WHAT PUBLIC SECTOR CAPABILITIES ARE CRITICAL FOR IMPLEMENTING MISSION-ORIENTED POLICIES IN LATIN AMERICA? INSIGHTS FROM A SYSTEMATIC REVIEW[1]

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This article examines the capabilities required for the implementation of Mission-Oriented Policies (MOP), with a focus on Latin America's middle-income countries. The main objective is to understand the specific capability requirements for MOP implementation in these contexts, using the Public Sector Dynamic Capabilities (PSDC) framework as an entry point. The article: (1) presents a systematic review of global and regional MOP literature, identifying key government roles and responsibilities; (2) identifies additional challenges, opportunities, and tasks for Latin American middle-income countries; and (3) maps the identified tasks to the PSDC framework's routines of sense-making, connecting, and shaping. Findings reveal that while the PSDC framework is highly applicable to the context studied, its implementation must consider the region's political instability, institutional weaknesses, power asymmetries, and resource constraints. The paper concludes that several of the tasks identified in the review are inherently political in nature, providing actionable insights for the development of public sector dynamic capabilities in the region.

Keywords: mission-oriented innovation; dynamic capabilities; public sector; government; Latin America.

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QUAIS CAPACIDADES DO SETOR PÚBLICO SÃO ESSENCIAIS PARA A IMPLEMENTAÇÃO DE POLÍTICAS ORIENTADAS POR MISSÃO NA AMÉRICA LATINA? INSIGHTS DE UMA REVISÃO SISTEMÁTICA

Este artigo examina as capacidades necessárias para a implementação de Políticas Orientadas a Missões (POM), com foco nos países de renda média da América Latina. O objetivo principal é entender os requisitos específicos de capacidade para a implementação de POM nesses contextos, utilizando o framework de Capacidades Dinâmicas do Setor Público (CDSP) como ponto de entrada. O artigo: (1) apresenta uma revisão sistemática da literatura global e regional sobre POM, identificando os papéis e responsabilidades-chave dos governos; (2) identifica desafios, oportunidades e tarefas adicionais para os países de renda média da América Latina; e (3) mapeia as tarefas identificadas para as rotinas de senso de fazer, conectar e moldar do framework CDSP. Os resultados revelam que, embora o framework CDSP seja altamente aplicável ao contexto estudado, sua implementação deve considerar a instabilidade política da região, as fraquezas institucionais, as assimetrias de poder e as restrições de recursos. O artigo conclui que várias das tarefas identificadas na revisão são inerentemente políticas, oferecendo insights acionáveis para o desenvolvimento das capacidades dinâmicas do setor público na região.

Palavras-chave: inovação orientada por missões; capacidades dinâmicas; setor público; governo; América Latina.

¿QUÉ CAPACIDADES DEL SECTOR PÚBLICO SON CRÍTICAS PARA IMPLEMENTAR POLÍTICAS ORIENTADAS POR MISIÓN EN AMÉRICA LATINA? REFLEXIONES A PARTIR DE UNA REVISIÓN SISTEMÁTICA.

Este artículo examina las capacidades necesarias para la implementación de Políticas Orientadas a Misiones (POM), con foco en los países de ingresos medios de América Latina. El objetivo principal es comprender los requisitos específicos de capacidad para la implementación de POM en estos contextos, utilizando el marco de Capacidades Dinámicas del Sector Público (CDSP) como punto de entrada. El artículo: (1) presenta una revisión sistemática de la literatura global y regional sobre POM, identificando los roles y responsabilidades clave de los gobiernos; (2) identifica desafíos, oportunidades y tareas adicionales para los países de ingresos medios de América Latina; y (3) mapea las tareas identificadas a las rutinas de hacer sentido, conectar y moldear del marco CDSP. Los resultados revelan que, aunque el marco CDSP es altamente aplicable al contexto estudiado, su implementación debe considerar la inestabilidad política de la región, las debilidades institucionales, las asimetrías de poder y las restricciones de recursos. El artículo concluye que varias de las tareas identificadas en la revisión son inherentemente políticas, ofreciendo perspectivas prácticas para el desarrollo de las capacidades dinámicas del sector público en la región.

Palabras clave: innovación orientada por misiones; capacidades dinámicas; sector público; gobierno; América Latina.

1. INTRODUCTION

Industrial policy has regained global prominence as nations seek to drive growth in the post-COVID-19 era (Juhász et al.). However, this resurgence extends beyond the search for economic expansion, challenging governments to also promote more sustainable and inclusive development. This shift reflects a broader transformation in industrial and innovation policies, moving from the horizontal strengthening of R&D systems to challenge-oriented approaches (Larrue, 2021; Mazzucato, 2018; Schot & Steinmueller, 2018). Within this context, Mission-Oriented Industrial and Innovation Policies (MOP hereafter) have emerged as a leading policy framework. These goal-driven, systemic, and coordinated policy packages are designed to steer research, development, and innovation toward societal priorities and the public good (Larrue, 2024; Mazzucato, 2024).

Against this backdrop, there is growing recognition that the successful implementation of these type of policies requires public sector organizations equipped with capabilities and tools suited for problem-based governance (Mayne et al., 2020). Societal challenges are often 'wicked problems' characterized by high levels of contestation, uncertainty and complexity (Wanzenböck et al., 2020). In such turbulent settings, dynamic capabilities that foster agility and adaptability are essential for effective MOP implementation (Spanó et al., 2023; Kattel & Mazzucato, 2018). However, despite the exponential growth of research on MOP, relatively little attention has been devoted to understanding the public sector capabilities necessary for their effective design and implementation (Haddad et al., 2022; Janssen et al., 2021; Kattel & Mazzucato, 2018). The Public Sector Dynamic Capability (PSDC, hereafter) framework seeks to address this gap, enabling a more informed reflection on what factors allow public sector organizations to remain dynamic and agile in the face of rapid changes while maintaining stability for core operations and public services' provision (Kattel, 2023; Kattel et al., 2022).

While these debates have taken center stage globally, several Latin American middle-income countries—including Mexico, Brazil, Argentina, Colombia, Peru, Chile, and Barbados—are also advancing Mission-Oriented Policy (MOP) agendas (Argentina.gov.ar, 2024; MDIC, 2024; Mazzucato, 2023). These efforts underscore their determination to tackle pressing societal challenges, such as climate change, inequality, and sustainable development, through industrial and innovation policies. However, these global challenges acquire unique dimensions in Latin America, where structural issues such as inequality, political instability, power asymmetries, institutional fragmentation, and resource constraints intensify the challenges of implementing MOP. This raises a critical question: what specific public sector capabilities are required to effectively implement MOP in these contexts?

In this article we focus on Latin America's middle-income countries (MICs), which typically have relatively well-developed Science, Technology, and Innovation (STI) and industrialization-related institutions, yet still face complex challenges when implementing MOP. The article has three main objectives. First, it seeks to provide a comprehensive and detailed understanding of the challenges, roles, and responsibilities that MOP implementation poses to governments globally. Second, it aims to identify the additional challenges that these policy frameworks present for governments in Latin America's MICs. Third, it analyzes both sets of challenges through the lens of the Public Sector Dynamic Capabilities (PSDC) framework, focusing on its core capability axes to assess its relevance and applicability.

The remainder of the article is organized as follows: Section 1 briefly introduces the PSDC framework, outlining its core propositions. Section 2 describes the methodology employed in the paper. Sections 3 and 4 review the global and regional literature on MOP through the lens of capabilities, identifying thematic clusters, public sector responsibilities, and key research gaps through the lens of capabilities, identifying thematic clusters, key public sector responsibilities, and research gaps. Section 5 discusses the implications of our findings through the PSDC framework and concludes, followed by suggestions for future research.

2. RETHINKING CAPACITY FOR INDUSTRIAL AND INNOVATION POLICIES THROUGH THE LENSES OF PUBLIC SECTOR DYNAMIC CAPABILITIES

There is a growing agreement that the complexity of MOP demands a wide variety of capabilities from the public sector, but important gaps still prevail in terms of what capabilities are needed, and how to assess and nurture these. Some of the recent developments in this literature (Kattel, 2023; Kattel & Mazzucato, 2018) set an interesting blueprint by summarizing how combining the lessons from different strands of the literature around state capacity from developmental state literature (Weberian), dynamic capabilities (Neoschumpterian) and public sector innovation literature, can provide insights for understanding what they frame as 'Public sector dynamic capabilities' in the context of Missions. The term 'dynamic capabilities' originally from management literature, defi es these as "the ability of an organisation and its management to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (Teece et al., 1997). The core proposition of the PSCD framework is that the agile and dynamic traits of capacities are essential for public sector organizations embedded in constantly changing landscapes, as was seen during the COVID-19 pandemic (Ferrannini et al., 2021; Mazzucato et al., 2021; Mazzucato & Kattel, 2020). However, while extensive research

has been carried out to understand how this dynamism evolves in private enterprises, there is very limited knowledge on how public sector organisations can rejuvenate and remain dynamic (Kattel, 2023; Kattel & Mazzucato, 2018).

Recently, Kattel (2023), offered a new synthesis providing a framework tailored for analyzing public sector dynamic capabilities. He proposes that the key analytical units of capacities and capabilities in the public sector are various 'organisational routines', and dynamic capabilities are themselves routines, specifically 'routines of renewal of managerial and organisational capabilities' (Kattel, 2022, pp. 7–8). In addition, he specifies that, in the public sector, the need for organizational renewal is located within the political context, for example: changes in leadership, perceived lack of legitimacy or ineffective existing policies are typically drivers for the emergence of new dynamic capabilities. This framework proposes that dynamic capabilities should be understood within the broader context of state capacities, which are defined as "existing routines to design and deliver policies" (Kattel, 2002, p. 8). Dynamic capabilities serve to rejuvenate state capacities, typically seen as enduring and long-term routines, by providing a more agile and short-term mechanism for adaptation and renewal.

Kattel (2022) proposes three clusters of routines as the constitutive elements of managerial and organizational dynamic capabilities in the public sector:

1. Sense-making routines: "analytical, assessment, information-gathering and processing routines that enable new learning, appraisal and evaluation patterns. These routines can relate to analyzing outputs and outcomes (value), as well as the internal performance of an organization" (p. 8).
2. Connecting routines: "networking and boundary-spanning routines that enable new networks and coalitions of internal and/or external stakeholders to be built. The routines help to (re-)build legitimacy and buy-in for new solutions" (p. 8).
3. Shaping routines: "routines to design and implement specific new directionality for an organisation or policy area, embed and mainstream new solutions into long-term routines, either in policy or in management, and be able to provide resources and support for new initiatives" (p. 8)

The PSDC framework offers valuable lenses for analyzing a largely unexplored area: how public organizations adapt to changing environments by interpreting these contexts, reorganizing their resources, and responding strategically to changes while also shaping their environments in desired directions. However, as a relatively new framework still under development, it is essential to critically reflect on both its linkages to the specific roles and tasks involved in MOP implementation and its applicability across diverse geographic contexts. The following literature review seeks to contribute to this reflection.

3. METHODOLOGY

A systematic literature review of MOP research was conducted to provide a comprehensive overview of this body of work through the lens of public sector capacities and capabilities. Recognizing that this remains an understudied area (Haddad et al., 2022; Kattel & Mazzucato, 2018), the review aimed to identify key themes, patterns, and gaps in the literature. Furthermore, it sought to evaluate the crucial roles, tasks, and responsibilities assigned to the public sector, contributing to a more grounded discussion on the dynamic capabilities required for MOP implementation.

The review adhered to the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). The methodology was divided into two stages: first, a global literature review was conducted using the SCOPUS database; second, a regional review of Latin American contributions was performed using La Referencia and SciELO databases. The result was a corpus of 79 articles published in global journals, and a corpus of 13 articles published in regional journals, encompassing both theoretical/conceptual frameworks and empirical studies. For a detailed explanation of the methodology, see Annex 1, and for global and regional corpus Annex 2 and 3 respectively.

An inductive analysis was conducted for both corpuses, grouping articles into broad thematic clusters. This approach allowed the identification of key research themes, that we present in the next section, highlighting their intersections with public sector capabilities and gaps.

4. CAPABILITIES FOR WHAT...? ASSESSING PUBLIC SECTOR ROLES AND TASKS IN MOP LITERATURE

4.1 Directionality

Several articles identified in the literature review address challenges related to directionality. Whereas there are various definitions of this term (de Graaff et al., 2023), the concept generally emphasizes the need to direct innovation toward socially benefic all areas, rather than merely increasing innovation rates (Foray, 2018; Mazzucato, 2016). Policies should not just level the playing field, but tilt it towards green, inclusive and sustainable growth (Mazzucato & Perez, 2015). Therefore, aiming for "directionality" can be defi ed as explicitly steering socio-technical systems toward desired societal goals (Bergek et al., 2023). While there is generally a wide consensus on the need for an active state role in MOP setting and steering directionality (Hausknost & Haas, 2019; Köhler et al., 2019), this literature still lacks clarity on the specific roles public institutions must play to fulfill this role. Particularly, it has been stressed that while this literature oftentimes treats the role of the state as one or monolithic,

there are several roles involved in this new generation of innovation policies. Moreover, these roles will vary in different contexts, leading to the need to better understand the array of factors influencing governments effectiveness in steering directionality (Borrás & Edler, 2020). Bergek et al. (2023) propose viewing the *translation* of societal challenges into policies as a multidimensional process, identifying eight key challenges: managing goal conflicts, defining mission boundaries, formulating realistic strategies, and mobilizing political domains.

Different MOP typologies underscore the increasing governance complexities posed by contemporary challenges that demand multi-actor involvement; complementary, supply and demand side policies and behavioral changes (Mazzucato & Penna, 2016; Wittmann et al., 2021). In addition, sustainability transitions' studies emphasize the need for systemic, radical transformations across all sectors, moving beyond incremental approaches (Diercks et al., 2019; Rosenbloom & Meadowcroft, 2022). This literature often highlights obstacles such as path-dependence in dominant systems, and the power of vested interests, such as incumbent industrial players, which complicate transformative efforts (Rosenbloom & Meadowcroft, 2022). Other challenges identified in empirical studies include: actor's misalignment with transformative goals (Wojtynia et al., 2021), neglect of the need for exnovation (phasing out unsustainable technologies and legislation), and insufficient reflexivity on the sustainability and social equity dimensions (Klerkx et al., 2022). In sum, studies dealing with directionality generally underline the conflictual dimension involved in implementing MOPs. Nevertheless, yet only few studies have thoroughly examined what are the specific capabilities that public sector organizations must master to deal with these challenges and how this dimension has operated in concrete cases, what capabilities have been present and which appear to be lacking or insufficient.

4.2 Collaborative governance and participation

The need for participatory processes in defining and managing MOP is a recurring theme in the literature (Janssen et al., 2021; Kattel & Mazzucato, 2018), reflecting a broader trend in this new generation of challenge-based innovation policies (Kuhlmann & Rip, 2018). Sustainability transition studies highlight the importance of non-state actors and collaborative governance, advocating for "constellations of actors" from the public, private, and third sectors to shape transformative policies (Schot & Steinmueller, 2018b). Some of MOP's foundational works stress that broad, bottom-up experimentation and active involvement of various stakeholders—including not only private sector actors but also civil society, unions, and citizens—are essential throughout all policy stages (Mazzucato, 2018c, 2019b). However, this participation cannot be assumed based on its incorporation of conceptual frameworks alone; it requires robust public policy tools and proactive government roles to ensure meaningful engagement (Stirling,

2014; Wiarda et al., 2023). Several studies examine the roles, modalities, and impact of citizen participation within MOP, revealing complexities in reconciling divergent interests (Boon & Edler, 2018; Wanzenböck et al., 2020). Effective participation is neither linear nor straightforward, and there is a lack of established procedures to guarantee meaningful stakeholder involvement at all policy stages (Janssen et al., 2023). For example, a study in the Netherlands found that while MOP projects engaged more public actors earlier than other innovation projects, they did not show greater diversity or increased public influence in funding decisions (Wiarda et al., 2023). Scholars propose that social movements could inspire and guide MOPs, though few studies explore how these collaborations could be structured or the capabilities needed for such partnerships (Leadbeater, 2018; Mucarsel et al., 2023).

In this thematic cluster we also identify studies that deal specifically with public-private partnerships in the context of Missions. These underscore the need for the public sector to strategically lead these partnerships, setting conditionalities when public funds are involved and developing context-specific instruments for risk and reward sharing, and dynamically assessing these (Laplane, 2021; Laplane & Mazzucato, 2020a; Mazzucato & Rodrik, 2023). More generally, the concept of Mission-Oriented Innovation Systems (MIS) has been coined to define: 'the network of agents and set of institutions that contribute to the development and diffusion of innovative solutions with the aim to define, pursue and complete a societal mission' (Hekkert et al., 2020, p. 77). MIS frameworks emphasize the importance of mapping innovation dynamics and addressing political and normative challenges during mission definition and implementation. Different studies apply MIS to sectors like agriculture, bioeconomy, and circular economy, examining barriers, power dynamics, and systemic changes needed for mission success (Klerkx & Begemann, 2020; Reike et al., 2023). In sum, while this literature acknowledges the importance of co-creation and participation, there is still a significant gap in understanding which public institutions are best suited to foster participatory processes across different institutional settings and policy arenas, and what specific institutional capabilities are required to effectively integrate participation into the different phases of these policies.

4.3 Policy coordination and policy-mixes

According to Hekkert (2020), MOP complexity arises from the aim of directing change, the urgency of setting specific temporal goals, and the need to integrate various interrelated technological and institutional solutions, which requires coordinating a wide array of policy instruments and governance mechanisms.

Policy coordination, long recognized as one of the most complex challenges in public administration (Peters, 2018; Sweeney, 1985), has gained increasing attention in the context of

innovation policies (Karo & Kattel, 2010). Central to this complexity is what has been termed the "paradox of complexity"—the more intricate the policy issues, the more fragmented the policymaking process becomes (Sweeney, 1985, as cited in Kattel & Mazzucato, 2018). While MOP demands sophisticated coordination mechanisms, political dynamics can significantly hinder these efforts (Peters, 2018). Furthermore, contemporary political systems tend to individual over collective action, and public management reforms have reinforced compartmentalization, further complicating cross-agency collaboration (Peters, 1998). For innovation policies, these difficulties are magnified by the challenges of measuring outcomes and attributing success to specific a tors (Kattel & Mazzucato, 2018).

MOP literature claims these policies can contribute to overcoming coordination challenges as this framework provides a pathway towards more integrated policy-making (Kattel & Mazzucato, 2018; Mazzucato, 2018b). It is stressed that coordination, both horizontally (across policy areas) and vertically (between different government levels), is critical for the success of these policies, as well as between supply-side and demand-side policies (Boon & Edler, 2018; Flanagan et al., 2011). Coordination in MOP is also essential to ensure policy consistency, avoid negative outcomes from fragmented actions, leverage technical and financial resources, and share risks among actors (Larrue, 2021). There is broad consensus on the need for more sophisticated policy mixes, characterized by diversity in instruments that are consistent, coherent, credible, and comprehensive (Rogge & Reichardt, 2016). However, a critical gap remains in understanding the organizational capacities required to achieve these desired characteristics. Rogge and Reichardt (2016) highlight the importance of "systemic capacities" which enable policymakers to design, monitor, and adapt policy mixes across various domains effectively. Despite this recognition, there is limited research on the specifics of intra- and inter-governmental coordination for MOP implementation, particularly regarding the capacity demands of different institutions and levels of government and what capabilities are critical for integrated governance. There are also concerns regarding the insufficient contextualization of MOPs, stressing the need to align them better with regional innovation ecosystems by ensuring multi-level governance (Brown, 2020; Bugge et al., 2023).

In addition, few studies have delved deeply into the specific types of instruments required for MOP and the underlying capacities needed to implement them. Public procurement as a tool for innovation is one of the few instruments that receives greater attention (Edquist & Zabala-Iturriagagoitia, 2012; Hamdan & Boer, 2019, among others). Yet, even in this field, most studies overlook the practical capacities needed to implement such policies successfully (Uyarra et al., 2020). Grimbert et al. dynamic, and functional capabilities.

4.4 Experimental governance, learning, and reflexivity

As MOP operate within uncertain, complex, and dynamic environments, scholars emphasize that MOP should be understood as "process-oriented policies" (Wanzenböck et al., 2020, p. 475). Throughout this process, the identification of problems and necessary transformations is often contentious, subject to opposition, negotiation, and continuous evolution (Kuhlmann & Rip, 2018; Wanzenböck et al., 2020). Therefore, it is stressed that addressing complex and open-ended societal challenges requires formulating missions that foster experimentation and accommodate diverse actors, solutions, and outcomes (Schot & Steinmueller, 2018b). Also, resistance, cooptation attempts, and strategic setbacks are inevitable, necessitating adaptive responses and strategic shifts (Boon & Edler, 2018; Janssen et al., 2021).

This context underscores the need for "tentative governance" — a flexible, dynamic, and revisable approach emphasizing experimentation, learning, reflexivity, and reversibility (Kuhlmann et al., 2019, p. 449). Such governance frameworks aim to accommodate the iterative nature of innovation processes while remaining responsive to evolving societal needs and stakeholder feedback (Kuhlmann & Rip, 2018). Ensuring policy directionality involves critically assessing the broader innovation system's characteristics and aligning them with mission goals (Kattel & Mazzucato, 2018; Lindner et al., 2016). Effectively implementing MOPs through this experimental and learning lens requires highly specialized organizational capabilities within the public sector. However, the literature on this area, still predominantly discusses normative aspects—how experimental policies should be *designed*—rather than providing applied frameworks for structuring public organizations to support experimentation, risk-taking, and continuous learning (Bravo-Biosca, 2020). There is also limited empirical evidence on the specific organizational capabilities needed to facilitate experimental governance and institutional learning in the context of missions (Kattel & Mazzucato, 2018; Kuhlmann et al., 2019).

4.5 Capabilities for implementing mission-oriented innovation policies

Through the review process, we observed that the MOP literature is increasingly stressing the importance of specific public sector capabilities to implement MOP (Kattel & Mazzucato, 2018; Mazzucato et al., 2020; Larrue, 2021; Spanó et al., 2023; Haddad, 2023).For instance, cultivating innovation, continuous learning, and creative problem-solving skills within public sector organizations has been deemed critical to address the increasing reliance on outsourcing fundamental service delivery to private entities (Collington & Mazzucato, 2022; Mazzucato & Collington, 2023). However, research specifically examining the organizational capabilities

required for MOP implementation remains limited, accounting for less than 10 percent of the articles retrieved by our search. The existing studies can be broadly categorized into two interrelated streams: one focusing on the public organizations spearheading MOP efforts, and another, still emerging, that delves into the specific capabilities these organizations need and use.

4.5.1 Public organizations leading mission implementation

The first group of studies examines the public organizations driving mission-oriented policies. Some researchers characterize these entities as *mission-oriented innovation agencies* (Mazzucato & Semieniuk, 2017), emphasizing their role not only in correcting market failures but also in shaping new markets. This body of research predominantly focuses on large, emblematic organizations, such as the Defense Advanced Research Projects Agency (DARPA) and its derivatives (Bonvillian, 2014, 2018; Haley, 2017), NASA (Robinson & Mazzucato, 2019), CERN, and national development banks like BNDES and KfW (Laplane, 2021; Mazzucato & Penna, 2015). Additionally, some studies investigate the role of public enterprises in tackling contemporary challenges, including climate change, health, and artificial intelligence (Archibugi & Mariella, 2021). Recent discussions, however, highlight the importance of studying *mission-driven intermediary organizations*, particularly those advancing technologies for internal use of the state. For instance, Roberts and Schmid (2022) caution against the uncritical replication of models like DARPA, emphasizing the need to expand the scope to diverse organizational types. This broader perspective can mitigate the risks of blindly following prevailing innovation trends, such as emulating DARPA or Silicon Valley models. However, the literature remains disproportionately focused on large-scale organizations in the Global North, leaving a significant gap in understanding how MOP are implemented in other organizational and regional contexts.

4.5.2 Capacities and capabilities for MOP implementation

The second group of studies focuses on the capacities and capabilities required for MOP implementation. Emerging research suggests adapting to the study of public organizations the dynamic capability framework, proposing the concept of Public Sector Dynamic Capabilities (Spanó, 2024; Kattel & Takala, 2023; Kattel, 2023; Kattel & Mazzucato, 2018; Mazzucato & Kattel, 2020). Recent works on this stream have identified key capabilities for MOP and the factors enabling their development. For instance, frameworks defining core public sector dynamic capabilities routines have been applied to distinguished organizations such as the UK's Government Digital Service, Sweden's Vinnova, and the city of Barcelona (Kattel, 2023). Another study of the UK Research and Innovation (UKRI) agency highlights critical capabilities such as dynamic portfolio management, network coordination, and the integration of learning and

reflexivity (McLaren & Kattel, 2023). Building on this conceptualization of public sector dynamic capabilities, Spanó et al. (2023) offer an important contribution by proposing an analytical framework that translates theoretical discussions into actionable policy guidelines with a focus on the role of legal and institutional designs in the formation of dynamic capabilities. Their framework dissects Teecian high-order dynamic capabilities (sensing, seizing, and transforming) into nine lower-order capabilities, addressing issues related to governance, organizational design, budgeting and finance, public procurement and partnerships, and human resources.

We see this framework on public sector dynamic capabilities as extremely valuable for redesigning innovation agencies to support MOP, but its focus on legal and institutional design risks overlooking *non-routinizable* capabilities, such as those required to navigate uncertainty and rapidly changing contexts (Teece et al., 2021). Analytical tools to identify and strengthen these other non-routine capabilities would further enhance the effectiveness of innovation agencies and other public organizations dealing with MOP. This is particularly important as recent studies highlight that building capacity for MOP delivery requires embracing risk-taking (as opposed to risk aversion), navigating uncertainty, and designing policies and partnerships that maximize public value (Mazzucato & Collington, 2023), and it has been asserted that these abilities in many cases do not emerge from routinizable activities but from entrepreneurial leadership (Teece, 2022). Another limitation within this literature is that so far, the case-studies on PSDC predominantly draw from Global North contexts, raising questions about their applicability in Global South scenarios.

To synthesize the results of the global literature review, the key roles of the state and its associated task identified are summarized in the following chart (Box 1).[1]

Box 1 – Roles of the State and associated tasks for MOP implementation

Roles	Key Tasks	References
1.Setting and Steering Directionality	Define transformation goals	Mazzucato (2018); Schot & Steinmueller (2018); Weber & Rohracher (2012).
	Identify, characterize and prioritize problems and solutions	Wanzenböck et al. (2020); Wittmann et al. (2021).
	Formulate strategies, mobilize cross-sectoral policy, and progressively dismantle unsustainable sectors and regulations	Bergek et al. (2023); Klerkx et al., (2022); Schlaile et al. (2017).
	Manage urgency and low political attention	Reale (2021); Hekkert et al. (2020).
	Align stakeholders and manage conflicts of interest	Wojtynia et al., (2021); Wanzenböck et al., (2020).

[1]To ensure the robustness of our analysis, tasks included in the list were selected based on a filter criterion: at least two articles from the reviewed literature needed to mention or address the task explicitly.

Roles	Key Tasks	References
2. Collaborative Governance & Participation	Implement participatory processes	Wanzenböck et al., (2020); Kattel & Mazzucato, 2018; Kuhlmann & Rip (2018); Schot & Steinmueller (2018).
	Identify and empower spaces for participation	Janssen et al. (2023); Mucarsel et al., 2023; Boon & Edler (2018); Wojtynia et al., (2021).
	Defi e roles within Mission-Oriented Systems, identifying potential barriers and catalyzers	Hekkert et al. (2020); Janssen et al. (2023), Jutting (2022); Klerkx & Begemann (2020).
	Develop instruments for risk and reward sharing in public-private partnerships	Laplane y Mazzucato (2020b); Laplane (2021); Mazzucato & Rodrik (2023).
	Address inequalities and avoid corporate cooptation	Frahm et al. (2021); Schot & Steinmueller (2018).
3. Policy Coordination and policy-mixes	Design coherent and consistent policy mixes	Flanagan et al., (2021); Kern et al. (2019); Rogge et al., (2020); Rogge & Reichardt (2016).
	Ensure resources and long-term commitment	Janssen (2022); Brown (2021).
	Promote strategic public procurement	Edquist & Zabala-Iturriagagoitia (2012); Grimbert et al. (2024); Roberts & Schmid (2022); Uyarra et al. (2020).
	Align policies with regional ecosystems/local governments' needs	Bugge et al. (2023); Pfotenhauer et al., (2022); Foray (2022); Boorman et al., (2023); Wanzenböck & Frenken (2020).
4. Experimental Governance	Adopt flexible governance models	Wanzenböck et al., (2020); Kuhlmann & Rip (2018).
	Engage in continuous experimentation and learning	Kivimaa & Rogge (2022); Bravo-Biosca, (2020); Kattel & Mazzucato, (2018); Schot & Steinmueller (2018).
	Reflect on innovation system evolution	Kattel & Mazzucato (2018); (2016)
	Regularly assess underlying visions and methods	Klerkx et al. (2022); Wojtynia et al., (2021); Diercks et al. (2019); Janssen (2022).
	Implement dynamic M&E processes	Mazzucato (2019); Stirling, (2014); Wiarda et al. (2023).
5. Strengthening Public Sector Capacities and capabilities	Assess and develop dynamic capabilities in the public sector	Mazzucato et al. (2020); Spanó et al. (2023); Kattel & Mazzucato (2018); Larrue (2021); McLaren & Kattel (2023).
	Steer and strengthen mission-oriented organizations (strategies, resources, instruments)	Mazzucato & Semieniuk (2017); Bonvillian (2014, 2018); Robinson & Mazzucato (2019); Archibugi & Mariella (2021).
	Design or redesign organizational models and legal & institutional frameworks fit-for-purpose	Roberts & Schmid (2022); Spanó et al. (2023).
	Build internal capabilities to embrace risk-taking, continuous learning, and creative problem-solving (avoid outsourcing)	Collington & Mazzucato (2022); Mazzucato & Collington (2023).

Source: Own elaboration.

5. LESSONS FROM MISSION-ORIENTED POLICIES IN LATIN AMERICA: CONTEXTUAL FACTORS AT PLAY

Innovation is a phenomenon deeply shaped by context (Edler & Fagerberg, 2017), and capabilities must be understood based on the specific tasks and purposes they are required for (Bertranou, 2015; Completa, 2017). Therefore, positioning MOP within the context of Latin America's MIC is crucial to understanding the additional challenges their implementation entails in these settings

The region offers both historical and recent cases that have been characterized as missions or proto-missions by various authors (Carrizo, 2019, p. 202; Gonzalo, 2022; Lavarello et al., 2020; Mazzucato, 2022; Mazzucato & Penna, 2016). Recent literature uses the term proto-missions to describe initiatives in low- and middle-income countries that align with key dimensions of the mission-oriented approach—such as a collectively developed strategic orientation and specific governance structures for policy coordination—without being explicitly designed with reference to the mission concept (Kumpf & Jhunjhunwala, 2022; Spanó, 2024). Based on this criterion, this section synthesizes key insights from regional scholars on policies recently analyzed as missions or proto-missions, even though most were not explicitly framed as MOP at the time of their design.

As a starting point, a recent report by ECLAC (Mazzucato, 2022a) refers to seven broad and interconnected structural problems that illustrate the region's complexities, including: commodity-driven development, low productivity, balance of payments constraints, territorial and productive heterogeneity, social vulnerabilities, weak institutional capacity, and limited fiscal space. Adding to this, our review of the regional MOP literature identified three inter-related contextual factors that further shape MOP implementation within this landscape: 1) political instability, which undermines continuity and the ability to sustain long-term initiatives; 2) challenges in securing committed, patient funding necessary for ambitious, long-term objectives; 3) Power asymmetries and institutional weaknesses, including the absence of robust monitoring and evaluation mechanisms. Although these constraints are commonly noted in studies of industrial and STI policies in the region, their impact on MOP is especially significant due to the ambitious, long-term vision and systemic coordination required by such policies.

5.1 Political instability and the absence of consensus on a shared developmental path

While the literature emphasizes that institutional stability is crucial for anchoring MOP and ensuring their continuity over time, achieving expected outcomes despite changes in partisan politics has proven difficult in the region (Giri, 2022). This appears also as a key constraint in a study commissioned by the Inter-American Development Bank (IDB) on MOP experiences and state capacities in the region, led by prestigious regional reseach teams and featuring 6 cases from Colombia, México and Chile (Mazzucato & Penna, 2020). This study highlights the lack of sustained

political commitment as one of the most significant barriers, particularly when countries are faced with shifts in political cycles, this leads to radical changes in government priorities.

The impact of high instability and the lack of consensus on shared development paths can be observed in its most extreme form during Bolsonaro's government in Brazil. A study exploring whether the COVID-19 response policy in the STI field could be considered a successful MOP concludes that, despite having valuable institutional and knowledge resources, these were undermined by the erosion and lack of mobilization of essential state capabilities. This hindered effective multi-level governance, the provision of funds, and the strategic use of demand-side instruments, such as BNDES credits for health innovation, which were significantly reduced. This lack of coordination among federal agencies was largely the result of deliberate actions by the federal government to undermine and sabotage social isolation and antivirus measures implemented by the federal government, mayors and governors (Oliveira Santos, 2023, p. 224).

5.2 Difficulties in secure long-term funding

The literature on MOP emphasizes the importance of sustained and ambitious public financing to build private sector confidence and encourage investment in mission-driven projects. The state must commit firmly to resource allocation and establish a clear timeline for gradually transitioning to private financing (Mazzucato & Penna, 2020). However, in Latin America, political cycles often constrain resources disrupting policy continuity. Macroeconomic instability and vulnerability further exacerbate these challenges, reducing fiscal and political leeway, hindering learning processes, and diminishing the impact of innovation policies (Coutinho, 2003).

For instance, Chile's Solar Energy Development Mission demonstrates how political cycle changes can reprioritize budgets, limiting mission-programs' impact. Although the policy roadmap aimed for a multi-sector, multi-actor, and multi-disciplinary approach, insufficient government commitment, particularly in financial terms, narrowed the program's scope and undermined its multidimensional ambition. This lack of commitment also resulted in poor policy complementarity and coordination among ministries and agencies, weakening the policy mix needed to achieve objectives effectively. Similar barriers were identified in several other cases in the region, where political and budgetary constraints forced competing actors to operate with limited resources, further fragmenting policy efforts (Mazzucato & Penna, 2020).

5.3 Institutional weaknesses and power asymmetries vis-à-vis corporations

Another set of challenges is related to power asymmetries and the influence of corporate players on institutional decisions. Institutions must deal with economic dependency on commodity exports, technological reliance due to limited R&D and brain drain, geopolitical

influence of transnational corporate actors like Big Tech corporations (Rikap, 2021; Franco et al., 2024). Regional governments must also navigate the political complexities of promoting certain sectors at the expense of others. For instance, in the case of the energy transition, this is reflected in the political resistance from the established interests of carbon-intensive companies (Corrêa & Ferraz Cário, 2022).

In addition, several articles highlight that middle-income LAC countries still face significant challenges due to weak institutional arrangements and limited public sector capacity, particularly at the local government level (Cassiolato et al., 2017; Casullo, 2020; Mazzucato, 2023). Fragile institutional structures often fail to channel investments into dynamic and innovative sectors or deliver quality services, exacerbating social vulnerability and eroding public trust (OECD et al., 2021; Mazzucato et al., 2021).

The regional institutional landscape is characterized by a mixed pattern, where pockets of excellence coexist with underdeveloped areas. Capability analyses for STI and industrial policies suggest that regional MICs operate at an intermediate level of state capacity, marked more by fragmentation and asymmetry between different institutions than by a complete lack of capacity (Castro, 2015; Casullo, 2021; Penna, 2021).

In addition, empirical studies on MOP in LAC consistently identify the lack of robust monitoring and evaluation (M&E) structures as a key weakness across case-studies (Corrêa & Ferraz Cário, 2022; Giri & Lawler, 2021; Mazzucato & Penna, 2020; Penna et al., 2021). Most regional MOP cases lack clear M&E frameworks, and developing indicators and metrics — especially "non-conventional" ones to assess the broader societal impacts of MOP remains challenging, as outcomes often extend beyond traditional market-oriented measures like turnover, exports, and productivity (Penna et al., 2021).

5.4 Opportunities for MOP implementation

However, the regional literature also emphasizes opportunities for MOP implementation in the region, such as its potential to reduce policy capture by setting clear directionality and focusing on tackling concrete socio-economic and environmental problems (Laplane, 2021; Penna et al., 2021; Carrizo, 2019), improve public-private synchronization (Surtayeva, 2021), strengthen participatory processes (Kremer, 2023) and enhance policy integration and coherence (Mucarsel et al., 2023).

An analysis comparing Argentina's nanotechnology and geostationary satellite policies (2003–2015) reveals that the former sought to promote a General-Purpose Technology at

the technological frontier through uncoordinated projects, lacking defi ed niches, concrete problems, or precise thematic lines of demand. This approach resulted in an agenda disconnected from socio-economic realities and yielded poor outcomes. In contrast, the satellite development plan, a clear example of a MOP, addressed concrete national challenges, prioritized learning processes, advanced technological scaling, and fostered networks of enterprises and public institutions, successfully enhancing industrial and public sector capabilities (Surtayeva, 2019).

Laplane (2021) sheds light into the processes of learning and capability evolution that took place in Brazil's public sector when implementing federal R&D programs pioneering MOP: the BNDES–FINEP Joint Programme (PAISS) and the Ministry of Health's PDPP. The analysis of these initiatives identified five key dimensions of effective public–private partnerships: (i) seizing opportunities, (ii) taking the lead, (iii) engaging in risk-sharing and institution-building, (iv) promoting risk diversification and competition, and (v) ensuring equitable reward sharing. Overcoming political, legal, and internal resistances demanded clear vision and bold leadership to enable experimentation and learning.

The literature also highlights that historical experiences and trajectories in STI and other policy domains must be leveraged to overcome the regional challenges. Moreover, authors claim that it is paramount to promote a critical analysis and adaptation of MOP frameworks tailoring these to regional realities and trajectories (Carrizo, 2019; Mucarsel, 2022). For instance, during the pandemic, new goal-oriented R&D approaches emerged in Argentina with some of the key MOP characteristics such as being more flexible, participatory and territorially connected, breaking from historical trends of disconnection between academia and the productive sector (Bortz & Gázquez, 2020). These new arrangements quickly delivered solutions to public health authorities and emphasized the importance of new ways of organizing R&D strategies to adapt to territorial needs and strengths (Bortz & Gázquez, 2020).

Regional scholarship also underscores the importance of universities in mission-oriented research, emphasizing the need to strengthen interactions between academia and industry and promoting mission-oriented basic research (Weinberg et al., 2009).

However, MOP still remain relatively new to the region, with traditional industrial policy models still dominating. An analysis of Brazil's "Inova Empresa" Plan, reveals that although it was an important industrial policy effort with innovative financing mechanisms, it did not align fully with the MOP framework. While some calls for projects targeted social issues like health, energy, and sustainability, the plan lacked key MOP elements, such as social engagement and addressing societal challenges, focusing primarily on enhancing industrial competitiveness through collaboration between businesses and research institutes, without aiming for structural changes or a greater civic engagement (Lucena, 2022)

Box 2 outlines the challenges and opportunities that each of the key government roles identified in the global literature revision, presents for Latin America's middle-income countries, based on the literature reviewed. It also outlines the 'additional' tasks these roles entail for governments in the region. While some tasks overlap with those identified in Box 1, the majority represent new responsibilities or more specific tasks for roles that have been mentioned globally but remain rather generic, translating these global concepts into more actionable, context-specific tasks. Also, some tasks could be relevant to multiple roles; however, they have been listed only once, under the role to which they are most closely related.

Box 2 – Government roles, challenges, opportunities in Latin America's Middle Income Countries

Role	Key Challenges	Opportunities	Additional Tasks
Setting and Steering Directionality	– Political instability disrupts long-term goals. – Difficulty ensuring long-term funding beyond electoral cycles. – Limited fiscal capacity. – Structural inequalities hinder inclusive goal-setting.	– Previous experiences in state-led democratic development planning. – Emerging regional alignment on inclusive development and sustainability goals (e.g., Colombia, Brazil, Mexico, Chile, Uruguay).	– Build cross-sectoral coalitions to shield missions from political cycles. – Promote broad public-private consensus around MOP. – Develop clear financial timelines for MOP implementation. – Assess potential niches for transitioning from public to private investment. – Increase the diversity of representation in leadership roles and advisory bodies guiding MOP implementation (e.g., civil society and trade-unions).
Collaborative Governance and Public-private coordination	– Deep socio-economic and regional inequalities. – Power asymmetries favor multinational corporations. – Weak regulatory frameworks for equitable risk-sharing agreements. – Risks of elite capture and corporate cooptation.	– Strong civil society movements advocating for inclusive policies. – Extensive regional expertise in participatory governance tools beyond STI. – Emerging public-private partnerships in key sectors. – State-owned enterprises with high-level capabilities	– Design MOP participatory processes to include social movements and marginalized groups. – Proactively address social and regional disparities in MOP design, implementation, and evaluation. – Design, gain legitimacy for and implement risk-sharing tools balancing public and private stakes. – Enhance leadership's ability to anticipate, address, and resolve emergent conflicts. – Strengthen institutional and regulatory capacities to ensure transparency and accountability.

Role	Key Challenges	Opportunities	Additional Tasks
Policy Coordination and Policy-Mixes	– Misaligned priorities between regional and national levels. – Siloed policy-making and bureaucratic inefficiencies.	– Dense regional innovation hubs. – Growing adoption of digital tools for policy integration and M&E. – National and regional innovation agencies equipped with strong capabilities and experience in collaborative policymaking (e.g., BNDES-FINEP).	– Align MOP with national and regional development plans, building on regional strengths and priorities. – Promote spaces for collaborative policymaking (horizontal and multi-level governance). To improve integration and coherence (e.g., federal councils, forums & roundtables).
Experimental Governance	– Risk of policy backlash due to political volatility. – Constrained capacity for sustained learning after government shifts	Strong academic and research institutions. – Successful examples of public sector innovation and social innovation (e.g., Chile's Government Laboratory, Medellín urban living labs).	– Empower semi-autonomous bodies insulated from political cycles. – Foster continuous learning through dedicated units collaborating with academic institutions. – Strengthen the civil service and design mechanisms to protect institutional memory.
Public Sector Capacities and Capabilities	– Lack of MOP-tailored M&E mechanisms. – Limited technical expertise to design and implement MOP at the local government level. – Insufficient investment in training and workforce development. – Fragmentation in policymaking.	– Regional tradition of strong public administration training programs. – Examples of highly skilled civil servants in innovation-related agencies (e.g., FINEP, CONACYT, Agencia I+D+i). – Growing interest in public service innovation at local governments.	– Design and implement robust M&E schemes for MOP, incorporating innovative evaluation methods. – Develop capacity-building programs for local government public servants to align with MOP demands, including technical and leadership skills. – Design adaptive mechanisms to continuously upskill and retrain public sector workers. – Create dedicated units for MOP implementation & M&E.

Source: Own elaboration.

6. DISCUSSION AND CONCLUSIONS

Before interpreting our findings further, we want to make clear that our review has certain limitations. First, it focuses exclusively on academic literature and could be expanded in future research by incorporating grey literature and policy reports, both globally and regionally. Such sources might provide deeper insights into the capabilities dimension, however there is a clear gap in this dimension. For instance, in a 2022 survey conducted by the OECD and the Danish Design

Centre, responses from over 200 international policymakers highlighted key capability challenges, including difficulties in overcoming silos and aligning resources across government. There was also a strong emphasis on the need to develop mission-compatible organizational models and governance structures. When asked, "In what areas do you need external help?" the most frequent response (67.5% of respondents) was "in skills, methods, and capacities" (OECD, 2022). Second, the review's focus on MOP excluded search terms related to other relevant streams of literature, such as Transformative Innovation Policies (TIP), where capabilities are also discussed. Nonetheless, key articles from this literature surfaced in our results, as discussions on TIP frequently overlap with MOP and missions (Haddad et al., 2022).

Despite these limitations, this review provides a comprehensive overview of the key policy roles, responsibilities, and tasks discussed in the MOP literature. Our approach involved three steps. First, we identified five core roles of the state, encompassing 24 tasks in the global MOP context. Second, we summarized the distinct challenges and opportunities that the key government roles, identified in the global literature, present for Latin America's middle-income countries, proposing 17 concrete tasks adapted to this context. Now, as a third step, we analyze how these tasks align with the three key routines for public sector dynamic capabilities (Kattel, 2023): sense-making, connecting, and shaping. Boxes 3 and 4 summarize the results of this exercise for both global and regional literature, followed by insights from this analysis.

Box 3 – Mapping MOP Global Tasks to PSDC Routines

SENSE-MAKING	CONNECTING	SHAPING
Identify, characterize, and prioritize challenges.	Implement participatory processes.	Define transformation goals.
Engage in continuous experimentation and learning.	Define roles within mission-oriented systems.	Formulate strategies, mobilize cross-sectoral policy, and dismantle unsustainable sectors.
Implement dynamic M&E processes.	Align policies with regional ecosystems.	Assess and develop capabilities in the public sector.
Reflect on innovation system evolution.	Align stakeholders and manage conflicts of interest.	Develop instruments for risk and reward sharing.
Regularly assess underlying visions and methods.	Build coalitions with internal/ external stakeholders.	Adopt flexible governance models.
Identify potential barriers and catalyzers.	Facilitate networking across policy areas.	Ensure resources (e.g., funding, expertise).

SENSE-MAKING	CONNECTING	SHAPING
Identify, characterize, and prioritize challenges.	Implement participatory processes.	Defi e transformation goals.
Manage urgency and low political attention.	Design coherent and consistent policy mixes.	Steer and strengthen mission-oriented organizations (strategies, resources, instruments).
Address inequalities and avoid corporate capture.		Design organizational models and legal and institutional frameworks fit-for-purpose.

Source: Own elaboration.

Box 4 – Mapping MOP tasks for Latin America with PSDC routines

SENSE-MAKING	CONNECTING	SHAPING
Design and implement innovative M&E schemes.	Build cross-sectoral coalitions to shield missions from political cycles.	Develop clear financial timelines for MOP implementation.
Develop capacity-building programs for local government public servants.	Promote broad public-private consensus around MOP.	Implement mechanisms to continuously motivate, upskill and retrain public sector workers.
Foster continuous learning through dedicated units.	Increase the diversity of representation in leadership roles and advisory bodies.	Strengthen institutional and regulatory capacities to ensure transparency and accountability.
Identify potential niches to transition from public to private investment.	Design MOP participatory processes to include social movements and marginalized groups.	Create dedicated units for MOP implementation, M&E.
Address social and regional disparities in MOP.	Promote spaces to improve policy integration and coherence (e.g., federal councils, forums and roundtables).	Design, legitimize and institutionalize risk-sharing mechanisms.
Anticipate sources of resistance and address emergent conflicts.	Align MOP with national and regional development plans.	

Source: Own elaboration.

This article has explored the dynamic capabilities required for the successful implementation of MOP in Latin America's middle-income countries, using the Public Sector Dynamic Capabilities framework as a lens. Through a systematic review of global and regional literature, we have identified key roles, tasks, and challenges faced by governments in implementing MOP, particularly in the context of Latin America's unique socio-political and economic landscape. Our analysis reveals several critical insights that contribute to the broader debate on PSDC, public sector innovation and capability-building.

First, the review highlights a significant gap in the literature on the specific capabilities required for MOP implementation. While there is growing recognition of the need for dynamic capabilities in the public sector, few studies explore how these capabilities can be developed and sustained in practice. This gap is evident in both the global and the still-emerging regional literature on MOP. By identifying key capability-related questions that have received limited attention, this review contributes to advancing the discussion on this critical aspect.

Second, the study underscores the applicability of the PSDC framework to the global implementation of MOP. The responsibilities and tasks identified confirm that MOP implementation requires dynamic public sector organizations, emphasizing the need for these organizations to adapt and re-orchestrate their resources, organizational structures, and practices to better align with the mission and navigate complex challenges effectively. While this may seem intuitive, the stylized model we propose sheds light on the breadth of specific tasks involved and how they map to each core capability proposed for public sector dynamic capabilities (Kattel, 2023).

The framework's three core routines — sense-making, connecting, and shaping — provide a robust structure for understanding how public sector organizations can adapt to rapidly changing environments, foster collaboration, and embed new policies and practices. These routines emerge as critical to fulfilling the tasks identified in our review. Furthermore, our analysis highlights that many of the tasks associated with MOP — such as setting directionality, navigating resistance, fostering public-private collaborative governance, and ensuring policy coordination — are inherently political. In other words, the core public-sector dynamic capabilities must be understood as deeply intertwined with political processes.

Third, when applying this framework to the challenges of Latin America, we observe that the additional tasks identified for the region also align well with the PSDC framework. However, its application in Latin America requires a nuanced understanding of the region's structural challenges, such as political instability, resource constraints, and institutional fragmentation. This highlights the importance of context-specific adaptations of the PSDC framework. The political dimension of MOP-related responsibilities and tasks is particularly salient in developing regions, where institutional weaknesses and power imbalances significantly shape policy outcomes[2]. This is relevant for Latin America, where political cycles and elite resistance often disrupt policy continuity. As a result, there is a need to shift focus from purely technical or administrative capabilities to those that encompass political acumen, leadership, and strategic planning.

[2] Interestingly, previous studies focusing on core countries highlight that MOP trajectories in these contexts also require significant levels of political anchoring and pragmatism (see Normann et al., 2024).

Fourth, we propose that each of the three core routines must be further elaborated to address the specific political and institutional challenges of the region.

Our analysis underscores that **sense-making capabilities** in the context of MOP are significantly more complex than the traditional "sensing" activities in the private sector. Sense-making in MOP is deeply intertwined with mission directionality, requiring a nuanced understanding of broader societal goals such as social justice, gender equality, and sustainability (Castro, 2018; Mazzucato, 2024). These objectives demand tailored lenses in the public sector to identify opportunities and risks aligned with these purposes. In addition, as Kattel (2023) emphasizes, these routines are not only essential for assessing external outputs but also for evaluating internal performance. This necessitates a culture of continuous self-assessment, enabling organizations to adapt to evolving scenarios and align with mission goals. In Latin America, where political instability and elite resistance are prevalent, sense-making capabilities take on even greater importance. Public sector organizations must cultivate the ability to not only identify threats and opposition but also to recognize opportunities and potential allies, and responding strategically to rapidly shifting political environments.

Accordingly, **connecting capabilities** must focus on building and sustaining broad coalitions that include private sector actors, civil society, and political entities to ensure the legitimacy and continuity of mission-oriented initiatives. These connecting capabilities, which were not originally included in the Teecian framework but were incorporated in the PSDC proposal (Kattel, 2023), emerge as essential for MOP in Latin America. The regional political landscape, with its frequent shifts and the rise of strong opposition, necessitates the creation and sustainability of broad coalitions. Furthermore, this task of connecting involves managing political relationships, aligning divergent interests, and negotiating power. This reveals that the success of MOP initiatives in Latin America heavily depends on the political acumen to form and maintain coalitions amidst shifting political tides.

Furthermore, many of the tasks identified in our review align closely with **shaping capabilities**, those focused on embedding directionality within organizational and legal frameworks. This alignment is unsurprising, given that MOP are inherently concerned with market-shaping and systems transformation. However, shaping routines pose particular challenges in Latin America due to frequent government turnover and political instability. Sustaining policies, securing long-term financing, and embedding directionality within institutional frameworks demand bold action and creativity from public sector organizations. These include designing new policies and regulations, as well as insourcing critical skills, such as digital expertise, rather than relying on outsourcing (Kattel, 2022; Mazzucato, 2021; Collington

& Mazzucato, 2024). In the context of Latin America, where neoliberal and, more recently, late neoliberal governments have significantly eroded state capabilities (García Delgado et al., 2017), these shaping tasks require urgent attention and political imagination to rebuild and strengthen public sector capacity.

Finally, the study identifies tensions in the MOP theorization when contrasting its propositions with regional realities. While global literature often emphasizes decentralized governance, public-private collaboration, and open experimentation, it frequently overlooks the political economy challenges faced by developing countries. These challenges are further exacerbated by social inequalities, regional disparities, and macroeconomic instability, which create a restrictive environment for innovation and systemic change. Again, these realities underscore the need for a more comprehensive approach that goes beyond strengthening bureaucratic capabilities and directly engages with the political nature of these challenges. Political capabilities — such as leadership, strategic planning, team motivation, and the capacity to pivot and navigate resistance — become indispensable for fostering public sector dynamism in the face of the contested, uncertain, and complex scenarios (Bernazza et al., 2015).

As Teece (2022), a foundational figure in the dynamic capability literature, recently observed, much of this literature has focused excessively on organizational routines, overlooking the fact that dynamic capabilities depend not only on routines but also on strategy, bold decisions, and leadership skills — elements that resist routinization. There is a risk of replicating this oversight in the context of public sector dynamic capabilities. This is particularly relevant for public sector organizations in Latin America, where political capabilities, as emphasized by regional scholarship on state capacities[3], play a critical role. Therefore, fully integrating these political dimensions into the global discourse on Public Sector Dynamic Capabilities will be essential to address the complex challenges MOP implementation faces in regions like Latin America and beyond.

6.1 Future research directions

Moving forward, our work suggests several avenues for future research. First, there is a need for empirical studies exploring how public sector organizations in Latin America develop dynamic capabilities for MOP. This could include individual and cross-case studies that provide deeper insights into regional dynamics, with particular attention to the role political capabilities, such as leadership and democratic planning, play in the formation of PSDC. For instance, as Kattel (2023) suggests, leadership at both the political and middle management levels appear to play

[3]Authors such as Bernazza et al. (2015), Castro (2023, 2015), De Toni (2013), Vilas (2012), Boschi & Gaitán (2009), and Matus (1987) highlight the need to address the political dimensions of state capacities. Their work provides valuable insights that can contribute to bridging this gap in the MOP literature.

a crucial role. In this context, enhancing leadership might have a more significant impact on fostering dynamic capabilities within the public sector than traditional approaches, such as solely focusing on changing institutional designs or creating new organizations. Testing this proposition through regional case studies could offer valuable insights into the contextual factors that influence the development of these capabilities.

Second, while the three broad capability categories — sense-making, connecting, and shaping — provide a useful theoretical framework, they may lack practical guidance for policymakers. To address this gap, future research could focus on identifying the sources that underpin the development of these capabilities and exploring different strategies for building each of them.

Third, there is a need for more research on the role that partnerships with other institutions — such as universities, research centers, trade unions and social movements — can play in strengthening public sector capabilities. Exploring these collaborations could provide new pathways for enhancing the dynamic capabilities of public sector organizations for effectively advancing MOP in these geographies.

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Annex 1 - Methodology

The first step of the Systematic Literature Review aimed to identify all relevant papers. As the review adopted a configurative rather than aggregative approach—seeking to "arrange, or configure, study findings (…) to shape a body of literature" (Gough et al., 2013: p. 16), —the goal was not to identify absolutely all relevant studies but to achieve sufficient coverage of the different ways this issue is understood. A preliminary scoping screening was conducted across multiple bibliographic databases, including Google Scholar, Web of Science (WoS), and Scopus, to ensure broad coverage. Based on the results, Scopus was selected as the primary database, as it yielded the broadest and most relevant results, consistent with studies suggesting Scopus's superior performance for social science searches compared to WoS (Mongeon & Paul-Hus, 2016).

The review focused on the period from 2012 to 2023, prioritizing recent peer-reviewed academic articles. The search was conducted in two rounds: the first in July 2023 and the second in March 2024, using the term "mission-oriented innovation" in titles, abstracts, or keywords. Although related terms such as challenge-driven innovation or transformative innovation policies could have been included, the methodological decision to focus exclusively on MOP was based on its status as the most widely adopted problem-oriented framework by governments globally (Janssen et al., 2021; Larrue, 2021b). This decision reflects an interest in exploring how this specific literature addresses the challenges and contributions associated with MOP, providing insights into its conceptual and practical underpinnings.

Inclusion Criteria:

- Peer-reviewed articles published between 2012 and 2023.
- Articles written in English.
- Articles with a clear focus on Mission-oriented Policies

Exclusion Criteria:

- Grey literature (e.g., book chapters, opinion pieces, policy documents, or non-peer-reviewed works).
- Articles that only mention Mission-oriented Policies very briefly without substantial discussion.
- Articles focused solely on traditional innovation policies without addressing new-generation innovation policies targeting societal challenges.

The initial Scopus search yielded 62 results. After reviewing titles and abstracts, 11 articles were excluded for lacking focus on MOP. The corpus was then expanded through snowballing, adding 15 highly cited foundational articles from references and relevant articles on MOP not captured in the initial search found by snowballing. The final dataset comprised 66 articles, encompassing both theoretical/conceptual frameworks and empirical studies (see final corpus in Annex 2).

In a second stage, a targeted search was conducted in two of the main Latin American journal databases, La Referencia and SciELO, to identify relevant literature by regional authors not indexed in Scopus. The inclusion and exclusion criteria remained the same.

The search in La Referencia was carried out using the terms "Mission-oriented," "orientada por mission", "orientada por misiones" and "orientada a Missões" also focusing on academic articles, no time or language limitations were established. This search yielded 91 results. After removing 43 results from Spain, the remaining results were 48 distributed as follows: Colombia with 18, Argentina with 15, Brazil with 7, Peru with 5, and Ecuador with 3. Subsequently, 30 articles were excluded after reviewing their titles and abstracts, as they did not address MOPs or only referenced them tangentially. The final selection was composed of 11 articles. The search in SciELO used the same terms and returned 10 results. Of these, 6 were excluded for not addressing MOP and 3 for being duplicates of results from the previous search. Ultimately, 1 additional article was included (see final corpus in Annex 3).

Annex 2. Corpus Global Literature Review

Authors	Title	Year
Klerkl et al.	Mission cocreation or domination? Explorative and exploitative forces in shaping the Dutch circular agriculture mission	2024
Mazzucato, M.	Governing the economics of the common good: from correcting market failures to shaping collective goals	2024
Wiarda M., Sobota V.C.M., Janssen M.J., van de Kaa G., Yaghmaei E., Doorn N.	Public participation in mission-oriented innovation projects	2023
Reike D., Hekkert M.P., Negro S.O.	Understanding circular economy transitions: The case of circular textiles	2023
Magrini M.-B.	Value Chain Sociotechnical Interactions and Functions of Mission-oriented Innovation Systems: An Analysis Based on Sustainability Challenges for Agricultural Value Chains	2023
Lehoux P., Silva H.P., Miller F., Denis J.-L., Pozelli R.S.	How can entrepreneurs experience inform responsible health innovation policies? A longitudinal case study in Canada and Brazil	2023
Hekkert M.P.	Response to "Missions and mission-oriented innovation policy for sustainability: A review and critical reflection"	2023
Kirchherr J., Hartley K., Tukker A.	Missions and mission-oriented innovation policy for sustainability: A review and critical reflection	2023
Bergek A., Hellsmark H., Karltorp K.	Directionality challenges for transformative innovation policy: lessons from implementing climate goals in the process industry	2023
Coenen T.B.J., Visscher K., Volker L.	A systemic perspective on transition barriers to a circular infrastructure sector	2023
De Graaff, S., Wanzenböck, I., & Frenken, K.	The politics of directionality in innovation policy through the lens of policy process frameworks	2023
Reike, D., Hekkert, M. P., & Negro, S. O.	Understanding circular economy transitions: The case of circular textiles.	2023
Rosenbloom D., Meadowcroft .	Accelerating Pathways to Net Zero: Governance Strategies from Transition Studies and the Transition Accelerator	2022

Authors	Title	Year
Rainville A.	Green Public Procurement in Mission-Orientated Innovation Systems: Leveraging Voluntary Standards to Improve Sustainability Performance of Municipalities	2022
Parks D.	Directionality in transformative innovation policy: who is giving directions?	2022
Roberts P.S., Schmid J.	Government-led innovation acceleration: Case studies of US federal government innovation and technology acceleration organizations	2022
Pfotenhauer S., Laurent B., Papageorgiou K., Stilgoe J.	The politics of scaling	2022
Foray, D.	The Economics of Incomplete Plan - on Conditions, Procedures and Design of Future Mission - Oriented Innovation Policies	2022
Janssen,M.J	Legitimation and Effects of Mission-Oriented Innovation Policies: A Spillover Perspective	2022
Fielke S.J., Lacey J., Jakku E., Allison J., Stitzlein C., Ricketts K., Hall A., Cooke A.	From a land 'down under': the potential role of responsible innovation as practice during the bottom-up development of mission arenas in Australia	2022
Klerkx L., Turner J., Percy H.	Navigating the rapids of agrifood systems transformation: reflections on Aotearoa New Zealand's emerging mission-oriented agrifood innovation system	2022
Jutting M.	Crafting Mission-Oriented Innovation Ecosystems Strategic Levers for Directing Collaborative Innovation Toward the Grand Challenges	2022
Bugge M.M., Andersen A.D., Steen M.	The role of regional innovation systems in mission-oriented innovation policy: exploring the problem-solution space in electrification of maritime transport	2022
Frahm N., Doezema T., Pfotenhauer S.	Fixing Technology with Society: The Coproduction of Democratic Deficits and Responsible Innovation at the OECD and the European Commission	2022
Bours S.A.M.J.V., Wanzenböck I., Frenken K.	Small wins for grand challenges. A bottom-up governance approach to regional innovation policy	2022
Wojtynia N., van Dijk J., Derks M., Groot Koerkamp P.W.G., Hekkert M.P.	A new green revolution or agribusiness as usual? Uncovering alignment issues and potential transition complications in agri-food system transitions	2021
Švarc J., Dabić M.	Transformative innovation policy or how to escape peripheral policy paradox in European research peripheral countries	2021
Wittmann F., Hufnagl M., Lindner R., Roth F., Edler J.	Governing varieties of mission-oriented innovation policies: A new typology	2021
Reale F.	Mission-oriented innovation policy and the challenge of urgency: Lessons from Covid-19 and beyond	2021
Chen J., Yin X., Fu X., McKern B.	Beyond catch-up: Could China become the global innovation powerhouse? China's innovation progress and challenges from a holistic innovation perspective	2021
Bugge M.M., Siddiq F.	Empowering professionalism in mission-oriented innovation	2021
Janssen M.J., Torrens J., Wesseling J.H., Wanzenböck I.	The promises and premises of mission-oriented innovation policy - A reflection and ways forward	2021
Deleidi M., Mazzucato M.	Directed innovation policies and the supermultiplier: An empirical assessment of mission-oriented policies in the US economy	2021
Caliari T., Ferreira M.J.B.	The historical evolution of the Brazilian aeronautical sector: a combined approach based on mission-oriented innovation policy (MOIP) and sectoral innovation system (SIS)	2021
Rabadjieva M., Terstriep J.	Ambition meets reality: Mission-oriented innovation policy as a driver for participative governance	2021

Authors	Title	Year
Brown R.	Mission-oriented or mission adrift? A critical examination of mission-oriented innovation policies	2021
Prochaska L.	An evolutionary perspective on the emergence and implementation of mission-oriented innovation policy: the example of the change of the leitmotif from biotechnology to bioeconomy	2021
Laplane, A.	Market co-creating and shaping through investments in innovation: a comparative analysis of two public funding programmes in Brazil.	2021
van der Loos H.Z.A., Negro S.O., Hekkert M.P.	Low-carbon lock-in? Exploring transformative innovation policy and off hore wind energy pathways in the Netherlands	2020
Klerkx L., Begemann S.	Supporting food systems transformation: The what, why, who, where and how of mission-oriented agricultural innovation systems	2020
Wanzenböck I., Wesseling J.H., Frenken K., Hekkert M.P., Weber K.M.	A framework for mission-oriented innovation policy: Alternative pathways through the problem-solution space	2020
Jütting M.	Exploring mission-oriented innovation ecosystems for sustainability: Towards a literature-based typology	2020
Mazzucato M., Kattel R., Ryan-Collins J.	Challenge-Driven Innovation Policy: Towards a New Policy Toolkit	2020
Hekkert M.P., Janssen M.J., Wesseling J.H., Negro S.O.	Mission-oriented innovation systems	2020
Wanzenböck I., Frenken K.	The subsidiarity principle in innovation policy for societal challenges	2020
Laplane, A. & Mazzucato, M.	Socializing the risks and rewards of public investments: Economic, policy, and legal issues	2020
Borrás & Edler	The roles of the state in the governance of socio-technical systems' transformation	2020
Deleidi M., Mazzucato M.	Putting Austerity to Bed: Technical Progress, Aggregate Demand and the Supermultiplier	2019
Robinson D.K.R., Mazzucato M.	The evolution of mission-oriented policies: Exploring changing market creating policies in the US and European space sector	2019
Maine et al.	State Capabilities for Problem-Oriented Governance	2019
Köhler et al.	An agenda for sustainability transitions research: State of the art and future directions	2019
Hausknost, D. & Haas, W.	The politics of selection: Towards a transformative model of environmental innovation	2019
Busch J., Foxon T.J., Taylor P.G.	Designing industrial strategy for a low carbon transformation	2018
Mazzucato M.	Mission-oriented innovation policies: Challenges and opportunities	2018
Florio M., Giffoni F., Giunta A., Sirtori E.	Big science, learning, and innovation: Evidence from CERN procurement	2018
McKelvey M., Saemundsson R.J.	An evolutionary model of innovation policy: Conceptualizing the growth of knowledge in innovation policy as an evolution of policy alternatives	2018
Karo E.	Mission-oriented innovation policies and bureaucracies in East Asia	2018
Kattel R., Mazzucato M.	Mission-oriented innovation policy and dynamic capabilities in the public sector	2018
Pigford A.-A.E., Hickey G.M., Klerkx L.	Beyond agricultural innovation systems? Exploring an agricultural innovation ecosystems approach for niche design and development in sustainability transitions	2018
Mazzucato y Semieniuk	Financing renewable energy: Who is financing what and why it matters	2018
Leadbeater, C.	Postscript: movements with missions make markets	2018
Mazzucato y Semieniuk	Public financing of innovation: new questions	2017

Authors	Title	Year
Haley	Designing the public sector to promote sustainability transitions: Institutional principles and a case study of ARPA-E	2017
Mazzucato M.	From market fixi g to market-creating: a new framework for innovation policy	2016
Edquist C., Zabala-Iturriagagoitia J.M.	Public Procurement for Innovation as mission-oriented innovation policy	2012
Karo, E. & Kattel, R.	Coordination of innovation policies in the catching-up context: a historical perspective on Estonia and Brazil.	2010

Source: Own elaboration.

Annex 3 - Corpus Regional Literature Review

Author	Paper Title	Year
Mazzucato, M.	Una respuesta colectiva a nuestros desafíos globales: Un enfoque de bien común y de "configuración del mercado"	2024
de Oliveira Santos, G.	Covid-19 Mission: Potentials and Limits for the Construction of a Mission-Oriented Innovation Policy	2023
Kremer, G. S.	O conceito de participação em políticas de inovação orientadas por missões: 10 anos de mission oriented innovation	2023
Mucarsel Elaskar, L. Y.	Construyendo capacidades para la innovación orientada: la respuesta argentina con perspectiva de género a la covid-19	2023
Sarthou, N.	Las becas CONICET para temas estratégicos: balance y desafíos	2023
Corrêa, L., & Ferraz Cário, S. A.	Entrepreneurial state, mission-oriented innovation policies and renewable energy transition: Justifications, principles and evaluation	2022
Giri, L. A.	Política orientada por misión: ¿un instrumento viable para las políticas científicas, tecnológicas y de innovación para la Argentina?	2022
Penna, C. C. R.	The role of Innovation and Entrepreneurship Agencies in the formulation of mission-oriented innovation policies: The experience of the FAPERJ	2021
Surtayeva, S.	Política tecnológica en Argentina: Los Fondos Argentinos Sectoriales en el caso de la nanotecnología	2021
Bortz, G. M.	Políticas CTI en Argentina durante la pandemia: ¿oportunidad para nuevas redes participativas en I+D+i?	2020
Carrizo, E.	Políticas orientadas a misiones: ¿son posibles en la Argentina? Ciencia, Tecnología y Política	2019
Weinberg, G. M. L., Jorge, M. J., & Jorge, M. F.	Produção de conhecimento e busca de aplicações: A experiência da universidade com a indústria química	2009

Source: Own elaboration.