challenges at different granularity levels, or multiple challenges. This spectrum ranges from low levels of required scientific or technical knowledge at one end to high-end challenges necessitating

transformative technological change at the other. The degree of coordination represents the extent of efficient and synchronized involvement by different public sector actors, as well as the interplay and cooperation of multiple public and external stakeholders from industry, science, and society, referred to as governance challenges. For instance, achieving zero manufacturing industry emissions by 2050 could be categorized as a Breakthrough Mission (Type 2 Transformative Mission in Wittmann’s classification), demanding extensive scientific and technological efforts.

The UK’s 2017 Industrial Strategy mission, aiming to “put the UK at the forefront of the design and manufacturing of zero-emission vehicles, with all new cars and vans effectively zero-emission by 2040,” exemplifies a Transformational Mission. This mission involves complex and risky technological solutions. Other Transformational missions (Type 1 Transformer Mission in Wittmann’s classification) might include goals like “achieving the most advanced levels of industrial digitalization” or India’s endeavour to design and manufacture its first satellite, the Aryabhata.

Figure 1. Types of Missions



Source: Adapted from Wittmann et al (2020).

The setting of an ecological impact fund is being proposed to simultaneously lower the greenhouse gases.

The literature on mission-orientation predominantly concentrates on societal challenges, typically requiring governance at the global or national level. However, missions should not be perceived solely in absolute terms; they can also be understood relative to the available skills, knowledge, technology, and capabilities to tackle them. These capacities may vary significantly at the regional, sub-sectoral, or local/micro levels, and differ across countries.

While certain challenges, like climate change, demand global-level governance, others, such as the moon landing or space exploration, have been addressed at the national level, even though international cooperation could have been beneficial. This flexibility allows missions to be set at different governance levels. What distinguishes them is their obligation to provide directionality and intentionality while addressing a key challenge at the specific governance level, employing multidisciplinary and multi-stakeholder tools.

At the sectoral level, a notable example of a Breakthrough mission in the 1960s was the joint industrial policy initiatives by several EU countries to establish Airbus. This initiative significantly transformed the European aerospace industry, positioning it on par with the US industry. India's efforts to diversify into electronics could also fall within this Breakthrough category. The introduction of the Tesla Roadster, the first highway-legal serial production of an all-electric (EV) car fueled by lithium-ion battery cells, capable of travelling more than 320 kilometers per charge, stands as a Transformational mission. This endeavour played a pivotal role in launching the modern EV industry.

Sectoral acceleration missions might involve goals like "achieving full energy efficiency in the iron and steel industry," while a traditional

mission could focus on "establishing factories worldwide producing Electric Vehicle motors without rare earth metals." It's essential to distinguish sectoral-level missions from sectoral private or government programs, as the latter typically entails a collection of tasks without the directional aspects inherent in missions.

At the local or micro level, consider a historical example of a Breakthrough mission that facilitated the diffusion of the steam engine. It could have been articulated as "to manufacture revolutionary engines that transmit continuous power to a machine." This mission would have played a crucial role in the widespread adoption of steam engine technology.

A Transformational mission can be illustrated by the mission of Longi, the current world leader in photovoltaics manufacturing from China. Their mission statement emphasizes leveraging solar energy to "make the best of solar energy to build a green world," reflecting a transformative goal in the realm of sustainable energy.

An example of an Acceleration mission is evident in the UK's West Midlands' local combined council contribution to the overall UK 2017 industrial strategy and electric vehicle (EV) design and manufacturing. The mission is framed as "West Midlands as a global center of transport and mobility," indicating a strategic push for regional prominence in the evolving landscape of transportation and mobility.⁵

Lastly, a Traditional mission is exemplified by the Tokyo Metropolitan Industrial Technology Research Institute (TIRI), established in 2006 by the Tokyo Metropolitan Government. TIRI's mission focuses on supporting small and medium-sized enterprises (SMEs) with industrial technical support, including testing materials and products, researching new technology, technical education, and enablement. Their

Companies are preparing themselves by proactively announcing net zero emission timelines.

stated mission is “to lead the industry with accurate forecasting of future trends and cutting-edge technologies.” This mission reflects a commitment to ongoing support and advancement within the industrial sector.

Conditions for Success

For the success of the mission-oriented industrial policy, it should be embedded within national development plans and a comprehensive Industrial Development ‘Big-Push’ Strategy, wherein manufacturing assumes a pivotal if not exclusive, role nationwide. This overarching industrial strategy should be both visionary and compelling, aiming for swift and advanced sustainable development while inspiring and mobilizing the populace into collective action. Similar to missions, the industrial strategy must strike a balance between audacious aspirations and practical, measurable objectives related to sustainable growth, exports, and technological progress.

The strategy’s foundation should lie in the identification and cultivation of two or three leading sub-sectors or value chains capable of catalysing a sustained transformative process. This approach ensures tangible outcomes and benefits for the population. These leading sub-sectors should be structured as breakthrough national-level missions, serving as focal points for concentrated efforts. Additionally, they can be supplemented by related or ‘component’ missions at lower levels of complexity and coordination.

When selecting sectors, a targeted focus on activities exhibiting high elasticity of demand, substantial productivity growth, and/or significant potential for technological change is essential. The decision-making process should be research-driven, incorporating evidence-based methodologies and involving stakeholders.⁶ This rigorous approach enhances the strategic alignment of the sectors within the industrialization strategy.

Breakthrough national missions demand a well-coordinated set of policy instruments, programmes, activities, and actions that are technically robust, aligned with clear objectives, and consistently pursued. While maintaining policy stability and coherence, there should be room for continuous experimentation, learning,

adjustment, and impact evaluation. Ensuring coherence across the policy instruments of missions involves assessing policies in light of the overall strategy, scrutinizing the intervention logic of each instrument, correcting deviations, identifying linkages between policies, and ensuring that the policy mix effectively achieves strategic objectives.

Given that missions often require significant industrial investments in uncharted territories, it is imperative to minimize risks to attract private investors.⁷ De-risking strategies, including industrial facilitation, direct support, incentives, guarantees, and financing, can play a crucial role. While smaller investors should be engaged, the magnitude of the tasks suggests that substantial reliance will be placed on large public and private investors. Financial institutions capable of financing the transformation process and serving as lenders of last resort if needed should be key stakeholders.

Transparency and effective consultation mechanisms are essential in the design and implementation of the Industrial Development ‘Big-Push’ Strategy. Involving various stakeholders, including the public, private investors, and financial institutions, ensures a holistic and inclusive approach, fostering trust and collective commitment to the transformation process.

Sustainable missions in the face of challenges require strong leadership and unwavering commitment, ideally originating from the highest levels of government, such as the presidential or prime ministerial rank. This leadership should be grounded in a compelling vision and a deep conviction regarding the positive impacts of industrialization on the country. Essential support is also required from ministries or organizations overseeing the overall strategy and missions, along with

De-risking strategies, including industrial facilitation, direct support, incentives, guarantees, and financing, can play a crucial role

key figures from both the public and private sectors who can passionately advocate for the objectives and the transformative process.

Champions play a pivotal role in garnering support from cohorts and society at large. These individuals, situated in influential positions, contribute significantly to the success of missions by enthusiastically advocating for their objectives. Moreover, middle and lower echelons of government within responsible organizations play a critical part by promoting missions among other government entities and peers, creating a network of advocates across various levels of governance. This multifaceted leadership and support structure help sustain missions over time and in the face of challenges.

Effective Implementation of Mission-oriented Industrial Policy

The government bears the primary responsibility for leading the comprehensive implementation of missions. Especially in the initial stages, governance should be centralized within responsible organizations and individuals. As functions and roles become well-defined and initiated, a more decentralized governance approach can be considered. Effective governance relies on well-prepared intra and inter-organizational teams, with multidisciplinary and multi-sectoral perspectives, and public-private teams serving as crucial operational mechanisms for missions. Ensuring the seamless functioning of these teams is essential.

Whether adopting a centralized or decentralized governance model, clarity and transparency in implementation processes and associated rules are paramount. Simultaneously, the public should be fully informed about the rationale behind the actions being undertaken. Garnering substantial support from stakeholders and the local population significantly contributes to the success of missions, emphasizing the importance of widespread backing for the mission objectives.

Effective implementation of Mission-oriented industrial policy benefits from the use of planning and coordination tools. Roadmaps, calendars, targets, and cost assessments, along with clearly defined roles and responsibilities, facilitate operational prioritization and process

The multifaceted leadership and support structure help sustain missions over time and in the face of challenges

management. Coordination is enhanced by appointing focal points in all involved units and organizations. The leading agency should diligently follow up on tasks assigned to other organizations.

Given that achieving mission objectives often involves numerous participants with responsibilities for a significant portion of the required activities, establishing multi-stakeholder implementation committees and working groups is crucial. These committees and groups should include relevant representatives and individuals from various sectors. As missions become well-established, coordination can be further refined by rotating responsibilities across stakeholders based on operational requirements and expertise. This dynamic approach ensures adaptability and expertise utilization throughout the mission's lifecycle.

The allocation of sufficient human and financial resources is a critical factor in the success of missions. Breakthrough missions in industrial development demand the dedication of the best available human resources, encompassing a diverse mix of technical and professional expertise. While technical skills are essential, managerial capabilities are equally vital during the implementation stages. Managers involved in missions need a combination of technical proficiency and holistic, creative thinking, exploration and experimentation competencies, problem-solving and risk-taking abilities, effective communication and persuasion skills, and the capacity to inspire trust and respect among subordinates and stakeholders. To drive successful implementation, there should be a growing emphasis on entrusting middle-level managers with responsibilities and encouraging them to identify and promote valuable bottom-up initiatives.

In terms of financial resources, it is crucial to ensure that adequate funding is allocated to the missions. Financial support for missions can take the form of investment grants, subsidies, tax incentives, funding programs, and capacity-building initiatives. Establishing a financial infrastructure capable of concurrently supporting multiple large industrial projects and new activities may be necessary. Additionally, financial resources are essential for funding the policymaking process, covering expenses such as consultants, studies, data, meetings, travel, software, and media. Whenever possible, leveraging the support of large corporations or business groups for key investments can be beneficial in fulfilling mission objectives.

Learning and feedback loops play a major role in refining and enhancing the effectiveness of mission implementation. These mechanisms offer in-process knowledge that allows for the correction of actions during mission execution and contributes to the enrichment of future and lower-level missions. Learning by doing is a dynamic process that involves reacting and adapting to contextual conditions, as well as adjusting plans in response to their impact. It also encompasses the testing of alternative solutions when challenges arise. Learning from experience involves codifying the initiatives and processes, followed by a thorough analysis to understand what aspects succeeded and what went wrong. This analysis delves into the reasons behind successes and failures, helping to identify necessary adjustments. Furthermore, drawing insights from experiences in other contexts and conducting comprehensive post-implementation content and process evaluations contribute valuable lessons for improvement. This continuous learning cycle ensures that knowledge gained during mission implementation is systematically utilized to refine strategies and approaches for subsequent missions.

The success of breakthrough missions hinges not only on stakeholder engagement but also on garnering widespread support from the general population. Therefore, a well-designed communications plan is a critical element in ensuring the success of missions. The information provided should be clear, easily understandable, and comprehensive, catering to the needs of various stakeholders.

Stakeholders must be kept informed about mission developments through channels that they typically use to disseminate and obtain information. For the broader public, a mass and social media information campaign proves to be the most effective approach. This campaign should articulate the rationale behind the missions, outline the anticipated benefits, position the missions at the forefront of national policy discussions, and encourage active participation in these discussions. The campaign aims to advocate for the missions while enlisting broad-based support from society, fostering a sense of involvement and commitment to the transformative goals of the missions.

Final Remarks

Mission-oriented industrial policy holds the potential to be a highly effective approach for transforming economies, especially in the context of developing countries, into modern and technologically advanced systems. This approach is well-suited to addressing global challenges, including those outlined in the SDGs. What sets mission-oriented industrial policy apart is its ability to combine the technical intricacies required for sound policymaking, with the aspirational and subjective elements vital for mobilizing societies and achieving transformative outcomes.

The accumulated knowledge and successful experiences associated with mission-oriented industrial policies make them particularly attractive to governments, both in developed and developing countries, across various governance levels. Increasingly, governments are turning to this approach to enhance their policy-making processes and successfully attain their strategic objectives.

India could potentially undergo a strategic shift by focusing extensively on manufacturing as

Effective implementation of Mission-oriented industrial policy benefits from the use of planning and coordination tools

a primary driver for sustainable development. Opting for a 'Big-Push' industrial development strategy at this juncture appears opportune, especially considering the prevailing geopolitical landscape. However, it's crucial to recognize that this window of opportunity may not remain open indefinitely.

For this shift to manufacturing to be successful, the Indian government must exhibit robust leadership in steering and managing the industrialization process. This involves identifying and implementing a select few compelling industrial missions that can garner widespread support across the nation. Rather than dispersing efforts, a focused and prioritized approach to mission selection is paramount.

The government will likely need to actively encourage major industrial conglomerates, public enterprises, and transnational corporations to invest in areas earmarked for significant structural change. Simultaneously, promoting healthy competition, preventing abuses, steering clear of capture risks, and

Establishing a financial infrastructure capable of concurrently supporting multiple large industrial projects and new activities may be necessary

ensuring the government's participation in the outcomes are essential considerations.

Additionally, the governments should play a pivotal role in crafting incentive incentives, financial structures, and risk mitigation strategies for key industrial development projects. This approach aims to attract the necessary investment for the envisioned transformation. It's important to note that the benefits of such a strategy may not be immediate, but the long-term gains could be substantial.

Endnotes

- 1 Mazzucato M and R Kattel (2023): "Insights on Industrial Development," Policy Brief Series, Issue No 2, United Nations Industrial Development Organization (UNIDO).
- 2 Ergas, H (1987): "Does Technology Policy Matter?" in H Brooks and B Guile (eds), Technology and Global Industry: Companies and Nations in the World Economy, National Academy Press, Washington, D.C, pp 191-245.
- 3 Mazzucato M (2018): "Mission-oriented Innovation Policies: Challenges and Opportunities," Industrial and Corporate Change, Vol 27, No 5, pp 803-815.
- 4 Dosi, G and L Soete (2022): "On the Syndemic Nature of Crises: A Freeman Perspective," Research Policy, Vol 51, No 1.
- 4 Wittmann, F et al (2020): "Developing a Typology for Mission-Oriented Innovation Policies," Fraunhofer ISI Discussion Papers, Innovation Systems and Policy Analysis, No. 64, Fraunhofer-Institut für System- und Innovationsforschung ISI, Karlsruhe.
- 5 HM Government (2019): "West Midlands Local Industrial Strategy," policy paper prepared by the Department for Business and Trade, Department for Levelling Up, Housing and Communities, Ministry of Housing, Communities & Local Government, and Department for Business, Energy & Industrial Strategy, May.
- 6 Rodrik, D (2004): "Industrial Policy for the Twenty-First Century (November)," URL link 1 & link 2.
- 7 Weiss, J (2018): "Implementing Industrial Policy: How to Choose?" Oxford Development Studies, Vol 46, No 1, pp 71-82.
- 7 Mazzucato, M and H L Li (2020): "The Entrepreneurial State and Public Options: Socialising Risks and Rewards," UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2020-20).

ISID Policy Briefs are available at <https://isid.org.in/publications/policy-briefs/>

ISID Institute for Studies in Industrial Development
An institution of Indian Council of Social Science Research (Ministry of Education)

Policy Research to Foster India's Industrial Transformation

4 Vasant Kunj Institutional Area, New Delhi - 110070 INDIA

